

Original Paper

Study on the Factors Influencing the Comfort of Strollers for the Elderly with Grandchildren

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Abstract

With the development of society and the aggravation of the trend of population aging, the elderly with grandchildren has become an increasingly common phenomenon. These elderly people often need to use baby carriages in the process of taking care of their grandchildren. However, the factors affecting the comfort of the elderly with grandchildren using strollers have not been fully studied. The purpose of this study is to explore the factors affecting the comfort of strollers used by the elderly with grandchildren, in order to provide a theoretical basis for the design and improvement of related products. This study adopts the methods of literature analysis, field investigation and experimental research. This paper makes a comprehensive analysis of the comfort of the baby carriage used by the elderly with grandchildren. First of all, through literature analysis, the research results on the comfort and influencing factors of the elderly with grandchildren and baby carriages at home and abroad are sorted out, and the theoretical basis and research framework of the study are clarified. Secondly, through the field survey method, the actual situation of the use of baby carriages by the elderly with grandchildren is collected, and their needs and troubles in the use process are understood. Finally, through the experimental research method, the scene of the elderly with grandchildren using baby carriages is simulated under laboratory conditions. The physiological and psychological indexes were measured, and the main factors affecting the comfort were analyzed.

Keyword

comfort, ergonomics, stability, stroller

1. Introduction

In China, with the aggravation of the trend of population aging and the adjustment of fertility policy, more and more elderly people with grandchildren have assumed the responsibility of taking care of their grandchildren (Chai, & Xu, 2016). As a common tool for infants and young children to travel, the comfort of baby carriages directly affects their quality of life for the elderly with grandchildren (Byard, Beal, Simpson, Carter, & Khong, 1996). Taking the elderly with grandchildren as the research object, this study aims to explore the relevant factors affecting the comfort of the elderly with grandchildren using strollers, and to provide a theoretical basis for the design and optimization of related products (Chai & Xu, 2016).

Through correlation analysis, this study aims to provide relevant enterprises and government departments with reference to product design and policy formulation. In addition, this study also pays attention to the problems that the elderly with grandchildren may encounter in the process of using the baby carriage, and puts forward the corresponding solutions.

2. The Current Situation of Using Baby Carriers for the Elderly with Grandchildren

There are some problems in the use of baby carriages by the elderly with grandchildren, such as improper use, which may have a certain degree of impact on the elderly and infants. It is mentioned in the literature that the design and use of baby carriages need to take into account the physical condition and use habits of the elderly (Fernández-Olano, Hidalgo, Cerdá-Díaz, Requena-Gallego, Sánchez-Castaño, Urbistondo-Cascales, & Otero-Puime, 2006). For example, the weight and folding mode of the baby carriage will affect the use experience of the elderly. In addition, the safety, comfort and portability of the baby carriage are also factors that the elderly need to consider when choosing and using the baby carriage. The research progress of baby carriage comfort at home and abroad shows that the design, function, material of baby carriage and the user's needs and habits will affect the comfort of baby carriage (Atthawuttikul & Khongkharat, 2021).

The comfort of stroller is mainly affected by the following aspects: seat design, backrest angle, seat depth, seat material and so on. Among them, whether the seat design conforms to the principle of ergonomics, whether the backrest angle can be adjusted, whether the seat depth is appropriate, whether the seat material is breathable and comfortable, are all important factors affecting the comfort of the baby carriage. In addition, the weight, folding mode and carrying convenience of the baby carriage are also the concerns of users (Nicholson, 2022). In view of the particularity of the use of strollers by the elderly with grandchildren, researchers should also pay attention to the following aspects: the physical condition of the elderly, such as whether the joints and muscles can adapt to the use of strollers for a long time; the psychological needs of the elderly, such as the convenience and safety of the operation of the stroller; whether the design and function of the stroller conform to the use habits of the elderly

(Carpman & Grant, 2016).

However, the baby carriages on the market at present do not fully meet the needs of the elderly. Many baby carriage designs pay too much attention to the comfort and safety of babies, ignoring the use experience of the elderly. In addition, the price of baby carriages is also an important factor affecting the choice of the elderly. Because of economic reasons, many elderly people will choose baby carriages with lower prices, and the quality and use experience of these baby carriages often cannot meet the needs of the elderly.

Therefore, the research on the current situation and problems of the use of strollers by the elderly with grandchildren can not only provide a reference for the design and production of strollers, but also provide a basis for the formulation of relevant policies. We need further research and discussion on how to improve the comfort of the baby carriage for the elderly with grandchildren (Brown, Digby-Bowl, & Todd, 2018).

3. Factors Affecting the Comfort of Strollers for the Elderly with Grandchildren

As an important tool in the daily life of the elderly with grandchildren, the comfort of the baby carriage is of great significance to their physical and mental health (Doherty & Gaughran, 2014). Based on the review of relevant literature, this study analyzed the factors affecting the comfort of the elderly with grandchildren using strollers, including the design of strollers, the use environment, the physical condition and psychological state of the users (Plante & Rodin, 1990).

First of all, the design of the stroller is an important factor affecting comfort. The size, weight, seat comfort and adjustability of the stroller will affect the comfort of the elderly with grandchildren in the process of pushing the stroller. In addition, the storage space and safety of baby carriages are also factors that can not be ignored, which are directly related to the convenience and safety of the elderly with grandchildren in the process of taking care of their grandchildren.

Secondly, the use environment has an important impact on the comfort of the baby carriage for the elderly with grandchildren. Road conditions, weather conditions, surrounding environment and other factors will have an impact on the comfort of the elderly with grandchildren using baby carriages. For example, smooth roads and good weather conditions help to improve the comfort of strollers for the elderly with grandchildren, while rough roads and bad weather conditions may reduce their comfort.

In addition, the physical condition and psychological state of the elderly with grandchildren are also important factors affecting their comfort in using baby carriages. Older people's physical condition gradually deteriorates with age, which may lead to fatigue and discomfort when they use the stroller. At the same time, the psychological pressure that may arise in the process of taking care of grandchildren will also affect the comfort of using baby carriages.

In a word, this study aims to provide a reference for researchers and product designers in related fields by reviewing the factors affecting the comfort of strollers used by the elderly with grandchildren, so as to further improve the comfort of strollers used by the elderly with grandchildren and reduce their burden in the process of taking care of their grandchildren.

4. Study Design and Methodology

The purpose of this study was to explore the research design and methods of influencing factors of stroller comfort for the elderly with grandchildren. First of all, this study will investigate the current situation of the use of strollers by the elderly with grandchildren in order to understand the actual situation of the use of strollers by the elderly with grandchildren. Secondly, through literature review and empirical research, the main factors affecting the comfort of the elderly with grandchildren using strollers are analyzed, such as the design of strollers, the use environment, the physical condition of users and so on. On this basis, targeted improvement measures and suggestions are put forward. In order to improve the comfort of the baby carriage used by the elderly with grandchildren. The research methods include questionnaire survey, field observation and experimental study. The questionnaire survey will use random sampling method to investigate a certain number of elderly people with grandchildren to understand their needs and satisfaction in the process of using baby carriages. Field observation will select representative use scenarios to record and analyze the process of using baby carriages with grandchildren in real time. The experimental study will test the comfort of strollers with different design schemes by simulating the actual use environment.

This study will comprehensively use statistics, ergonomics, gerontology and other related theories to analyze the collected data and draw practical conclusions.

5. Subjects and data collection

The purpose of this study was to explore the factors affecting the comfort of the elderly with grandchildren using strollers (Atthawuttikul & Khongkharat, 2021). According to the purpose of the study, we first identified the object of the study, that is, the group of the elderly with grandchildren. In order to collect relevant data, we designed a questionnaire including the type, brand, price, frequency of use, use environment and other aspects of the baby carriage, and through random sampling method, selected 200 eligible elderly people with grandchildren to fill in. After collecting the data, we used statistical analysis methods. An empirical study was conducted on the factors affecting the comfort of the elderly with grandchildren using strollers.

The results show that the factors such as the type, brand, price and frequency of use of the stroller have a significant impact on the comfort of the stroller used by the elderly with grandchildren. Specifically, the type and brand of baby carriage have the greatest impact on the use experience of the elderly,

followed by price and frequency of use. In addition, we also found that the use environment, the physical condition of the elderly and other factors also have a certain impact on comfort.

5. Experimental Design and Process

The purpose of this study is to explore the experimental design and process of the factors affecting the comfort of the elderly with grandchildren using strollers. First of all, through the method of literature review, combining the domestic and foreign research on the comfort of strollers and the use of strollers by the elderly with grandchildren, this paper clarifies the research background, significance and the shortcomings of the existing research. Secondly, using the questionnaire survey method, we designed a set of questionnaires about the factors affecting the comfort of the elderly with grandchildren using strollers, and surveyed a certain number of elderly with grandchildren in order to obtain the needs and comfort feelings of the actual use. The design of the experiment is divided into three parts:

The first part is to collect the basic information of the elderly with grandchildren, including age, gender, height, weight, etc. In order to fully understand this group, we first collected their basic information, including age, gender, height, weight etc. This information plays a vital role in our understanding of the needs and comfort of the elderly with grandchildren in the use of strollers. Age is an important factor affecting the comfort of the elderly with grandchildren using baby carriages. As you get older, their physical functions gradually decline, and they may suffer from joint pain, muscle weakness and other problems. Therefore, when designing baby carriages, we need to take this into account, try to reduce the burden of the elderly and improve comfort. Gender can also affect the comfort of the elderly with grandchildren using baby carriages. For example, there are differences between men and women in terms of size, strength and so on, which may affect their comfort when using the stroller (Bush, Porcari, Greany, Greany, Dodge, & Foster, 2007). Therefore, when designing and manufacturing strollers, the needs of the elderly of different genders should be taken into account to improve the comfort of the product.

The third part is the environmental factors affecting comfort, such as road conditions, weather conditions and so on. There are many environmental factors affecting comfort, such as road conditions, weather conditions and so on. In terms of road conditions, road flatness, slope, width and other factors will have an impact on the comfort of the elderly with grandchildren using baby carriages. Good pavement conditions help to reduce the physical exertion of the elderly and improve comfort. Weather conditions are also an important factor, such as high temperature, rainfall, wind speed and so on. In hot weather, the elderly may easily feel tired, while rainfall and wind speed may affect the stability of the elderly pushing the stroller. In addition, there are other environmental factors to consider. For example, noise in the surrounding environment, air quality, etc. Excessive noise may affect the communication between the elderly and infants, while poor air quality may have a negative impact on the health of the

elderly and infants. In a word, this study aims to provide a reference for the formulation of relevant policies and product design by analyzing these environmental factors that affect the comfort of elderly people with grandchildren using strollers.

During the experiment, in order to ensure the accuracy and reliability of the data, strict investigation procedures and data entry and proofreading processes were adopted. At the same time, in the analysis and discussion part of the experimental results, this study explains and discusses the experimental results in depth according to the relevant theoretical framework, in order to provide more comfortable and convenient experience for the elderly with grandchildren, and provide some reference for relevant enterprises and research institutions.

6. Data Analysis Method

In this study, a large number of field survey data were collected to analyze the key factors affecting the comfort of the elderly with grandchildren using strollers. Data analysis methods mainly include descriptive statistical analysis, correlation analysis and regression analysis. First of all, we use descriptive statistical analysis to sort out and summarize the collected data to understand the basic situation and distribution characteristics of each variable. Then, the correlation analysis was used to explore the degree of correlation between the variables, in order to determine the factors that may affect the comfort of the elderly with grandchildren using strollers. Finally, based on the regression analysis method, a mathematical model is established to quantitatively reveal the influence of various factors on the comfort of the baby carriage for the elderly with grandchildren, which provides a theoretical basis for the design and optimization of related products. According to the actual needs of the elderly with grandchildren in the process of using the stroller, this study selected the following key factors: body weight, folding convenience, seat comfort, ease of implementation and storage space. Through the data analysis of these factors, this study can provide more comfort for the elderly with grandchildren. Convenient baby carriage products can reduce their burden in the process of taking care of their grandchildren and improve their quality of life. According to the results of this study, relevant enterprises and research institutions can optimize the baby carriage product design to meet the actual needs of the elderly with grandchildren. In addition, government departments and social organizations can also strengthen their attention and support to the elderly with grandchildren, and improve the comfort and safety of the elderly with grandchildren by publicizing and popularizing the knowledge of the use of baby carriages and organizing relevant training activities.

7. Results and Analysis

Through the analysis of relevant data, we find that the following main factors have a significant impact on the comfort of the elderly with grandchildren using baby carriages: First of all, the weight and size

of the stroller is a key factor. Heavy baby carriages will increase the burden of the elderly with grandchildren and affect their comfort. In addition, the inappropriate size of the baby carriage may lead to the unnatural posture of the elderly in the process of pushing, which further affects the comfort. Secondly, the stability and safety of the baby carriage are also very important for the elderly with grandchildren's stable stroller can reduce the risk of falling during the pushing process, thus improving comfort. In terms of safety, the functional design of the brake system and folding device of the baby carriage plays an important role in ensuring the safety of the elderly and infants. In addition, the convenience and versatility of the baby carriage are also important factors affecting the comfort of the elderly with grandchildren. For example, whether the baby carriage has adjustable seat angle, removable and washable seat cushion and other designs will affect the comfort of the elderly in the use process. According to the results of the study, we suggest that when designing and producing strollers, the needs of the elderly with grandchildren should be fully considered in order to improve their comfort in using strollers. At the same time, the formulation and implementation of relevant policies should also pay attention to the needs of this special group and provide more support and convenience for the elderly with grandchildren.

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