

Importance of Designing Adaptive Garments for Physically Challenged People

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ABSTRACT

The aim of this study is to raise awareness of the value of clothing designed for people with physical disabilities, with a focus on comfort, safety, and mobility, is the aim of this study. The study answers two important questions: why do fashion designers frequently fail to make special clothes for people with physical disabilities, and how do these people feel when they have trouble getting dressed and taking off their clothes?

For people with physical limitations, adaptive clothing improves comfort, movement, and independence, which can have life-changing effects. Innovative designs that address issues including limited dexterity and mobility disabilities include adjustable features, Velcro fasteners, and magnetic closures. These solutions make daily tasks easier while promoting dignity and individuality. But conventional apparel frequently falls short of these requirements, underscoring the need for clothing that puts inclusion first.

The study's findings show that participants have a very positive opinion of adapted clothing options, highlighting the significance of inclusive and useful designs. The results show that there is a sizable market for creative apparel that meets a range of demands, which is consistent with the larger trend toward accessible design. This study emphasizes how important adapted apparel is to enhance the lives of people with physical disabilities and urges fashion designers to pay more attention to this underrepresented group.

Keywords: Adaptive clothing, Safety and comforts, Accessibility fashion

INTRODUCTION

Designing clothing specifically for physically disabled individuals is of utmost significance. These adaptive garments can have a transformative impact on their lives, offering a range of benefits that enhance their comfort, mobility, and independence. For instance, consider a person with limited dexterity who struggles with buttons or zippers. Adaptive clothing with magnetic closures or Velcro fasteners can make dressing and undressing much easier, allowing them to maintain their independence and dignity.

Furthermore, individuals with mobility impairments may face challenges when it comes to putting on and taking off clothing. Adaptive garments that incorporate features like wider openings or adjustable closures can simplify the process, enabling them to dress themselves without assistance. This fosters a sense of autonomy and self-reliance, promoting their overall well-being.

Traditional clothing is frequently not made with individuals with disabilities' particular requirements in mind, necessitating the fabrication of clothing expressly for them. A person's physical and mental well-

being can be affected by clothing, which is a necessary component of daily living. However, it can be challenging for people with disabilities to obtain clothing that is appropriate for their individual needs.

Designing clothing expressly for people with disabilities can help with these issues and give them access to comfortable, useful, and fashionable clothing. Frequently, clothing made for people with disabilities has the following characteristics:

This raises a very important question in the context, which highlights the importance of doing research in this direction. **Why are industries/brands not focused on designing and promoting fashion clothing for challenged people?**

Because of a lack of knowledge, a perception of low demand, high production costs, social stigma, and a lack of regulations, industries and fashion brands frequently ignore designing for people with impairments. The creation of inclusive and adaptive clothing solutions is hampered by these limitations.

The passage of the Disability Discrimination Act (DDA) in 1975 in the United Kingdom aimed to eliminate prejudice against individuals with impairments (Doyle, 1996). According to the DDA, a disability refers to a physical or mental impairment that significantly and permanently restricts a person's ability to perform daily tasks. The detailed impairments are mentioned in Fig.1.

For those with physical limitations, adaptive apparel is essential to improving their quality of life. With features like elasticized waists, Velcro fastenings, and open backs, it caters to specific demands while encouraging self-reliance, movement, and self-assurance. By providing functional yet fashionable solutions catered to personal tastes, these clothes also aid in the reduction of stigma. Because of high production costs, low demand, and a lack of awareness of the needs of people with disabilities, adaptable clothing is still underrepresented in the fashion industry despite its significance. To guarantee accessibility and inclusion in fashion and to support everyone's right to self-expression and dignity, these obstacles must be removed.

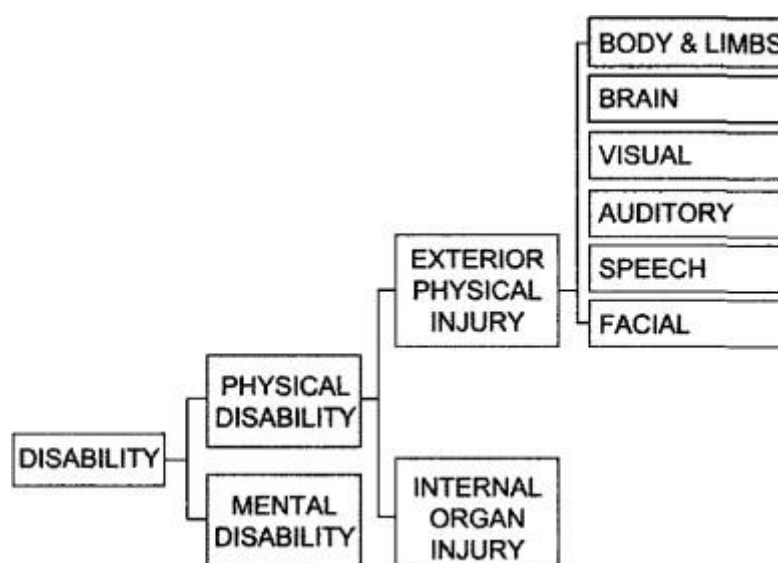


Figure 1: Classification of disability based on DDA law.

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This study highlights the need to give priority to adaptable apparel designed for people with physical disabilities. It investigates the obstacles that prevent the fashion business from responding quickly, like misunderstandings about consumer demand, financial limitations, and ignorance. The study investigates the practical and emotional difficulties that people with disabilities encounter when getting dressed and taking off their clothes through surveys, interviews, and case studies. It looks at things like body form diversity, fabric sensitivities, and accommodations for medical devices. The ultimate objective is to raise awareness, support the creation of clothing that improves this marginalized population's safety, comfort, and freedom of movement, and advocate for diversity in fashion.

RESEARCH OBJECTIVES

To investigate the importance of designing “adaptive garments” for physically challenged people, a mixed-method approach will be employed. This will involve both qualitative and quantitative research methods.

Research Objective:

- To make awareness of the Importance of garments for physically challenged people.
- To provide the required level of safety and comfort.
- To provide the required level of safety, comfort, and freedom of movement.

Research question:

1. Why are fashion designers not catering special dresses for physically disabled people?
2. How do physically disabled people feel when they face problems in dressing and undressing themselves?

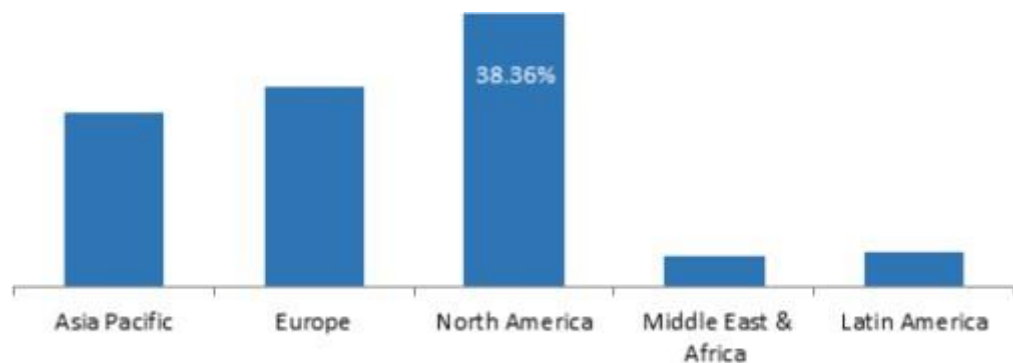
LITERATURE REVIEW

The phrases "adapted clothing," "functional clothing," "universal design," and "inclusive design" are commonly used in the clothing industry to market wearable products for individuals with disabilities, as stated in a literature survey on nomenclatures for clothing targeting people with disabilities (chia, 2009). To transition adapted clothing from a niche market to a more mainstream one, it is emphasized that improved representation of individuals with disabilities within the fashion industry is necessary (Gema, 2017). The essay underscores the value of clothing that provides individuals with disabilities a sense of independence, dignity, and reduced loneliness (BK, 2008). A comprehensive review on the creation of clothing for disabled individuals emphasizes the need to develop garments that enable individuals with impairments to dress with minimal assistance from others (Grimmer, 2019). In a study by (chae, 2022), individuals with spinal cord injuries highlighted the need for clothing with additional padding in key areas such as the seat and back to prevent pressure sores. The application of technology in the design of adaptive clothing is another emerging trend. In a study by (Grimmer, 2022), the use of

3D printing technology was suggested as a viable solution for producing specialized adaptive clothing that caters to individual needs and preferences. (Sullivan 1972) investigated the wardrobe issues affecting four spina bifida-affected girls (Spina bifida is a birth defect that affects the development of the spine and spinal cord), ages 8 to 16. She mentioned that getting dressed could be difficult if you have braces, restricted range of motion, or limited hand use.

The global adaptive clothing market size was estimated at USD 274.1 million in 2019 and is anticipated to reach USD 392.8 million by 2027, exhibiting a CAGR of 4.7% over the forecast period (2020-2027), according to research by Coherent Market Insights released in 2020.

According to the report, the market for adaptable clothing is expanding because of reasons like growing demand for comfortable and adaptive clothing, greater public awareness of inclusive clothing, and an increase in the number of persons with disabilities. Additionally, a number of clothing manufacturers have been stressing inclusive designs, which is anticipated to further accelerate market expansion.



Source: Coherent Market Insights

Figure 2 Global adaptive market size by region

The statistics in Fig. 2 highlights the adaptive market size, as from the graph it is clearly visible that North American's regions occupy the maximum market share. The values highlight the significance of market growth and severe need for the development of adaptive fashion industry.

Currently, there are several brands working in this domain, the table below sorts out some of the trusted websites working in this domain. These websites provide a variety of options for adaptable clothing, such as clothes with magnetic fasteners, Velcro fasteners, and adaptive features including easy-to-open zippers and adjustable waistbands.

Adaptive clothing websites	
https://wheelchairjeans.com/	https://www.izadaptive.com/
https://www.buckandbuck.com/	https://www.ablddenim.com/
https://www.silverts.com/	https://www.adaptationsbyadrian.com/
https://nbzapparel.com/	https://www.easyaccessclothing.com/

Given adaptive garments website refers to a website that specializes in selling clothing and accessories designed to meet the unique needs of individuals with disabilities or limited mobility. These adaptive garments are specifically designed to be easier to put on and take off, accommodate medical devices, and provide comfort and functionality for individuals with diverse abilities. The website may offer a wide range of adaptive clothing options, including items with Velcro closures, open-back designs, adjustable features, and other modifications that make dressing and undressing easier. Additionally, some adaptive garments websites may also provide resources and information on dressing techniques, sizing guides, and tips for caregivers.

Limitations in Existing Brands

After analyzing the previous literature and some of the options available, following limitations, we have pointed out the following limitations. To name a few:

Options are limited compared to non-adapted clothes: Despite the fact that there are numerous brands of adaptive clothing available. Because of this, it may be challenging for persons with disabilities to locate clothes that suit their unique requirements and sense of style.

Cost: Because of the extra design elements needed to make adaptive clothing accessible, it can cost more than non-adapted clothing. Due to this, it may be challenging for disabled persons who are on a restricted budget to purchase adaptive clothing.

Lack of inclusivity: Some adapted clothing companies may not cater to all disabilities, even if many of them concentrate on specialized ones, such as those that affect wheelchair users or persons with limited mobility. This may prevent some people with impairments from getting the adaptive clothing they require.

Limited accessibility: Some adapted clothing companies may only be sold online or in specific areas, which might restrict accessibility for persons without access to these resources.

METHODOLOGY

Population

1. Designers: Fifteen fashion designers specializing in garment manufacturing for adaptive clothing were recruited.
2. Physically Challenged Individuals: A sample of 25 individuals facing difficulties with dressing and undressing were selected from a local disability center.

SAMPLING TECHNIQUE

Interviews with Designers:

1. Conducted interviews with all 15 designers to understand their experiences, challenges, and recommendations for designing adaptive clothing.
2. In-depth follow-up interviews were held with selected designers to gain deeper insights.

Questionnaires for Physically Challenged Individuals:

1. Administered questionnaires to 25 participants in a focus group to gather detailed data on challenges, preferences, and adaptive clothing features.

2. The focus group discussions addressed specific needs and preferences in adaptive clothing styles and functionality.

RESEARCH APPROACH:

Qualitative Research

Explored reasons for the lack of specialized clothing through interviews with fashion designers and industry experts, focusing on barriers, challenges, and opportunities.

Quantitative Research

Conducted surveys with physically challenged individuals using a Likert scale to measure experiences, emotions, and difficulties with existing clothing options.

Research Instruments

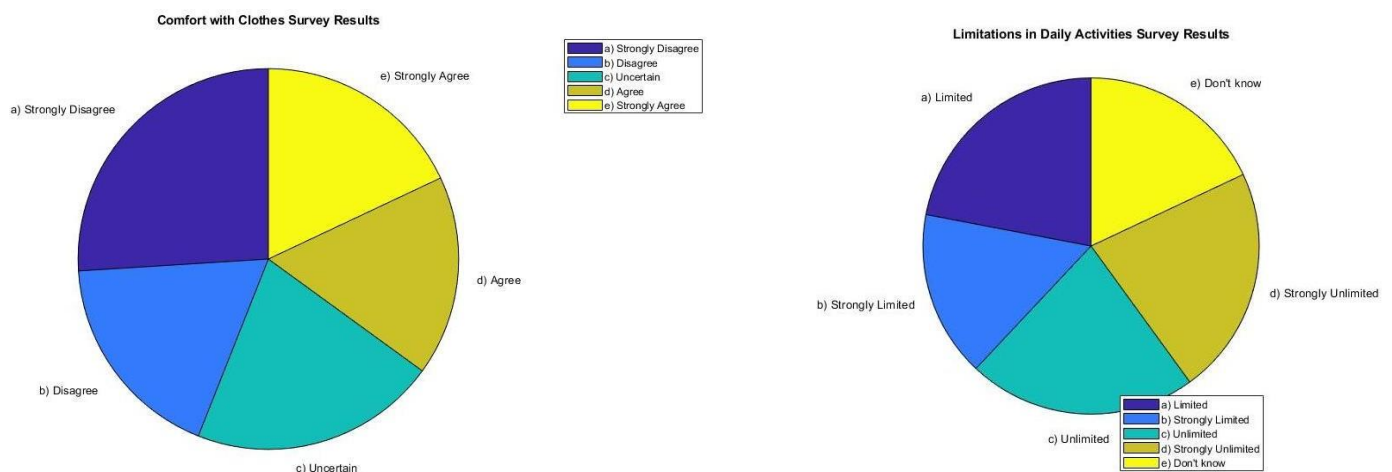
1. Surveys and Questionnaires: Designed to capture preferences, challenges, and willingness to invest in adaptive clothing.
2. Interviews: Conducted with individuals with disabilities, caregivers, healthcare professionals, and designers, using open-ended questions for in-depth insights.

Interview Methodology with Designers

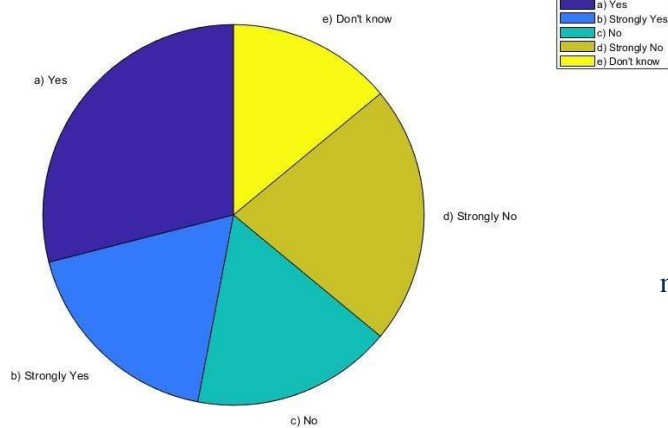
1. Developed an interview guide with tailored questions.
2. Recruited participants through online searches, professional networks, and garment manufacturers.
3. Scheduled interviews at convenient times for participants.
4. Conducted interviews, following up on responses for clarification.
5. Took detailed notes to ensure accurate analysis.
6. Thanked the participants for their contributions.

RESULTS

Questionnaire results are combined and attached in the following graphs:



Need for Adaptive Clothing in a Professional Workplace Survey Results



Interest in Clothes for Physically Challenged Persons Survey Results

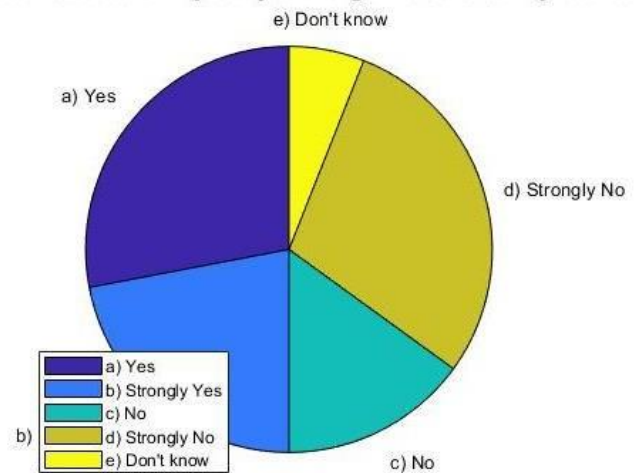


Figure 4: Sample question results

METHODOLOGY OF ANALYSIS

We examined major themes pertaining to participants' experiences with comfortable clothing, limitations in day-to-day activities, and interest in clothing made for people with physical challenges in our analysis of a subset of sampled responses from 50 questionnaires.

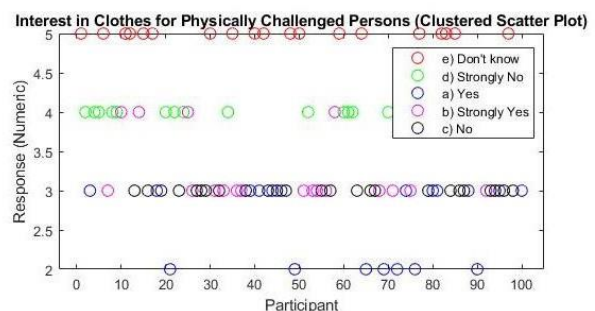
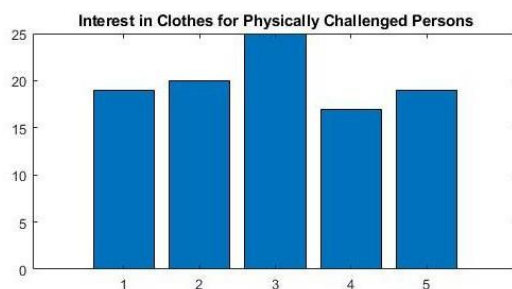
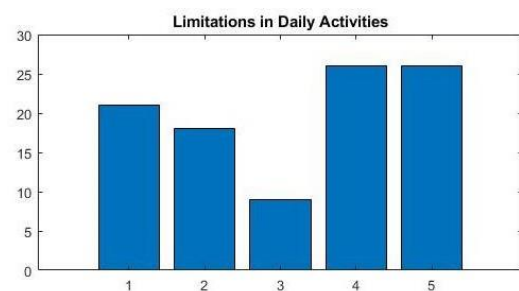
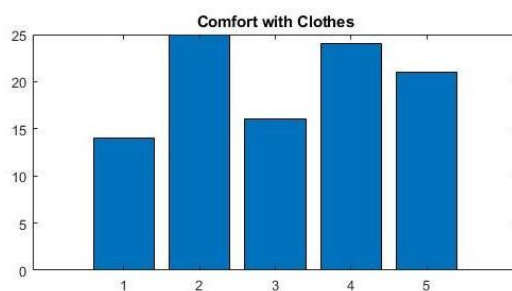


Figure 5: Questionnaire analysis

CONCLUSION

After compiling answers to a wide range of inquiries about clothing comfort, daily activity limitations, interest in clothing for people with physical disabilities, and other topics, a striking pattern surfaced. An important positive sentiment regarding adaptive clothing solutions is revealed by the analysis.

There was a consensus among participants that functional, comfortable, and inclusive clothing is important, as evidenced by their consistent positive inclination towards the concept of adaptive clothing. This positive outcome highlights the potential market demand for creative clothing solutions that meet the needs of individuals with a variety of needs, in addition to being consistent with the larger trend towards accessible fashion.

The results show a promising trend in favor of adaptive designs, indicating a rising understanding of the advantages these solutions can bring to people's everyday lives. This thorough analysis highlights the potential for beneficial industry and societal change and supports the idea that there is a receptive audience ready to see advancements in the field of adaptive clothing.

Following the major takeaways from the results:

Comfort in Clothes:

Most participants said they were generally at ease in their clothes. Positive reactions were common, suggesting that standard clothing's degree of comfort was generally regarded as satisfactory.

Restrictions on Everyday Activities:

Notably, respondents who self-reported as disabled mentioned difficulties with everyday tasks involving clothes. This emphasizes how critical it is to comprehend and meet unique needs to improve comfort and functionality for people with physical disabilities.

Interest in Clothing for Individuals with Physical Disabilities:

An important and positive finding was the high level of interest in clothes made for people with physical disabilities. The sample responses revealed a greater level of interest and receptivity to customized solutions, pointing to a possible market need for inclusive and flexible fashion.

When designing clothing solutions that prioritize comfort, address limitations, and satisfy the expressed interests of people with varying physical abilities, designers, retailers, and legislators can take these insights into valuable consideration. The results highlight the importance of inclusive design practices in the fashion industry and the possible effects they may have on people's everyday lives and general well-being.

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