

ADAPTIVE CLOTHING FOR FEMALES WITH ARTHRITIS IMPAIRMENT

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ABSTRACT

Clothing is one of the basic needs of human life. It plays an important role in the development of an individual, which is equally true in case of physically challenged. Adaptive clothing can offer arthritis women an easy, time saving and pain free way to dress. Keeping in view the importance of clothing in human life, three sets of garments were specially designed for females with Rheumatoid arthritis impairment. Independence and self-confidence of these specially designed garments were assessed by wear trail test. Research process comprised of assessing clothing needs and problems faced while donning and doffing and providing independence and self-confidence through co-designing and evaluating the effectiveness of that adaptive garment after wear trail of three weeks. A qualitative method was used, employing data collection by in-depth interviews and observations. The researcher did a detailed thematic analysis using predetermined codes to aid analysis, of all the information gathered from three female participants of the study. The researcher found what was missing in the clothing that the participants wore in their regular lives, and worked with them to find out what they wanted in the adaptive clothing that provides them independence and self-confidence. The special features incorporated in the newly designed functional garments were found to be most comfortable and practicable. All the three participants expressed that the specially designed garments were not only attractive but also functional and can be used as casual wear or outer wear. The adaptive clothing was a successful mean to satisfy the participant's needs and preferences in a better way.

Keywords: Rheumatoid arthritis, adaptive clothing, independence, self-confidence, physical limitations, donning and doffing

INTRODUCTION

Clothing governs the impression a person will be able to make on others and give them a sense of security, through feelings of acceptance and through self-esteem. Clothing helps to build and enrich the personality of the wearer, being the main source of forming first impression for others. If the first

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impression is poor it may create avoidance, where as if the first reaction is favorable, a pleasant interaction between the individuals usually ensures¹. Clothes render on individual

a distinct identity. This gives a feeling of self-confidence and comfort and the wearer feels physically, psychologically and socially at ease. Uncomfortable clothes can take away the joy of living². This is equally true for special groups, whose needs are of greater care because they need more comfort and convenience as compared to normal people to become independent. Special group consists of people who deviate from the normal with respect to physical, mental and social characteristics to such an extent that they need unique care in clothing³.

Rheumatoid arthritis (RA) is a chronic, systemic inflammatory disorder that may affect many tissues and organs, but principally attacks the joints producing an inflammatory synovitis that often progresses to destruction of the articular cartilage and

ankylosis of the joints. Women are affected three times more than men. It generally affects middle-aged individuals between ages of 40 to 60. However, women can also be affected at a young age. It can be a disabling and painful condition, which can lead to substantial loss of functioning and mobility⁴.

In the case of this study, the focus is on patients with rheumatoid arthritis. Rheumatoid arthritis is a chronic, progressive and disabling auto-immune disease. Its origins are unknown. It is classified as arthritis because in rheumatoid arthritis the individual faces problems in multiple joints of the body, causing swelling, severe pain and destruction of the joint as well as facing deformity. This type of a disease typically affects the small finger joints, wrists, knees and toes. All joints of the body however are potential targets⁵. Thus rheumatoid arthritis can be one of the most disabling types of arthritis. It is also more common disease now a day.

Adaptive clothing is a special clothing design made for people with impairment, who face difficulties in dressing themselves. These specially designed clothes make clothing experience easy, and cater a wide range of disabilities. Each disability requires a different type of design according to their disabilities⁶. Adaptive clothing helps to minimize joint movements and pain faced by patient while dressing or undressing. It also decreases the amount of patient handling performed by attendant⁷. Thus adaptive clothing allows making life easier for special people.

Adaptive clothing for people with physical disabilities, allowing more independence in dressing and more self-sufficiency. Dressing and undressing time and effort can be reduced by careful selection of garments and their fastenings. Independence in personal activities is a great boost to morale and a desirable goal to strive for, but the cost of achieving such independence must be carefully considered. Although it is gratifying to know that one can be independent, dressing without help, where such help is available, may not be making the best use of one's limited physical resources, particularly someone going to work or a mother with a family⁸.

Dressing by oneself is essential for independent living. Yet dressing and undressing can be a source of pain and embarrassment to disabled people, of all ages. Unsolved clothing and dressing problems can contribute to a person becoming housebound, and make it difficult to mingle with people or take a job. They can inhibit normal social life and greatly increase living expenses. Clothing difficulties are therefore a much more important area in the life of disabled people than have previously been recognized⁹.

The correct adaptive clothing design gives an opportunity to enjoy life and becomes a wonderful way to prove that sick people with special needs and disabilities may improve the quality of their life.

Some disabled people are not able to donning and doffing clothes independently because that is not designed for their disability, and so they have to adapt to them. This study was aimed to design special garments that make them more independent while donning and doffing and need very little or no help and also increases self-confidence of the females with Rheumatoid arthritis and to investigate their preferences according to their physical limitation, and design suitable clothing in this regard. It addresses the two key questions:

1. To assess the level of independence of adult female patients when facilitated by adaptive clothing.
2. To determine change in self-confidence level of adult female patients with the use of adaptive clothing.

MATERIALS AND METHODS

The study was conducted in 2010–2012 in Lahore. The purpose of this study was to design suitable clothing for adult females of Pakistan suffering from Rheumatoid arthritis. The study was exploratory in nature; therefore qualitative methods were used to achieve the objectives of the research. The researcher explores case studies on adaptive clothing for three adult female patients with rheumatoid arthritis impairment in Pakistan. The sample of the study was purposively drawn. Due to limited resources and time, only three females suffering from rheumatoid

arthritis with limited shoulder, hand and wrist, finger and knee movement were taken as a sample. Patients were selected by the recommendation of orthopedic specialist. Three hospitals and rehabilitation center, namely, Rheumatology Department of Sheikh Zayed hospital, Orthopedic Department of Fatima Memorial hospital, and Rehabilitation Centre on Ferozpur Road, (all these are situated in Lahore) were visited by the researcher, (after getting formal permission from them), this was mainly done to get first-hand knowledge and information, and to collect a sound sample for the study.

Qualitative research design with inductive approach was used for data collection. Therefore in-depth interviews and observations were used for data collection of the study. The researcher used common methods like interviewing the medical specialist to develop an understanding of rheumatoid arthritis. In addition to that, in depth interviews and observations with patients help to illuminate basic elements of alterations required in their garments and to understand the context of the limitations that they face. The patients expressed their needs, and these needs were made the basic criterion for the design of the adaptive clothing for them.

Interviews are considered a direct method for data collection. In order to gather comprehensive data, a series of interviews was conducted. In order to maintain a level of confidence, the researcher remains conscious and careful to gain trust of the participants. This required a great deal of sensitivity, love and compassion, and they needed to be treated like equal in the society. During the interview, questions about their daily lives, and the problems that they faced were asked. Gradually, as trust level began to increase, they were able to open up and start talking about their physical problems. There were negative responses towards specially designed clothing, mainly due to the patients' need to hide their feelings and most did not believe that they had a clothing problem.

Another method used was observation, which is an indirect method of data collection in qualitative research. The sample was sensitive and reserved, after various meetings with the

patients and the specialists, and gaining trust from the patients, the researcher was then allowed to visit their homes, which gave access to more observational data. This was done by expressing the need to build rapport and better understanding of the physical limitations.

The observations were focusing behavior of the patients, mainly looking at how they walked, sat, ate and how well they were able to grasp things. This allowed proper analysis and observation on their physical limitations. At the same time, attention was given to the types of clothes that were worn by the patients. Through this any objection on other types of clothes were also noted. Each observation of individual patients was all noted separately in order to make sure that the patients' clothing was designed accordingly.

In order to have comprehensive data, an interview protocol was prepared with the help of doctors who screened the contents of the question. Then interview questions were developed in consultation with the advisor and experts (dress designer).

The researcher used different methods of instrumentation and content analysis, based on a categorization scheme to code and interpret the data. Before content analysis, each audio file of interview dialogue was transcribed into English by the researcher to ensure consistency and validity. All the details of discussion were carefully reviewed and coded for correspondence to the identified categories, which would be meaningful to the research problems. The process of coding data involved seeking recurring themes in the data representing outlines in different categories and themes.

This study was divided into three phases, which followed a linear progression of data collection and analysis. The first phase was focused entirely on gathering data about the problems faced by the specific group of women with rheumatoid arthritis, while dressing and undressing independently. The information that was gathered by the researcher through in-depth interviews and observations includes type of physical limitation, clothing needs and preferences and the body measurements.

The second phase is the designing phase, which covered information on collaborating with the participants of the study to design the adaptive garments that bring change in the level of independence and self-confidence of participants of the study. This phase also used the information obtained from Phase I to sketch a design of the garment that would be easily manageable and suit the individual needs of the participants. The collaboration involved interactive sessions with the members of the sample to comment on the sketches made in the initial stage of the design, and then finalized the sketch design according to their preferences. With the understanding of what was problematic for the participants and what the participants wanted to see in their clothing, the researcher put together three variations of adaptive clothing design for shirt (*kameez*) and pants (*shalwar*) in drawing for each participant. This was then short-listed by the participants for the construction of the one design for wear trial, so that they could test the clothing.

The third and final phase focused on making a trial garment and given to the participants for wear testing to assess the level of independence and self-confidence. One out of the three sketches for adaptive clothing designs of phase two made for each participant of the study was selected and constructed for the wear test. The selected design was developed for construction with the help of a detailed specification sheet that contained final body measurements for each participant along with the detailed line sketch of design and its accessories. This specification sheet facilitated the construction process further because it contained detailed information. Three sets of this trial adaptive garment were made in accordance with the body measurements of the participants and with the help of a basic pattern for a shalwar and shirt. Wear-test of the trial adaptive garment given by the same group of participants was selected from the start of the research. Phase Three of the research was related to the testing of the adaptive design and to evaluate its effectiveness in relation to independence and self-confidence through in-depth interviews and observations. The researcher worked very closely with the

participants of the study to design and select one of the three designs made for each participant according to their need and preferences. So three selected adaptive design of shirts were constructed in same colour with same print for each participant. One design of a suggested adaptive shalwar was also chosen for construction for all participants.

RESULTS AND DISCUSSION

The findings of the present study show that specific physical limitations were common in all the three participants. They were categorized as range of motion, strength, stamina, motor planning, and others. These categories impacted the independence and self-confidence of this special group while donning and doffing, managing fasteners and also through the style of the clothing. The researcher found the clinical definition of Rheumatoid arthritis to be consistent with the identification of the limitations that were earlier categorized, which was supported by Yep (1997)¹⁰, Reich and Shannon (1980)⁹ and Newton (1984-85)¹¹. Limitations caused by disease usually impact the ability to find suitable clothing. Through observations and in-depth interviews the researcher found significant problem areas that participants were facing in finding clothes that did not constricting them and would give them the freedom to move and the ease to manage fastenings. The problems with constructing style were solved with designing clothes that had full front open shirt with simple set-in-sleeves, Reglan and Kimono sleeves with moderate neck depth and fairly loose garments. Cotton garments are most suitable compared to woolen, silk and synthetics. Velcro fasteners are highly preferred for quick and fast manipulation.

The researcher uses a co-designing technique to find the change in the level of independence and self-confidence of the participants, through creating common clothing features according to the need and preferences of participants in the trial adaptive clothing solution. These features included loose clothing with no define waistline. The adaptive clothing also included

a front or side opening, with a simple and basic neckline, and a simple collar. A fastening that was used is Velcro. Shalwar with elasticized waist and elastic band at the bottom of each paincha, zippers on shalwar paincha and on back of the shirts.

All participants found all features very comfortable and convenient that makes them more independent and self-confident. They open up that front open shirt with zipper at back and on shalwar paincha are very helpful for massage. All these features were seen to also be applicable to those who belonged to other groups with similar range of physical disabilities.

The analysis of all the information gathered through qualitative methods and also used predetermined codes to aid analysis of all the information. These codes, that were in form of instrument listings, allowed the researcher to understand and combine all the responses that came from the participants. The researchers found what was missing in the clothing that the participants wore in their regular lives, and worked with them to find out what they wanted in the adaptive clothing that provides them independence and self-confidence. Finally, it was found that the adaptive clothing was a successful mean to satisfy the participant's needs and preferences in a better way, as they felt pleased with most of the dimensions of the final part of the research. It was also found that it is important for adaptive clothing to understand what is required and that the co-designing the final product was a very effective means of doing so, as it reduced the amount of problems in the final construction stage.

The evaluation found a significant positive response from the individuals; all participants found that all categories like comfort, independence and self-confidence, provided through adaptive features of the designed garment which includes shirt with full front opening, easy-to-manage fastenings, style of fastenings, ease of movement and visual appeal was much better than what they had imagined. Thus, the adaptive garment aided the women in reducing many of the problems that they were facing when donning and doffing clothes and increases the comfort, independence and self-confidence of this special group of participants.

CONCLUSIONS AND RECOMMENDATIONS

Research Question 1:

Does adaptive clothing effects the independence of adult females suffering with Rheumatoid arthritis?

All problematic features were incorporated into the adaptive clothing design, which was then made into a trail adaptive garment for the participants to test out. The design of the opening position should improve the clothing functionality. So the full front and side opening position with Velcro fastening facilitate to dress independently. The wear test evaluation demonstrated that functional practicality of dressing independently could be maintained. The participants showing satisfaction in most areas, mostly seeing that they need very little or no help from others in dressing. One participant told that she never imagines that she can change her cloth so easily and independently.

Research Question 2:

Does adaptive clothing increase self-confidence of adult females suffering from Rheumatoid arthritis?

All participants were extremely sensitive about the appearance. They do not like any style that is not aesthetically appealed. Using functional and aesthetic properties in the adaptive clothing solution, researcher makes it possible in increasing the self-confidence of all the participants of the study. All the selected features combine the perfect blend of "fashion and function." Front and side open shirts using Velcro fasteners that fit neatly behind the decorative buttons without emphasizing their disabilities. That facilitates them in donning and doffing independently or helps them in quick change of clothes, decrease in the reluctance of meeting people and increase the self-confidence. Aesthetically pleasing clothing deemphasizes their disability, beautifies their outward appearance, increases their self-confidence and enables them to enjoy a healthy psychological context.

All participants found all features very comfortable, they open up that zipper with front open shirt and on shalwar paincha are very helpful for massage. All these features were seen to also be applicable to those who belonged to other groups with similar range of physical disabilities.

In view of the findings and conclusions of the study, some recommendations are given that could aid further future studies and gives new ideas that could be explored by other researchers in this or in a similar field.

1. Future researchers may increase the sample. More adult females with Rheumatoid arthritis should be included and should be considered for further designs to be made.
2. Instead of adult female, males with Rheumatoid arthritis should be taken as a sample for future research.
3. Comfortable materials for clothing could be another topic of discussion that other researches can go into detail with.
4. This study can also be further taken to the next level by putting forward this idea to readymade products.

This study was able to aid the life of a woman who is riddled with a physical disability in living a normal life, without having to fuss about daily clothing exercise. With the help of adaptive clothing, a woman with rheumatoid arthritis can dress up independently and comfortably and still feel good about her-self, which increases self-confidence. This design concept is unique in this society's context, and will be able to help many others in the future, have more or less similar disabilities.

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APPENDIX**Figure 1**

Front



Back

A full one side front opening with cancelled Velcro and decorative piping on both sides. Plain set-in-sleeve with loose elasticized wrist opening, and half back zip.

Figure 2

Front



Back

A one piece plain with print body and loose fitted shirt with full center and side opening, with decorative large button having Velcro underneath. Half back zip, Raglan sleeve with plain piping, and a pocket.

Figure 3

Elasticized belt, with zipper at both painch and kunda seam. Elastic band at lower edge of both painchas

