

Clothing Needs for Teenagers with Mental Handicap in Hong Kong

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ABSTRACT

Teenagers with mental handicap have great difficulties in the areas of dress appearance and purchasing appropriate well-fitting garments due to their unusual body configurations, overweight and/or numerous congenital defects. The purpose of this research was to investigate the anthropometric measurements, as well as psychological and physiological needs of teenagers with mental handicap in Hong Kong so as to identify their major concerns and needs on the clothes they wear. Results indicated that the anthropometric measurements of the mentally handicapped teenagers as well as their behavioural development differed markedly from that of the ordinary teenagers. They have generally larger waist girth, thigh girth and back width, but shortened arm length, leg length and trunk circumference. As revealing their daily activities, though they are overweight, they are very active in social activities and like to have interaction with people. This group of teenagers has strong clothing needs such as easy wearing and allowing big movement, whilst fabrics have to be easily cleaned with good sweat absorbency. And most importantly, an appropriate sizing system has to be developed in order to enhance their personal appearance and self-image.

Keywords: anthropometry, body motion, mentally handicapped

1. INTRODUCTION

Clothing is a language, a nonverbal system of communication that through its symbols conveys much about the wearer to the viewer. Before people speak to one another, their clothing makes a statement that expresses their sex, age, class, occupation, origin and personality, as well as what they are or what they want to be at a particular moment. People wear clothing for functional as well as for social reasons. Clothing has always been a kind of status symbol and expression of the individual personality. People of all ages and in all circumstances of life are aware of the importance of appearance in perception of self and in their relations with other people. However, for those whose surrounding environment is limited by age, conditions of health, or physical and mental handicaps, dressing properly is a very difficult and often impossible task. Medical personnel, such as occupational therapists, social workers, psychologists, and medical doctors, have concerned with the special clothing needs and appearance problems of the handicapped. Handicapped people care about their appearance and want to be accepted and

recognized^{13&15}. More importantly, desire of approval is always present, and gives them a feeling of well-being and self-confidence^{2&3}.

In Hong Kong, clothing for mentally handicapped is generally altered or adapted from ready-made garments according to the interest, ability and ingenuity of family members and others who were responsible to take care of them. As reported by the medical staff of local care centers, the mentally retarded group experienced unique problems in areas of dressing style and appearance as the physical development of retarded individuals was often not the same as that of people with normal intelligence^{4,12}. Children who are mentally handicapped may be abnormally thin or very stout and overweight due to compulsive eating habits. Their growth velocity also differs from normal children, significantly during the adolescent years^{7,9&10}. They may have numerous congenital defects such as congenital heart disease, skeletal disorder and skin disorders, that are frequently observed in young people with Down's Syndrome (one of the most common types of mental retardation)³. Those who care for them need to alter outsized garments or maternity clothing for them, or they have to accept ill-fitting and inappropriate clothes. The

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effectiveness of such effort is usually unsatisfactory. Besides having unusual body dimensions, some of the mentally handicapped group also exhibit abnormal movement patterns. They attempt to compensate for their hypotonia, ligamentous laxity, decreased strength and short arms and legs by developing compensatory movement patterns^{8,11&14}.

According to the Central Registry for Rehabilitation of the Health and Welfare Bureau, in 2001, there were 430,248 disabled people in Hong Kong accounting for 6% of the total population. Amongst those about 139,000 are categorized as mental or retarded is a type of developmental disorder and it is a condition that appears early in life and has a life-long effect on the way an individual grows and acquires skills, or develops. The most common types of mentally retardation include Mongolism, or Down's syndrome, cretinism and Hurler's syndrome. This may be the result of congenital deficiency in the secretion of the hormone thyroxin from the thyroid gland, insufficient amount of iodine in the diet of the child's mother during pregnancy, or deficiency of an enzyme that results in the accumulation of protein carbohydrate complexes and fats in the cells of the body, etc.

Poor physical appearance (due to wearing ill-fitting and inappropriate clothes) adversely influences their acceptance into the mainstream community. Improvement in the area of appropriate clothing and physical outlook of these people is an important issue as it enables them to take part in the mainstream activities of society and thus enhances their self-reliance and self-esteem¹². This study therefore aims to investigate the anthropometric measurements, as well as psychological and physiological needs of teenagers with mental handicaps in Hong Kong so as to provide a conceptual framework for the product development of appropriately designed clothing.

The label, "LOTS OF LIFE" is an example of special clothing design for the handicapped. The project founder, Delhi-based Kamal and Sanjiv Saxena have set up Project Solace, a unique venture dedicated to making special adaptive garments for spastics, mentally- and physically-challenged individuals and orthopaedic patients. The project was about making the mentally- and physically- challenged patients self-reliant and raising their self-esteem, as well as to give them comfort. The "scientifically-designed" outfit which was implied a perfect coordination of the fabric, colour and the design. Suitable fabrics are used to make the garments skin-friendly. Care is taken to make use of different cotton blends as well as treat the fabrics with anti-microbial agents to help ease problems like bed-sores. Through computer-aided designs, the clothes are fitted to take care of essentials. Three-dimensional measurements are used to make the space required to move the deformed part of the body. Value addition comes in the form of accessories like Velcro and easy-to-handle zippers. For a person wearing callipers, the garment takes his body posture into account and care is also taken to help ease the screwing and unscrewing of the nuts and bolts of the callipers. A natty shirt for a bed-ridden patient opens up into a sheet on which you could just roll him on¹⁶.

2.METHODOLOGY

The aim of this study is to investigate the anthropometric measurements, the psychological and physiological needs of teenagers with mentally handicap in Hong Kong. First of all, the body dimensions of the mentally handicapped group were collected. Results were then compared against the anthropometric results obtained from the normal teenager group. To minimise the subject's and their parents' concerns, traditional manual body measurements could only be taken in this study. Referring to the standard body measurements recommended by the British Standard, 17 anthropometric measurement parameters (including some of the major growth characteristics of children with Down's Syndrome such as height, weight, head circumference, arm length, trunk circumference, fat measurement, etc.) have been determined. With the consent of the parents, a total of 28 normal teenagers (aged from 12 to 17) and 24 teenagers with mental handicap were invited to take part in the manual anthropometric measurement survey. The results of basic statistical analyses of the manual body measurement are reported.

To assess the subjects' ability to perform routine movements, body motion measurements were also carried out to measure their range of motion (ROM) by using the VICON motion capturing system. It is considered as the maximum extension of a subject's body part when doing a particular movement^{1,5&6}. In this study, 4 normal teenagers and 4 teenagers with mental handicap were invited to perform 6 movements including standing trunk flexion, left and right elbow flexion, left and right shoulder abduction and shoulder bending, their maximum body extensions were then analysed.

Secondly, random sampling was used and a total of 65 teenagers who are mentally handicapped and/or their parents were interviewed. Factor analysis was employed to analyse the detailed dimensions of their eating habits and expectations on clothing selection.

3.RESULTS AND DISCUSSION

3.1Body Configurations and Extension

Amongst the mental handicap group, the mean weight and height were 59.5 kg and 161.3 cm for boys and 47.92 kg and 142.45 cm for girls respectively. The body mass index (BMI) ranged from 14.4 to 31.9 for boys and from 19.6 to 27.6 for girls respectively. Over 30% of the boys and girls with mentally handicap have BMI >25 kg/m² respectively, which is defined as overweight by the National Institute of Health. In the case of the normal group, the overweight proportion was only 11% for the boys and 5% for the girls. The mentally handicapped group has significantly short stature, with a disproportion of weight to stature, as compared with the normal group, in particular for the girls. The reasons of overweight or obesity of these mentally handicapped teenagers could be explained by their eating habit and lack of opportunity for activity. The hypotonia characteristics of people with Down's Syndrome could also influence their motor development. The delay in the achievement of motor milestones may limit their physical activity and result in poor gross motor performance. Moreover, teenagers with

Down's Syndrome have a pubescent growth spurt but the magnitude of the growth spurt is often smaller than in normal teenagers. It is possible that the mentally handicapped group has a normal pubescent fat spurt but that it occurs with a deficient pubescent spurt in stature. This combination could result in excessive weight relative to the limited increase in stature and lead to obesity.

Most of the mentally handicapped teenagers have bulky waist girth, thigh girth and back width, but short arm length and leg length. A large range of anthropometric variations were also observed within the mentally handicapped group. For the 18 mentally handicapped boys, the weight ranged from 23.9 kg to 92.4 kg, nearly 4 fold amongst the group, whereas the height only ranged from 129 cm to 179 cm.

The results obtained from the body motion measurements also indicated that all of the 8 subjects generally exhibited the greatest body extension when performing shoulder abduction. Nevertheless, the body extension results of the mentally handicapped group differ noticeably from that of the normal group. The ROM results were generally consistent across the six movements for the normal teenage group. A wide range of extension variations were observed from the 4 mentally handicapped teenagers. The results may be explained by their delayed motor development and dynamic balance ability of people with Down Syndrome. To some extent, this may also be affected by their body dimensions as strong correlations were observed between subjects' ROM and their body dimensions. Subjects' standing trunk flexion increased with the trunk circumference, elbow flexion increased with arm length, shoulder abduction increased with height and shoulder bending increased with shoulder width. The values of correlation coefficients (r) ranged from 0.80 to 0.997 for the mentally handicapped group, whilst ranged from 0.88 to 0.99 for the normal teenage group.

3.2 Psychological and Physiological Needs

Amongst the 65 respondents, 48 (73.8%) are male and 17 (26.2%) are female. For demographic profile, 10.8% of the respondents are aged below 8, 21.5% of the respondents are aged 9 to 11, while 26.2 % respondents are aged 12 to 14, 27.7% respondents are aged 15 to 17, and 9 (13.8%) respondents represent age group are above 18 in the sample.

3.2.1 Eating Habit

The factor analysis yielded two factors with eigenvalues greater than 1.0, explaining a total 64.41% of variance. Table 1 shows a summary of the two loading factors on eating habit of mentally handicapped group. They are labeled as "Overeater" and "Sweet lover".

Table 1. Summary of the Eating Habit Factors

Factors	Factor Loading	Eating Habit Statement
Overeater	0.840	Eat more than other buddies
	0.741	Like meat
Sweet lover	0.750	Like sweet food
	0.712	Like carbohydrate food

As reviewing the eating habit of the mentally handicapped teenage group, it was found that they could eat more than their buddies. Moreover, they love meat, carbohydrate and sweet food. This may contribute to their heavy body weight which leads to the concern on their specific requirements on clothing material and style.

3.2.2 Social and Emotional Performance

The factor analysis yielded two factors with eigenvalues greater than 1.0, explaining a total 67.81% of variance. Table 2 shows a summary of the two loading factors on social and emotional performance of mentally handicapped group, which are labeled as "Social Participant" and "Interactive Learner". Results indicated that they were active in social activities such as participating in group activities. They are capable of understanding and following classroom's and game's rules. They also enjoyed interacting with other people.

Table 2. Summary of Social and Emotional Performance Factors

Factors	Factor Loading	Social & Emotional Performance
Social Participant	0.756	Feel happy to join activities
	0.865	Know simple social manner
	0.809	Follow classroom's and game's rules
	0.877	Feel happy to play with buddies
	0.838	Can participate in group activities
Interactive Learner	0.776	Self-conscious in waiting
	0.824	Get along well with other people
	0.808	Can interact with buddies
	0.775	Learn actively

3.2.3 Self-control and Self-consciousness

By using factor analysis, three factors are yielded with eigenvalues greater than 1.0, explaining a total 75.84% of variance. Table 3 shows a summary of the three loading factors on self-control and self-consciousness, labeled as “Self-caring”, “Self-cleaning” and “Self-discipline”. The results indicated that the mentally handicapped group pays very strong attention on self-caring and self-cleaning. They are also aware of their clothing appearance in perception of self and in their relations with other people.

Table 3. Summary of the Self-control and Self-conscious Factors

Factors	Factor Loading	Self-control/Self-conscious Statement
Self-caring	0.884	Can wear clothes by themselves
	0.941	Can eat and clean up by themselves
	0.905	Can clean themselves
Self-cleaning	0.899	Can wash & dry hands by themselves
	0.925	Put the rubbish to rubbish bin consciously
Self-discipline	0.885	Can understand and present an event

3.2.4 Requirements on clothing

In respect to clothing requirements, three factor scores are extracted with eigenvalues greater than 1.0, explaining a total 75.87% of variance. Table 4 shows a summary of the three loading factors on clothing requirements, labeled as “Functionality”, “Durability” and “Fashion”. Results showed that amongst the functional clothing requirements, clothes which allow free movements and fabrics with breathability, sweat absorption and warmth keeping ability are regarded as the most important factors.

Table 4. Summary of the Clothing Requirement Factors

Factors	Factor Loading	Clothing Requirement Statement
Functionality	0.674	Concern on size range
	0.815	Concern on ease of wearing
	0.931	Concern on ease of movement
	0.864	Concern on comfort
	0.902	Concern on breathability
	0.925	Concern on sweat absorption
	0.909	Concern on warmth keeping ability
	0.825	Concern on easy caring
	0.798	Concern on special fabric functions
Durability	0.801	Concern on durability
Fashion	0.818	Concern on fashion style
	0.828	Concern on fashion brand name

4. CONCLUSION

As appearance plays an important role in the individual’s own feelings of confidence and being the key of acceptance in today’s society, the topic of special clothing needs has recently become a focus of great interest for clothing researchers. The body configuration results revealed that about one-third of the mentally handicapped teenage group could be obese. This could be explained by their eating habits of taking large amount of meat and sweet food. Apart from health concerns such as increased blood pressure, cardiac disorders and diabetes, obesity may limit their participation in the usual physical and recreational activities.

The anthropometric measurement results also pointed out that the mentally handicapped teenagers generally have bulky waist girth, thigh girth and back width, but short arm length and leg length. The disproportion of body dimensions and large range of anthropometric variations within the mentally handicapped teenage group have further magnified their problems of ill-fitting and dressing appearance. Nevertheless, it is evident that the mentally handicapped group has a strong desire of social acceptance. They enjoy social activities and like to interact with other people. They also pay very good attention to personal cleanliness.

In this respect, a specific sizing system covering a broad range of sizes with increased waist girth, thigh girth and back width, but shortened arm length and leg length must be derived. The study also revealed that clothes allowing free movements, with breathability, sweat absorption and warmth keeping ability are more popular among the purchasers who are mostly parents of mentally handicapped teenagers.

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