

EXPLORING AESTHETIC INNOVATIONS IN ADAPTIVE CLOTHING**Preethi A R^{*1}**

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ABSTRACT

In this project, I am going to design a collection of Indian-style Kurtis tailored specifically to meet the requirements of individuals with disabilities. In recent times, the fashion industry has shifted its focus towards inclusivity, ensuring individuals with various body types and physical disabilities are also accommodated. Adaptive clothing refers to clothes that are made to fit the unique needs and requirements of people with varying degrees of disability, such as physical disabilities, congenital disabilities, acquired disabilities (from an illness, injury, or accident), age (older people may have difficulty opening and closing buttons), and temporary disabilities. A person's need for assistance with dressing, such as from a carer, as well as their age, kind of impairment, degree of independence, mobility, and dexterity, all affect their choice of adaptive clothes. Adaptive clothing may be necessary for those who have difficulties with buttons, shoelaces, zippers, or even fabrics and textures because of a handicap. The majority of adaptable clothing designs are derived from mainstream apparel, whose comfort level started to rise in the 1950s thanks to new technologies like stretchy textiles and elastic waistbands. The foundation for this exploration lies in the diverse identities of individuals with different physical disabilities with diverse needs and preferences. Traditional adaptive clothing has often prioritized functionality over aesthetics. This results in a gap between style-conscious people and the available options. The research will mainly be focusing on the existing adaptive clothing designs - their advantages and disadvantages, by examining the historical evolution of adaptive clothing, by analyzing existing adaptive clothing lines and collaborations between designers and individuals with disabilities. Drawing inspiration from successful stories and breakthroughs in the field of inclusive adaptive will help in finding the key design principle that contributes to both functionality and aesthetic appeal. Considering this we will create a curated collection of adaptive clothing which has a blend of functionality and aesthetics from the research processes. This will help in diversity and empowers the individual to express their identities through fashion.

Keywords:

adaptive clothing, fashion, evolution.

INTRODUCTION

The fashion business today prioritizes inclusion and accommodates people with a wide range of body types and physical disabilities. This work aims to delve into the dynamic realm of inclusive fashion, particularly by exploring the nuanced relationship between aesthetics and functionality in adaptive clothing design. So in this project I aim to curate a collection specifically designed to meet the requirements of individuals with disabilities, focusing on adapting the traditional Indian style Kurti to ensure inclusivity and accessibility.

Adaptive clothing is defined as apparel designed to meet the particular needs and specifications of people with varying degrees of disabilities, has become a critical aspect of the contemporary fashion industry's push towards inclusivity. There are different degrees of disability including congenital disabilities, acquired disabilities (such as the result of an injury, illness or accident), age (elderly people may have trouble with opening and closing buttons) and temporary disabilities, as well as physical disabilities are known as adaptive clothing. The fashion industry is undergoing a transformative shift, recognizing the importance of catering to individuals with diverse body shapes and physical disabilities. Adaptive clothing, designed to meet the specific requirements of those with varying degrees of disability, represents a significant step towards breaking down barriers in the fashion world.

The growth of adaptive clothing can be seen in between 1955 to 1976 in the USA, where 30% of the top designers came together to create the functional fashion line. One of the designers who stood out was Helen Cookman who had a hearing disability. She created a clothing line where special belt pockets are used to hold her hearing aids.

Traditionally, adaptive clothing has leaned heavily towards functionality, often neglecting the aesthetic preferences of style-conscious individuals. This has resulted in a perceptible gap between the fashion-forward community and the limited available options in adaptive wear. The motivation behind this work is rooted in the contemporary shift towards inclusivity within the fashion industry. There exists a growing awareness and recognition of the need to cater to individuals with diverse body shapes and physical disabilities. The proposed scope of this project is to contribute to this paradigm shift by redefining the point at which fashion and functionality converge. By doing so, the aim is to bridge the gap between style-conscious individuals and the current landscape of adaptive clothing, creating a more inclusive and diverse fashion environment. The challenges in the existing paradigm primarily revolve around the historical emphasis on functionality at the expense of aesthetics in adaptive clothing. This has limited the choices available to individuals with disabilities who seek both style and substance in their clothing. The proposed solution involves a comprehensive exploration of existing adaptive clothing designs, dissecting their advantages and disadvantages. By analyzing the historical evolution, current market offerings, and collaborative initiatives between designers and individuals with disabilities, this research aims to extract key principles that contribute to both functionality and aesthetic appeal.

The roots of adaptive clothing in India dates back to the traditional garments and practices tailored to individuals with disabilities. Indian clothing has exhibited adaptability within loose - fitting silhouettes and draped fabrics for the ease of movements which helps people with mobility impairments. This versatility is best demonstrated by traditional clothing, like the saree and dhoti, which provide comfort and use for people with a range of physical needs. The need for inclusive design and growing awareness of disability rights. This has driven the growth of adaptive clothes in India in recent decades. Designers and innovators have increasingly recognized the importance of producing and creating the garments that meet the specific needs of people with disabilities.

India has made significant progress in the field of adaptive clothing. the rise of non - profit organizations dedicated to advancing accessible fashion. These organizations work towards increasing public awareness, promoting & advocating inclusive design practices and providing resources for individuals with disabilities to access adaptive clothing.

Furthermore, creative solutions in adaptive clothing design resulted from partnerships between fashion designers, healthcare professionals, and assistive technology experts. The comfort, usefulness and visual appeal of adaptive clothing have been improvised by these developments, which range from specific fabrics and materials to adjustable closures and simple - to - fasten features. Most of the closures used in adaptive clothing are velcro, snap buttons, magnetic fasteners etc.,.

Upon further research into the adaptive clothing I have found that there are limited options available for the Indian - style garments. Despite the growth of inclusive fashion, it's relatively scarce to find garments that are tailored to the Indian cultural preferences. This highlights a significant gap in the market and the need for innovation and diversity in the adaptive clothing market. In response to the identified gap, I made a strategic decision to focus on creating adaptive garments inspired by the Indian styles. such as Kurtis. Through the incorporation of traditional Indian clothing into adaptive clothes, my objective is to accommodate individuals' distinct cultural preferences while simultaneously offering them fashionable and functional clothing options that are authentic to their identity and background. This choice demonstrates a commitment to diversity and inclusivity in the fashion Industry, assuring that people with a range of needs and background are empowered and repressed via clothing.

OBJECTIVES AND METHODOLOGY

- To conduct a study on existing Adaptive clothing designs and their historical evolution. The project will begin with the trough research into the evolution of adaptive clothing, tracing its development from historical origins to contemporary designs. This will involve reviewing the literature, analyzing archival sources, and examining historical garments to understand how adaptive clothing has evolved over time. By exploring the historical content and evolution of adaptive clothing, the project aims to gain insights into the factors that will have an influence in the designs and functionality.
- Next, we have to identify the advantages and disadvantages of existing adaptive clothing designs. This will involve analyzing the diverse range of adaptive clothing products which are currently available in the market, assessing their advantages and disadvantages in terms of functionality, aesthetics and the user experience. By systematically evaluating existing designs , the project aims to identify areas for improvement and innovation in adaptive clothing design.

- With a comprehensive understanding of existing designs and their strengths and weaknesses, the project will then seek to identify the key design principles that balance functionality and aesthetic appeal in the adaptive clothing. This will involve in the processing of findings from the research phase, identifying the common themes and patterns followed and choosing the correct key principles that contribute to the successful adaptive clothing designs. From the clear design principles, the project aims to provide a framework for creating adaptive clothing that effectively meets the needs of individuals with disabilities while also appealing to their aesthetic sensibilities.
- Creating the mood board and inspiration board is the crucial step in the design process, as they serve as visual guides to communicate the aesthetic direction and inspiration for the adaptive clothing. The boards can be created using Adobe illustrator or Canva
- From the insights gained from the research and analysis, it will involve in translating the conceptual ideas into tangible designs. Using tools such as Adobe illustrator or hand sketching, we can create the detailed sketches and renderings that bring the vision for the adaptive clothing collection to life.
- The final objection involves creating the curated collection of adaptive clothing that seamlessly blends the functionality and aesthetics. This collection includes the tops that are Indian styled garments. That is designed to meet the diverse needs and preferences of individuals with disabilities while also appealing to broader fashion sensibilities.

Flow diagram of the proposed work

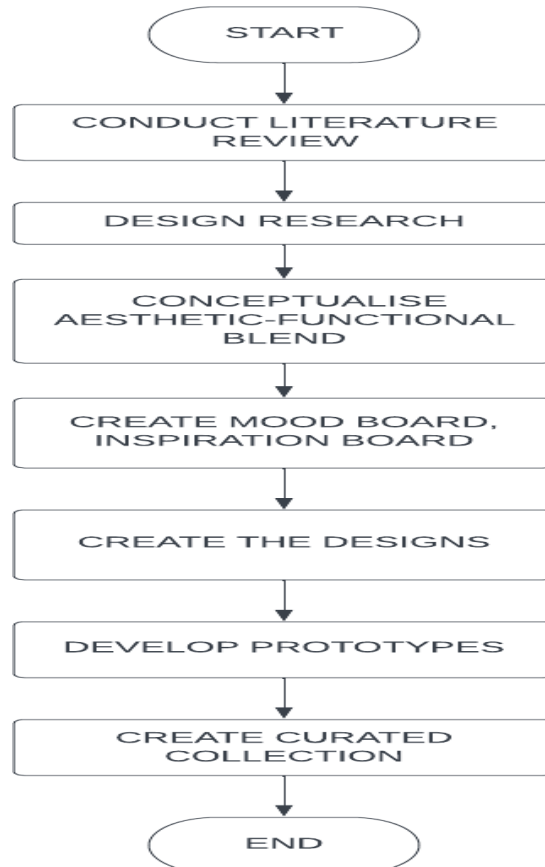


Figure 1 : Flow diagram of the proposed work

Conduct Literature Review

Conducting a literature involves gathering and analyzing existing research, articles and publications relevant to the topic of adaptive clothing design. This step helps to gain insights into the current state of the field, identify the gaps in the knowledge, and understand key concepts and theories that inform their work.

Design Research

Design research involves exploring the various aspects of design, including the materials we are going to use, constructions and technique to create the garments and aesthetics. These steps may include studying the fashion trends, analyzing the market offerings and examining the needs and preferences of the target audiences that are individuals with disabilities who will benefit from adaptive clothing.

Conceptualize Aesthetic-Functional blend

Conceptualizing involves integrating aesthetic and functional considerations to develop design concepts for adaptive clothing collection. We need to balance the functionality, aesthetic appeal, accessibility and comfort, ensuring the garments meet both the practical and style requirements.

Create Mood Board and Inspiration Board

Mood board and inspiration board are visual tools used to communicate and visualize the aesthetic direction, mood, color palette, textures, patterns, and the design element of the collection - Indian style garments.

Create Designs

Based on the conceptualized aesthetic-functional blend and the inspiration from mood boards and inspiration boards, we need to create detailed designs and sketches of adaptive clothing collection using softwares such as Adobe Illustrator or hand sketching. This step involves translating conceptual ideas into tangible visual representations.

Develop Prototypes

Develop the garments from the designs we have created. Test the functionality, fit, comfort and aesthetics.

Create Curated Collection

The final step is to curate a cohesive collection of adaptive clothing that has both the functional and aesthetics blend conceptualized in the earlier processes.

Data Collection

Disability and clothing problem

Mainstream clothing brands and the options that they offer are not designed for the needs of individuals with disabilities. They often face difficulties while dressing independently because of muscle weakness etc.. Historically, the fashion industry has not been inclusive when it comes to showcasing a range of body types and disabilities. This lack of representation contributes to the feeling of exclusion. Many individuals struggle to find clothing options that align with their Identity and style preferences.

Classification of Disabilities

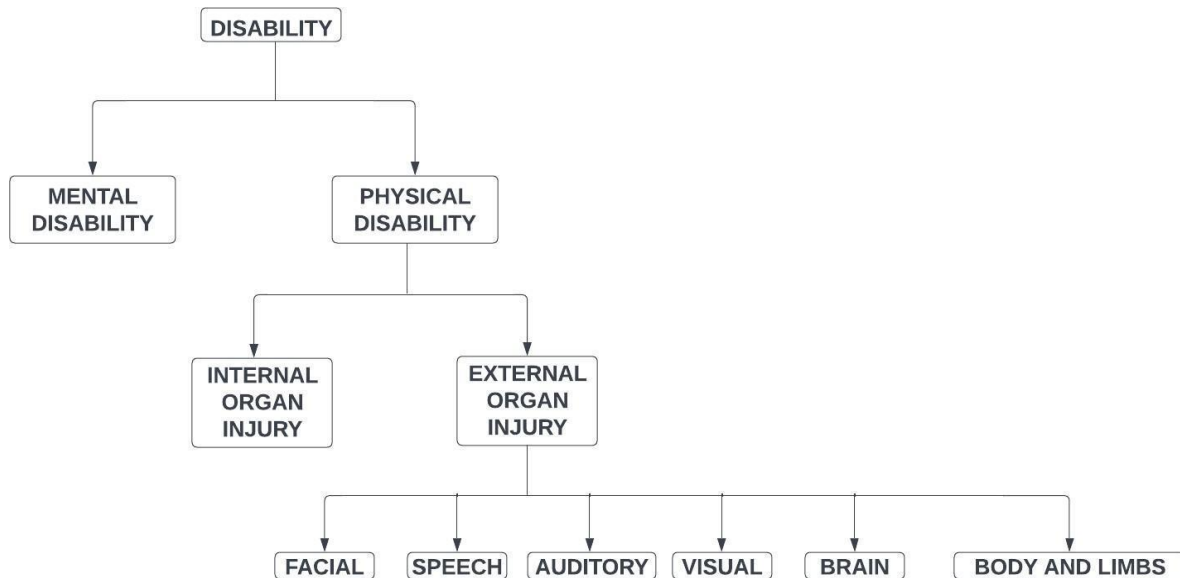
The UN defines a disabled person as someone who has a physical or mental impairment that has a substantial and long-term adverse effect on his or her ability to carry out normal day to day activities.

The following distinction is made by the World Health Organization(WHO, 1980), in the context of health experience, between impairment, disability and handicap: "Impairment: Any loss or abnormality of psychological, physiological, or anatomical structure or function." "Disability: Any restriction or lack of ability to perform an activity in the manner within the range considered normal for a human being." "Handicap: A disadvantage for a given individual, resulting from an impairment or disability, limits or prevents the fulfillment of a role that is normal, depending on age, sex, social and cultural factors, for that individual."

Handicap is therefore a function of the relationship between disabled persons and their environment. It occurs when they encounter cultural, physical or social barriers which prevent their access to the various systems of society that are available to other citizens. Thus, handicap is the loss or limitation of opportunities to take part in the life of the community on an equal level with others(<http://www.un.org/esa/socdev/crable/rights/ahestata3refdispecific.htm>).

Following is the classification of disability based on the law on the welfare of the disabled by the Ministry of Health and Welfare of Korea(Fig. 1). The adaptive clothing is mainly related to people who have body & limbs or brain injury since rest of other physical injuries do not affect the movement much which create clothing problems.

Figure 2: Classification of disability based on the “Law on the Welfare of the



Disabled”

What is Adaptive clothing?

According to Wikipedia, Adaptive clothing is clothing designed around the needs and abilities of people with varying degrees of disability, including congenital disabilities, acquired disabilities (such as the result of an injury, illness or accident), age (elderly people may have trouble with opening and closing buttons) and temporary disabilities, as well as physical disabilities. Adaptive clothing is designed to make it easier for the person with disabilities to put on and take off their own clothes easily.

Types of modifications in adaptive clothing

The conventional garments must undergo several alterations so that it is easy for disabled people to dress up. For example replacing buttons for velcro, or placing closures on the back, front closing bras, lap over backstyle garments with snaps for individuals who can't raise their arms, velcro on the side seam of the pants.

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Figure 3: Snap button closure on the side seam of the t-shirt.





Figure 4: Zipper closure on the shoulder of the t-shirt



Figure 5: Velcro closure on the shoulder of the tank top.

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Figure 6: Velcro closure on the side seam of the shorts



Figure 7: Snap button on the lap over backstyle t-shirt



Figure .8: Front Velcro closure on the dress

Factors affecting Adaptive clothing

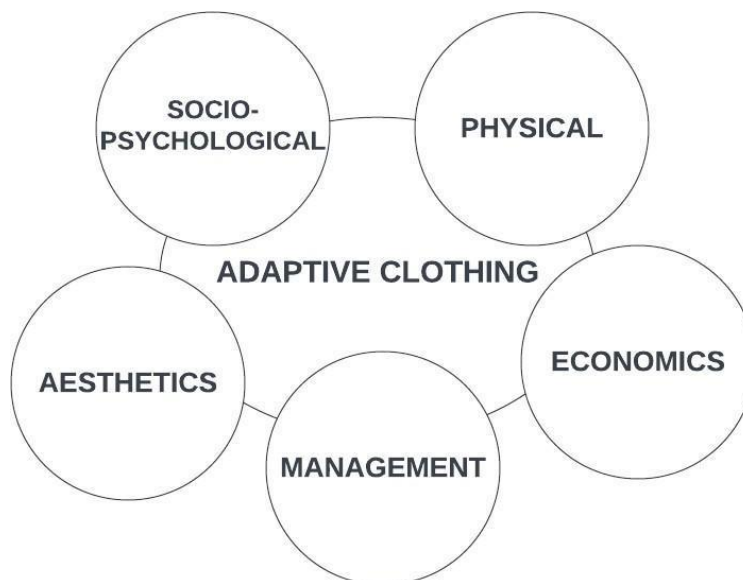


Figure 9: Factors affecting Adaptive clothing

The variables influencing the adaptable apparel are listed above the image. These factors ought to be taken into account when designing clothing that is adapted for people with special needs.

Socio-psychological Aspect

According to the socio-psychological aspect, having the appropriate clothes that encourage dressing independently and feeling good about oneself can boost one's self-esteem and confidence in appearance. Stated differently, adaptive clothing has the potential to significantly improve the socio-psycho-logical functioning of people with exceptional needs.

Aesthetics Aspect

Clothes shopping is inconvenient for people with special needs. For the most part, those consumers had significant difficulty finding fashionable clothing that fit their limitations. All clothing should be fashionable and appealing from an aesthetic standpoint, highlighting the wearer's positive attributes while concealing any disabilities. When wearing adaptive clothing, the alterations should not be noticeable for a stylish appearance.

Management Aspect

People with disabilities should take into account the additional wear and tear and washing that their clothes receive compared to clothing designed for the able-bodied. Appliance joints or wheelchair arms may experience significant wear at specific locations. It is necessary to ensure that clothing is constructed specific areas from materials that are sturdy enough. One significant issue is that durable materials might result in bulky seams that can irritate delicate skin or lead to pressure sores. To lessen the issue in this instance, the garment must be cleverly designed with proper seam placement.

Economic Aspect

Since most individuals with special needs have lower incomes and higher costs, economical products are quite important when it comes to adaptive clothing. Take into account both the initial cost and the cost per wear of an item of clothing. Additionally, it makes sense to choose pieces that may be combined with several units to prolong the life of a garment and lower the cost of each wearing.

Physical Aspect

Comfort and accessibility are important factors to take into account for people with special needs. Clothes should be easy to put on and take off, with plenty of long openings and few fastenings. By utilizing special features like velcro closures or snaps, it makes getting dressed less unpleasant and more straightforward.

For people who dribble a lot and have weak or nonexistent mouth muscle control, protection is necessary because otherwise their top garments will stay wet all the time, which frequently results in chest infections. Skin that is delicate needs to be shielded from pressure or friction from bulky fasteners or uneven seams. Taking into account physical characteristics, adaptable clothes

By considering physical aspects, adaptive clothing can encourage dressing independence for individuals with special needs and make dressing easier for caretakers.

Design features to be considered when designing clothes for people with special needs**Aesthetics**

The clothes we wear play a big role in how we look and can disclose a lot about our personalities. We typically choose different styles of attire for different kinds of activities (such as work, play, parties, etc.). Appropriate clothing can serve as a means of disguising potential disabilities.

Comfort

Textiles that come into direct touch with the body, such as clothing, shouldn't be uncomfortable in any way. Thermal considerations (insulation and breathability), tactile factors (hand characteristics), pressure, flexibility of mobility, non-allergenic, etc. are some of the several components of comfort that must be taken into account.

Ease of movement

When developing clothing for individuals with disabilities, it's critical to incorporate additional comfort into the fabric to ensure that it doesn't impede their range of motion. Joint placement should be given more design consideration for easy limb mobility.

Easy access

Opening Location: Front opening makes it easier to dress and undress on your own. Because the person should be able to access them independently, openings should be properly created. The pants' outside seam openings enable them to lie flat on a chair or bed. Accessible inside seams make it possible to attend to personal hygiene requirements without removing clothing or shoes.

Type of Fasteners: Adaptive clothing should be designed so that persons with disabilities can easily put it on and take it off, giving them a sense of independence and confidence. Accessory closures like snaps, Velcro, large pull-tab zippers, and buttons can be utilized to help individuals with disabilities. For many years, makers and designers of adapted clothing have preferred to use velcro. Many have attempted to cover up Velcro fasteners with attractive buttons and zippers so

that the garment appears like traditional apparel and can be easily adjusted. In clothing, magnetic fasteners are used in place of difficult-to-manipulate buttons or zippers.

Type of adaptive clothing chosen for this project

Due to their limited motor abilities, people with Parkinson's disease(age-related degenerative neurological disorder) and Arthritis(joint inflammation) have merged Velcro and comfortable touch magnetic closures on their clothing, which is more effective and more comfortable than buttons and zippers.

Final collection



Figure 10: Final sketch 1

Figure 11: Final sketch





Figure 12: Final sketch 3

Figure 13: Final sketch 4



CONCLUSIONS & SUGGESTIONS FOR FUTURE WORK

People with special needs experience more significant physical changes and limits, and they often struggle to locate clothes that fit well, hang well, and are easy to put on. All people value the sense of self-worth, contentment, and social acceptance that accompany dressing in practical, suitable, and stylish clothes, but individuals with special needs value these benefits even more.

Disabled people with brain injuries, body & limb impairments, and the elderly who are unable to perform regular dressing movements require adaptive clothing. Because people are living longer and experiencing more illnesses and injuries, there are more elderly and disabled people in society today.

This project aimed to provide concepts and solutions for the fashion-functional design of clothing for people with special needs. It also successfully addressed the need for Indian-styled adaptive clothing that prioritizes both functionality and aesthetics for individuals with special needs. Since medical conditions often cause clothing issues, it is necessary to examine patients' medical histories before designing clothing for the disabled. This helps ensure that individuals with specific requirements receive the appropriate fit and care. The project demonstrates its dedication to honoring ethnic diversity and offering useful solutions for people with impairments by curating a selection of adaptable kurtis. The clothing has been improved to guarantee wearers' comfort, convenience of usage, and general happiness through user input and testing.

The project's focus on affordability also exemplifies a comprehensive approach to inclusive fashion, taking into account larger social and environmental effects in addition to the requirements of people with disabilities.

When designing adaptive clothes, socio psychological, aesthetic, management, economic, and physical factors must be taken into account; Adaptive clothing has the potential to significantly improve the socio-psychological well-being of people with special needs. In terms of appearance, it should be stylish and appealing, showcasing the wearer's assets while concealing their disability. In terms of management, the issue of wear and tear can be resolved by carefully positioning the seams to lessen pressure sores from durable cloth. In terms of affordability, it needs to be within a fair range, making it accessible to people with special requirements. In terms of the body, convenience and comfort are important to make getting dressed less difficult and painful.

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