

HYDRAULIC WHEELCHAIR

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Abstract

Being bedridden is a form of immobility, manifested as being unable to move or even sitting upright. It is different from bed rest, which is a non-invasive treatment that is usually part of rehabilitation or restricted mobility. Early dementia, Alzheimer's disease, Parkinson's disease and multiple sclerosis are just few diseases that may make our loved ones bedridden. With these concerns, wheelchairs are still the best form of mobility for many bedridden peoples. However, wheelchair for bedridden people is always sell at very high price, usually around RM1900 to RM2300. Apart from that, they're also not innovative enough. We decide to design, and build cheaper, yet feature rich wheelchair for bedridden. We make sure this product is useful, safe to use, ergonomic, and cheaper than the current one in the market. A new concept of having hydraulic system to adjust the height of the wheelchair is to address the issue of ergonomic current design. This has significant potential benefits for the lives of bedridden people. Based on the official website of Department of Health of Malaysia, the number of elderlies will be double from 7% to 14% within 28 years in our country as opposed to Sweden who has been for 112 years with the same change (United Nations, 2007). Senior citizens defined as individual who aged 60 and above (United Nations, 1982). The senior citizens issues are discussed through a variety of ways, especially through health aspects. Health problems of the elderly will occur when if the need for healthy life cannot be met or achieved. Bedridden elderly patients not only suffer physical changes, but even changed from the social, economic and emotional. For family members, they also felt the challenge in terms of patient care and management of these bedridden patients.

1.0 Introduction

The World Health Organization defines a wheelchair as "a device provide wheeled mobility and seat support for the disabled it's difficult to walk or move around." Therefore, the wheelchair is to improve personal mobility. The purpose of the wheelchair the design is to produce good performance and can provide proper seat and posture support without compromise strength, durability and safety. The government can do this authorities, manufacturers, engineers, designers, service provider and users perform their respective design responsibilities.

The design of wheelchairs is very different, and diversity should be considered user requirements with design functions, such as total length, weight, frame type and width, seat configuration, wheel and caster type, arm and footrest, axle position and propulsion mechanism, all have affected the function. To ensure that the wheelchair is suitable, Designer & provider must thoroughly understand the expected demand Users and their environment.

According to the design of Visagie et al. (2015). The function must match the user's functional ability and posture support needs, as well as requirements for the environment and durability claim. Realize the ideal match between the user and the wheelchair design and environment can be both difficult and important. When there are multiple models to choose from, it can best meet the needs of users which one to choose. The design of the wheelchair should enable its users to use it participate in as many activities as possible. At least, a wheelchair should enable users to lead a more active life without have a negative impact on their health or safety. Comfort and safety, these are two important factors that affect the quality of life of long-term users.

2.0 Methodology

Hydraulic Wheelchair Started with product design. Best design then proceeds for materials selection, fabrication, cost of materials and operation methodology will be shown as well in this chapter to provide in depth information about the product. Hydraulic wheelchair pump's use hydraulic fluid as the force to move the hoist mechanism. A simple crank is attached to pump the fluid to provide lifting force.

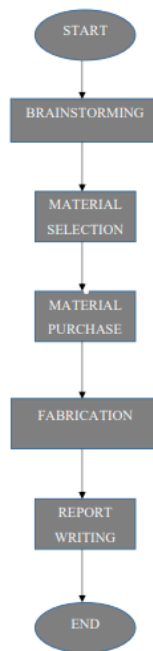
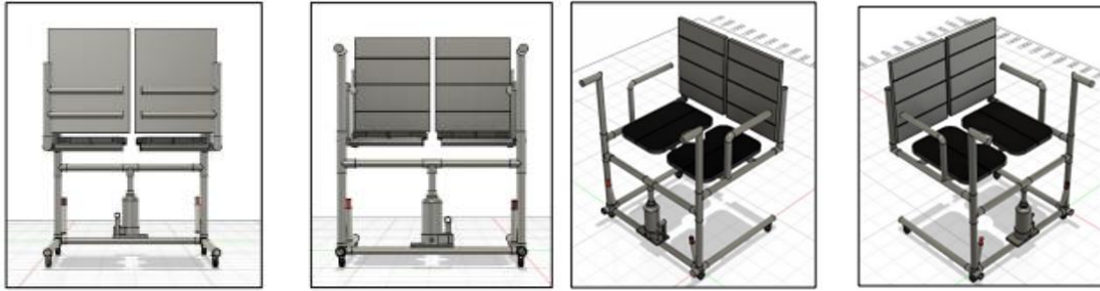


Figure 2: Project Flow Chart

3.0 Result & Analysis

The project of Hydraulic Wheelchair is designed to improve the design of current wheelchair. This project aims to develop a wheelchair with new capabilities and designs specifically for bed ridden patients. The innovations of this wheelchair are focus on adjusting the height the seat and mainframe which ease the mobilization of occupant by employing hydraulic jack.



Product Design

4.0 Conclusion

Through this project, the wheelchair should be suitable for the following environment they will be used and for the specific people who will use them. One design of a wheelchair is not suitable for everyone. When designing or choosing Wheelchair, it is necessary to consider the environment and the way the wheelchair will be use and place where wheelchairs can be used. All hopes that the advantages of this product can bring benefits and convenience to the community. While for the disadvantages, we will encourage the younger generations to take this as rooms for improvements for this product and conduct more research on this project. This project will be a beneficial in the future. More test and analysis should be conducted so that the product will be more accountable in the future.

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