

Article Info:

Received Date: 4 October 2018

Accepted Date: 18 October 2018

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Constructing A Conceptual Framework of the Smart Apparel Design using KJ Methods for the Disabled Elderly

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Abstract

This study is to extract the keywords from the literature review as the guideline factor to construct the best conceptual framework of the smart apparel design for disabled elderly in folks' home. Based on the problem occurred in Old Folks Home in Kajang, Selangor, fifteen disabled elderly at the aged of 50 to 70 years old with half body paralysed were participating in this study. Recently, the patients or health worker is having difficulties in changing disabled, elderly garments. They are also facing various problem on the accessibility for medical examination daily in the Folks Home Centre. The KJ method technique and literature reviews is used to develop the conceptual framework in order to identify the gap and needs of the user in their daily garment. As the result, this conceptual paper provides the classifying knowledge transfer in constructing smart apparel design for disabled elderly in an old folks home as the guideline that can improve the conceptual framework.

Keywords: design development, design pattern, patients, care taker, KJ method

INTRODUCTION

The healthcare sector has seen robust growth over the past decade and this sector has one of the highest multipliers in the economy in Malaysia. The Government aims to further grow this sector by encouraging more private investments in areas such as aged care services, manufacturing of pharmaceutical products, medical devices, clinical research and supporting collaborative efforts between public and private healthcare providers. Producing guidance and tools for primary care providers on the comprehensive assessment of health status in an older person and the delivery of the integrated health care will enable them to maintain, slow and/or reverse declines in their physical and mental capacities (10 priorities towards a decade of healthy ageing, WHO Organization, 2017). The main focus of the health sector is to achieve 'Quality of Life of an Advanced Nation', the health sector has also some role to play in the other strategic directions. Quality Healthcare & Active Healthy Lifestyle has been set as the main Key Result Area (KRA) for the health sector for the 10MP. (Country Health Plan: 10th Malaysia Plan 2011-2015). The strategy is to expand the capacity and increase accessibility, with initiatives in developing services such as new facilities, upgrading existing facilities, and enhancing healthcare personnel capacity and capabilities. The role and the importance of health care systems in the quality of life and social welfare in the modern society, have been broadly well recognized. The health care garment is a part of the healthcare services that concern on disabled elderly satisfaction. Thus, this service is a crucial part that will pursuit of disabled, elderly satisfaction while in the old folks home or under treatment.

LITERATURE REVIEW

In designing a special garment for the disabled or elderly users, the pattern construction is a crucial element to be considered in the fashion design process. Singh & Srivastava (2016) identified the importance of designing some clothing for elderly so that dressing and undressing could be made easier and simpler and no more trouble for them. Liu et al (2016) more than half of the hospitalized patients are unwilling to wear patient clothing and are unaware of the reasons for wearing these uniforms, such unwillingness has been attributed to the poor comfort, fit, appearance, and hygiene of these uniforms, which can also bring psychological discomfort. The Personal Care Garment allows access for personal, intimate hygiene, while maintaining a sense of dignity for the wearer (Doyle, Dale, Choi, & City, 2012). Considering the direct contact between clothing and user, the information about anthropometric biomechanical and ergonomic are of extreme relevance for the model (garment) development for different needs of user (Das Neves, Brigatto, Medola, & Paschoarelli, 2015) . According to Araújo De Brito et al. (2016) to identify the cognitive profile of the elderly and its association with anthropometric and functional aspects. The implementing some of the garment design for patients dignity, patients feel worth of their quality of life consider on comfort, ease of movement in addition to the better appearance (Mohamed, Nagda, & Mady, 2015).

Other than that, invention relates garment should be improve. During medical treatment patients, clinics, physician's office should worn special garment follow their speciality (Catherine A. J ,1990). The present invention comprises an improved medical gown for increased patient privacy and dignity, comprising a conventional medical gown With flaps that open to allow various parts of a patient to be accessed While covering the rest of the patient; ensuring their privacy and comfort during an examination or procedure (Hauswirth , 2008). Further, according to Baillie & Matiti (2013) explores dignity within the context of equality and diversity, and examines some of the ways in which discriminatory behaviour of health- care workers contributes to loss of dignity in healthcare. Those behaviour and physical presentation are the component to control disabled elderly or patients feeling comfortable and valued (Baillie, 2009).

Generally, disabled elderly needs more attention from the care taker, health care or person who responsibility to take care off. According to Høy, Wagner, & Hall, n.d.(2016) stated that not only be on codes and guidelines for the care providers, but on the entire health care system, and how dignity can be protected and enhanced through policies and organizational need to restructures. From expression of respect for patients dignity is illustrates on how people surrounding then attitudes, actions, and behaviours that can either contribute to detract (Henry, Rushton, Beach, & Faden, 2015). Addressing the multiple needs from the point of 'patients' is one of the important factor in this research. The three main viewpoints on the elements for PCC (patient care center) were identified: "treating patients with dignity and respect," "an interdisciplinary approach" and "equal access and good outcomes." (Scholl et al., 2014). Høy et al., (2016) stated this knowledge emphasizes the potential of a dignity-oriented approach to the care of older people and may assist nurses and other health care providers to understand the maintenance of dignity from the residents' perspective.

Old Folks Home care centre involves the input from health care workers, staff and patients. The aim of this paper is to construct a conceptual framework in indentifying the gap and focus area for developing a product for disabled elderly in Old Folks Home. This review covers the half body paralyzed elderly in the Old Folks Home. It is to identify the significant factor of KJ method, where the categories were build from the literature review keywords as in Table 1. Those categories are focusing on problem, solution, keywords and references.

Table 1: Clarification keywords from literature review

PROBLEM	SOLUTION	KEYWORDS	REFERENCES
dressing and undressing could be made easier and simpler no more trouble for them.	modifications and adaptation in order to make clothing more comfortable, functional, beautiful and convenient to use	<ul style="list-style-type: none"> • Comfortable • Functional • Beautiful • Easy to use • simple 	Singh & Srivastava (2016)
how patient dignity can be promoted, in acute hospital setting	must promote dignity in their behaviour with patients and be aware of their impact on vulnerable patients' dignity	<ul style="list-style-type: none"> • promote dignity • behaviour • patients dignity 	(Baillie, 2009).
explores dignity within the context of equality and diversity, and examines some of the ways	organizations should support the provision of equality and respect for diversity and dignity	<ul style="list-style-type: none"> • equality • respect • dignity context 	Baillie & Matiti (2013)
differentiated and appropriate products to their needs and expectations	considering the direct contact between clothing and user, the information about anthropometric	<ul style="list-style-type: none"> • anthropometric • patients needs 	Das Neves, Brigatto, & Paschoarelli (2015)
source of dignity and draw on examples to illustrate how clinician attitudes, actions, and behaviors can either contribute to, or detract from, expressions of respect for patient dignity	careful analysis of how clinician characteristics, environmental factors, and\ other variables impede respect for patient dignity is well warranted.	<ul style="list-style-type: none"> • Attitudes • Action • Behaviour • Characteristic • Environment factor 	(Henry et al., 2015)
to promote health, particularly among the elderly patients	focus should not only be on codes and guidelines for the care providers, but on the entire health care system, and how dignity can be protected and enhanced through policies and organizational structures	<ul style="list-style-type: none"> • System • Care taker • Disabled elderly • Dignity protect 	(Høy et al., n.d.)
perspective, nursing care for older patients in hospital encompasses both symptom management and a deep concern to re-establish the patients' dignity	was to explore clinical nurses' experiences of caring for older patients. Besides, re-establishing a lost feeling of dignity is an important issue of caring for older people	<ul style="list-style-type: none"> • Perspective • Explore • Feeling • Experiences 	(Hall & Hoy, 2012)
needs to combine between fashion designing and ergonomics because ergonomics in designing	order to improve their quality of life and the researchers designed the garments for PD patients considering comfort and	<ul style="list-style-type: none"> • Ergonomic • Fashion • Easy to move 	(Mohamed, Nagda, & Mady, 2015)

the garments will satisfy PD patients' needs	ease of movement in addition to the better appearance	<ul style="list-style-type: none"> • Better appearance • Quality of life 	
to identify the cognitive profile of the elderly and its association with anthropometric and functional aspects	important to keep the concern for variables related to functional capacity, as well as the anthropometric profile, as they present relationship with the cognitive deficits	<ul style="list-style-type: none"> • Functional aspect • Practical aspect • Anthropometric 	Araújo De Brito et al. (2016)
the study is to make the process of stretch pattern construction more transparent in CAD applications for the designer/technician, fabric technologist and global manufacturer, and ultimately to offer better fitting and more comfortable garments for the customer	to improve the fit-quality and to enhance comfort and freedom of movement	<ul style="list-style-type: none"> • Freedom • Technical • Fabric • Technology • Fitting • Garment comfort 	(Watkins, 2011)
to provide a convenient garment for hospital patients to mitigate and/or obviate the aforementioned problems	changes may be made in detail, especially in matters of shape, size, and arrangement of parts	<ul style="list-style-type: none"> • Shape • Size • Garment parts • material 	(Chen, 2001)
unwillingness has been attributed to the poor comfort, fit, appearance, and hygiene of these uniforms, which can also bring psychological discomfort	identify the factors those influence their negative attitudes.	<ul style="list-style-type: none"> • Hygiene • Psychology • Discomfort 	Liu et al (2016)

1.0 METHODOLOGY

In this study, the conceptual framework is important to extract the basic keywords that is related to the disabled elderly issues. The conceptual framework represents the idea development in the crucial area that need to be focused on this study. The KJ method is a qualitative technique developed by Kawakita Jiro in 1953 and it is very useful for classifying data and sorting the process (Cheng, 2014).

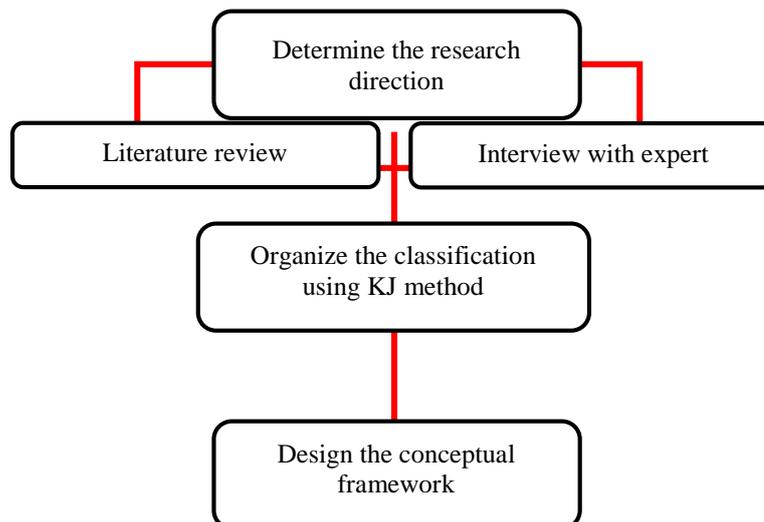


Figure 1: research process of design the conceptual framework

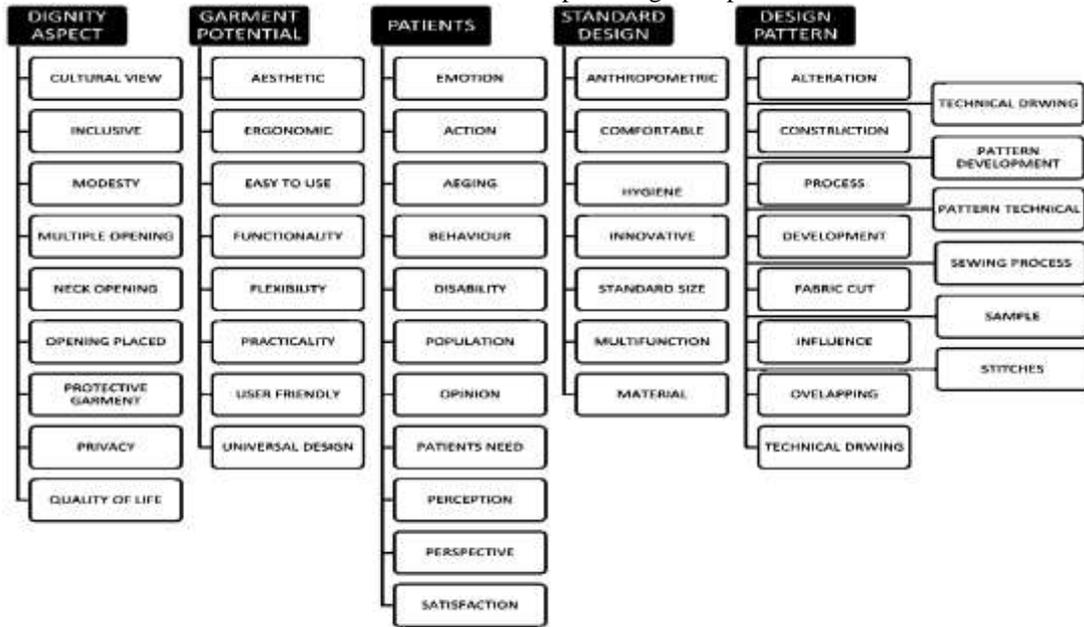
The KJ method includes four aspects: a problem solving model, qualitative data formulation and analysis tools, new type of field research concept and method, also teamwork concepts for creating (Scupin, 1997). Fig 1, this study about the research process to identify the influencing factors from a different perspective, which is from literature review and an interview with an expert.

The actual KJ method applies with four essential steps which is; 1) label making, 2) label grouping, 3) chart making, 4) explanation. (Scupin, 1997). The step of KJ methods for step 1: label making, capture all the issues that related to the problem and list down all the keywords found in literature. Then, further exploration on label grouping in step 2, the group elaborates from some label seem belong together or in same criteria to in a group. As shown in table 2 and table 3 below:

Table 2: label making in step 1

THE KEYWORDS				
Attitude	Disability	Hygienic	Opinion	Simple
Anthropometric	Dignity	Innovative	Potential	Stitches
Aesthetic	Design pattern	Influence	Protective garment	Standard size
Action	Development	Inclusive	Practicality	Sleeve
Agieng	Design process	Measurement (size)	Patients need	Standard design
Alteration	Emotion	Multifunction	Pattern Development	Sewing process
Behavior	Ergonomic	Modesty	Privacy	Satisfaction
Breathable	Easy to use	Multiple opening	Pattern technical	Technical drawing
Color	Fabric cut	Material	Perception	Universal design
Comfortable	Functionality	Neck opening	Population	User friendly
Construction	Flexibility	Overlapping pattern	Patients perspective	Upper garment
Cultural view	Garment potential	Opening placed/area	Quality of life	

Table 3: Group making in step 2



RESULT AND DISCUSSIONS

Through the process of sorting and clustering the keywords, results shows that KJ methods has successfully developed a product design criteria that can be used for the functional apparel design process with an approach of the new variables. (Dunne, 2004). From the data of group clustering, there are three different categories have been developed to be essential step 3 chart making. It is a stable spatial arrangement based on understanding of cause& effect, interdependence, connection and contradiction. As shown in Fig 2. Affinity diagram based on design pattern, which is divided into four connections; design, standard design, pattern garment and fabric cut.

In Fig 3. Affinity diagram based on the patients/elderly, with three main arrangement; patients need, patients behaviour and dignity aspect and for, Fig 4. Affinity diagram will be based on the potential of garment. It has been divided into three main points; functionality, practicality and garment parts. All this step involves patterning of the ‘families’ into a consistent unifying chart (Scupin, 1997).

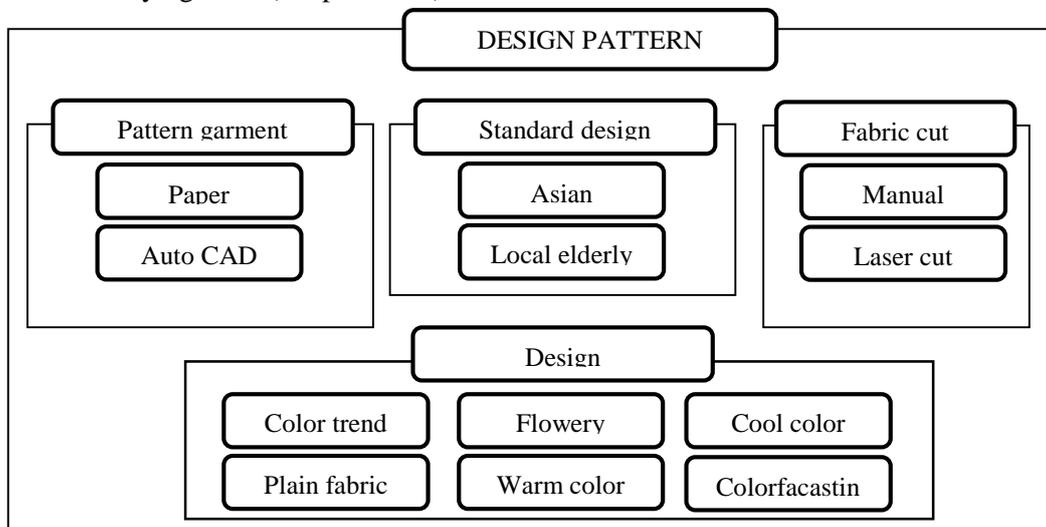


Fig 2: Affinity diagram based on design pattern

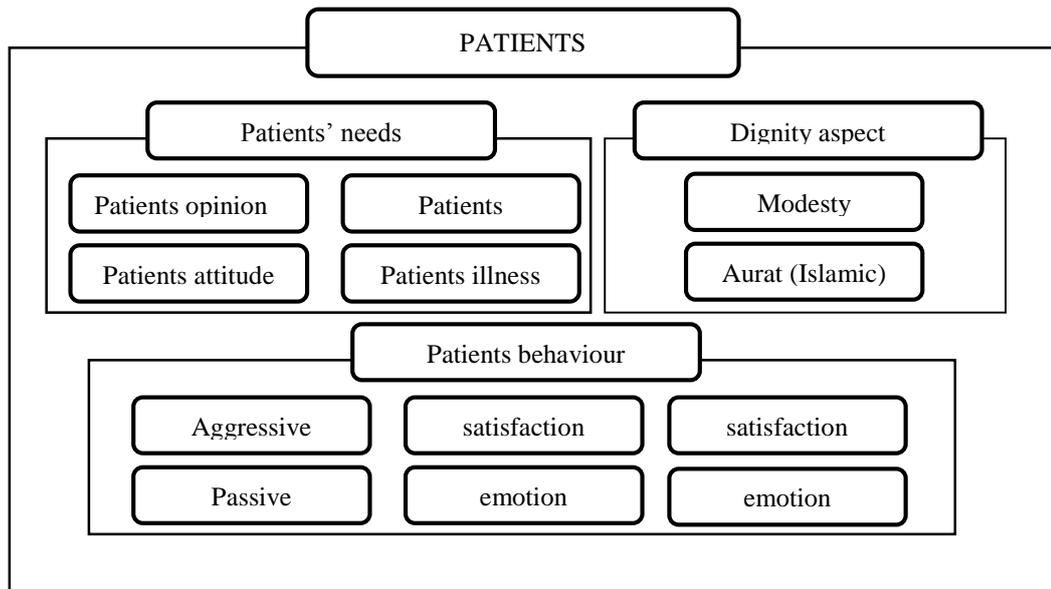


Fig 3: Affinity diagram based on patients / elderly

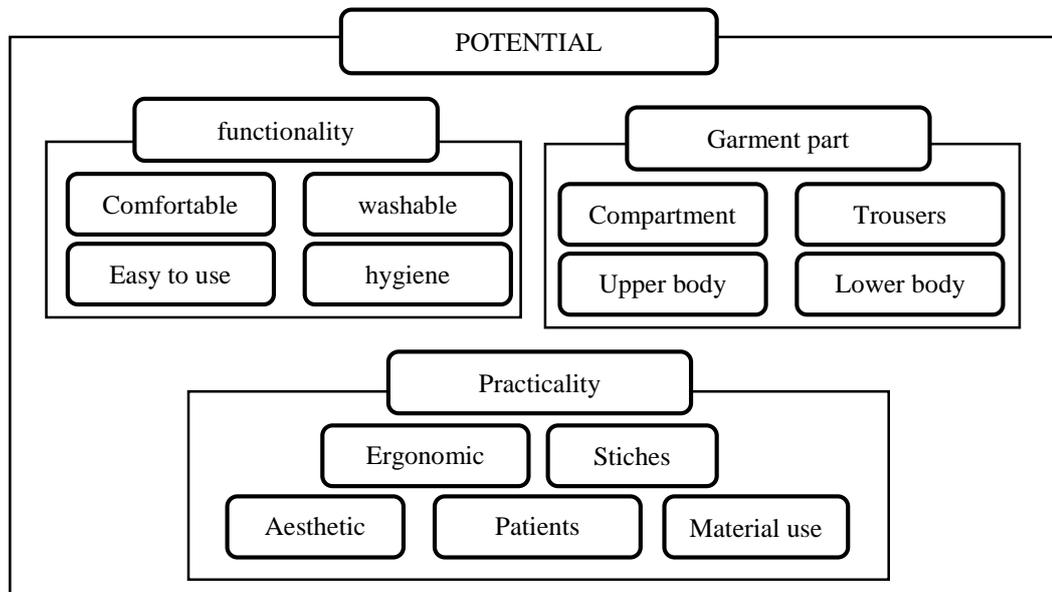


Fig 4: Affinity diagram based on garment potential

Further information, the conceptual framework for this study have been developed through the different theories of search and literature reviews. A conceptual framework is defined as a network or a “plane” of linked concepts and the advantages of conceptual framework analysis are its flexibility, its capacity for modification, and its emphasis on understanding instead of prediction (Jabareen, 2009). In this research, after step 3: chart making, there is three main categories that will be highlighted which is on pattern design, patients and garment potential and continue to step 4: conclusion and explanation. Each of the point, will elaborate with one critical gap issues, as shown in (e.g. Fig 5)

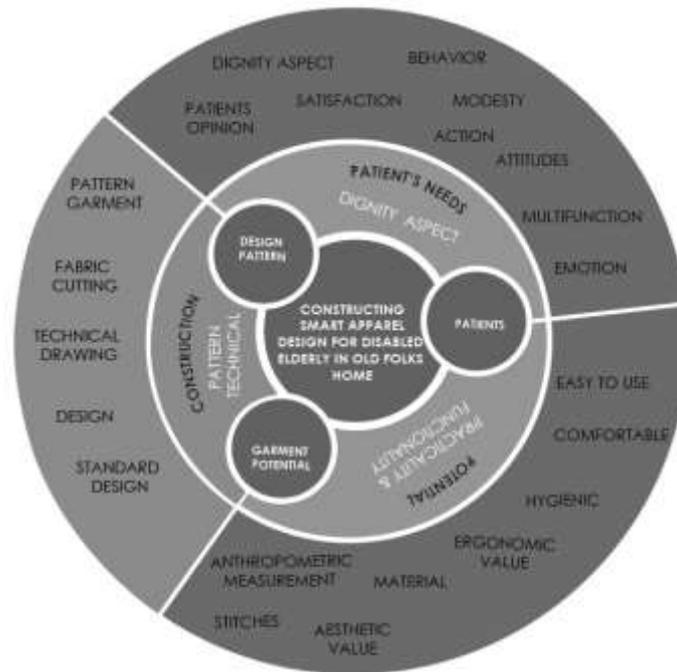


Fig 5: Shows the conceptual framework of constructing smart apparel design for disabled elderly in old folks home

The keywords for the design pattern is the most important criteria that highlighted in this research. From the conceptual framework the technical pattern on construction will be the main focused issue in the development, design idea and design concept. It is to build a standard design based on technical drawing and pattern drafting that required the best pattern garment for the fabric cut process. From this study, the highlight keywords from the patient issues based on the psychology part of the patients. It shows that, few aspect need to explore on patients' opinion of the design, the opinion could be from family members or caretaker in the center. From the conceptual framework we can describe that the multifunctional design can expose them with comfortability and satisfaction during using the apparel/garment as well as in daily treatment or routine. The researcher also needs to validate the acceptance patients' attitude towards the patients' behavior and patient's emotion before or after garment use. Based on the garment potential keywords of functionality and practicality design will lead to produce a functional and innovative design that explore on standard Asian body measurement based on Malaysian anthropometric sizing. The aesthetic and ergonomic value of the garment will include the hygienic aspect, easy to use and comfortable criteria that is suitable for the disabled elderly. From the situation and the environment patients, selection of proper materials for the garment must also considered for the purpose of the standard or procedure of health. Those criteria as a guide for researcher to improve the existing agrment. In conclusion, the conceptual framework helps the researcher to identify the research gap issues that should be improve on the design construction from pattern technical garment, patients needs on patients dignity also garment potetnial for practicality and functionality aspect for disabled elderly apparel. This will enhance the design criteria in garment making dan its uasge spesifically for the need of elderly user.

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