

# *Design of Healthcare Facilities under the Concept of Healing: A Case Study of Bath Products for the Elderly*

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**Abstract:** As aging society intensifies in China, there is a growing demand for bath facilities and products oriented to the elderly. However, most of the barrier-free bath facilities for the elderly have problems such as unclear positioning, fuzzy product functions and little consideration to the psychological needs of the elderly. In the installation and use, relevant bath products cannot well solve problems faced by the elderly in bath. Through comparative analysis, this study investigated and analyzed the pros and cons of the existing bath appliances for the elderly from the aspects of usage mode, product type and so on, proposed auxiliary products suitable for the elderly in bath, optimized the use experience of the products and paid more attention to the psychological feelings of the elderly during bath. In addition to meeting the basic bathing function, the auxiliary bathing products for the elderly should also have certain psychological healing effect on the users in use, so that users can gain more experiences and feelings in use, with the needs met at both physical and mental levels.

## 1. Introduction

With the increasing population scale of the elderly, the degree of aging is deepening. By the end of 2021, there were 267 million people aged 60 or above, accounting for 18.9% of the total population. There were over 200 million elderly people aged 65 and above, accounting for 14.2% of the total population. It is expected that by around 2035, the elderly population aged 60 or above will exceed 400 million, accounting for more than 30% of the total population and symbolizing the entry into the stage of severe aging. The rapid growth of aging population promotes the rapid development of aging in China. Some data even indicates that the domestic aging level will rise to a peak value of 34.9% by 2054 <sup>[1]</sup>.

Population aging presents an irreversible and rapidly developing momentum, forming a powerful force worldwide, bringing challenges to the social development of many countries, as well as new challenges and opportunities to the elderly industry and products in China. According to the latest proposal of 2020 "Guidelines on Promoting the Development of Elderly Products Industry" <sup>[2]</sup>, by 2025, the overall scale of elderly products industry will exceed 5 trillion yuan, and it is highlighted in the guidelines that it is necessary to meet the development needs of intelligent daily auxiliary

products for the elderly as a goal.

Elderly products have huge demand in China's elderly care industry. According to the 2006 sample survey of disabled people in Shenzhen, the disabled people accounted for as high as 33.93% of the elderly over the age of 65. That is, one in every three elderly people is disabled. The huge demand opens the demand window of China's elderly aids industry. The use of elderly aids can not only guarantee the daily life of the elderly, but also well protect the safety of nursing staff and improve nursing efficiency. Moreover, it can maintain the dignity of the elderly and relieve the pain of disability<sup>[3]</sup>, giving rise to the gradually expanding medical demand for rehabilitation from 2018 to 2024.

In summary, elderly products are an extremely important demand of the elderly faced with increasingly serious aging, which involves many aspects of life for the elderly. This paper mainly makes related research and discussion from the elderly bath products.

## **2. Research Status of Bath Appliances for the Elderly**

### **2.1. Necessity of Bathing Aids**

Bathing is an essential part of daily life for most people, but it is an extremely risky activity for the elderly, which demands key attention in the daily life of the elderly.<sup>[4]</sup> According to the sample survey on the physical condition of some elderly people in 2003, the proportion of self-care inability in bathing was 90.8%<sup>[5]</sup>, and the proportion of time spent on bathing is 8.21% of time spent on taking care of the disabled elderly, ranking the third, next to feeding and daily care<sup>[6]</sup>. Many elderly people would barely bath themselves independently rather than accept others' assistance, often resulting in frequent bath slips, bump, syncope and other life-threatening problems. Hence, there is significantly increased demand for bath products.






### **2.2. Status Quo of Bath Products for the Elderly**

As a socially vulnerable group, the elderly need more help in many aspects of life. In recent years, great improvements have been made in people's living conditions, living environment and public health system. The life span of the elderly has been greatly improved, but at the same time, there is gradually increasing burden of daily care for the elderly<sup>[7]</sup>. For elderly bath aids, the biggest function is to meet the bath requirement in the elderly's daily life. The elderly are prone to fall in bath because of walking difficulty, unsteadiness, weak hands and feet. Moreover, due to some related senile diseases, the elderly cannot reach bath products at high place, or cannot adjust the shower head. Therefore, there should be a bath aid product designed for the elderly on the market to improve the lives of some families with elderly people.

At present, bath aids for the elderly in China are mainly divided into main bath products and auxiliary bath products. The main bath products can independently meet the bathing needs of the elderly, while the auxiliary bath products need to be used with the existing products, mainly including: bath stool, bath chair, bath bed, elderly bathtub, anti-slip cushion, safety handrail, etc. (Table 1)

In the investigation of existing products, it is found that most of the auxiliary bath products for the elderly on the market do better meet the basic needs of the elderly in bathing, and also show concern for psychological feelings of the elderly. However, these products are mainly designed to meet the usage function, failing to give users more care and concern at the spiritual level.

Table 1: Classification of bath products for the elderly

Main bath products	elderly bathtub	
	Protective bath machine	
Auxiliary bath products	bath chair	
	Safety handrail	
	Bathtub stool	

### 3. Design Examples of Bath Aids for the Elderly

#### 3.1. Product Research and Analysis

In this survey, it is found that there are two ways of bathing at home: shower and bath, and most of the elderly prefer shower. Shower is the primary cause of fall in the elderly, but most families are not equipped with bath aids products for the elderly. In most cases, a stool is put in place to solve bath problem of the elderly. Nevertheless, stool is not a professional bath aid product, which cannot really replace the role of bath aid products in terms of safety and hygiene.

For pension institutions, bathing room is the main environment for bath, and most nursing operations are completed in this area. Indoor brightness, space supply, contrast information, security and privacy are all important factors affecting the product design<sup>[8]</sup>. Therefore, in the design of such products, it is more important to care for the safety and emotion of the elderly in use. In addition to meeting the basic function of bathing, the design should also let users reduce the psychological burden in use. Moreover, the use should bring physical and mental relaxation and pleasure, and create psychological healing effect, which is an important factor to be considered in this study.

#### 3.2. Product Design Direction

In the design of this product, first of all, the modeling should meet different usage habits and needs through the combination of reclining chair, bathtub, bath stool. Second, comprehensive consideration should be given to the details of each part to change the original basic way of standing and lying down into semi-lying approach. Again, handrail on the bath stool can be retained on both sides of the equipment to make it convenient for the elderly to get up and lie down, preventing the elderly from

slip. Finally, on the basis of the bathtub outlet, the side nozzle is added to massage the body of the elderly. To provide a comfortable and safe bathing environment for the elderly, this scheme is finally determined.

### 3.3. Product Modelling Design

This product design pursues simple modeling to give people a fresh and aesthetic feeling. By combination of automatic and manual shower head, the existing automatic closed modeling design on the market is changed, the modeling is simplified to avoid material waste, reduce the product cost, and give people transparent and simple sensory experience at the same time. (Figure 1)

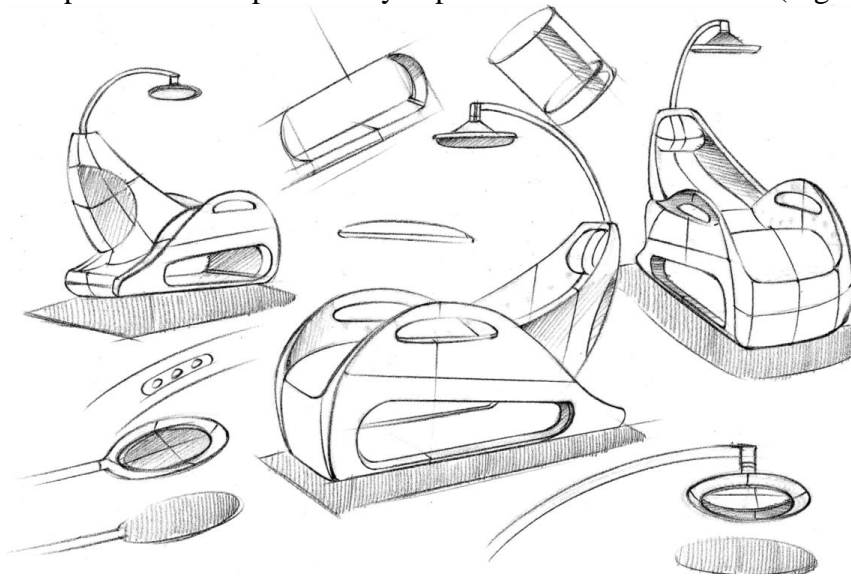


Figure 1: Product sketch design (Drawing by Fu Han)

### 3.4. Main Material Design of the Product

In this product design, considering man-machine comfort, etc., cast iron enamel and polyurethane were taken as the main material. Cast iron enamel is used for the shell, which is strong and durable, featuring good load resistance, greater sanitation. Compared with traditional acrylic material, it is not easy to be scratched. Compared with steel enamel, it is not easy to produce noise, so that the modeling is richer and aesthetic, bringing more comfortable and safe bathing experience to the elderly. Polyurethane (a commonly used polymer material with a wide range of product applications) is used in the part requiring anti-skid treatment to achieve better anti-skid and economic effect. (Figure 2)



Figure 2: Product material design (Drawing by Fu Han)

### 3.5. Details of Product Design Points

#### 3.5.1. Water Outlet Design

In the design of bath products, the most direct, the most essential and the most important part is the water outlet design. As this product is an auxiliary bath product for the elderly, portable handheld shower head is added on the side based on the traditional top shower design. When washing the body using the top shower head, there are always some parts demanding the use of portable handheld shower head to achieve the effect of bathing. The two cooperate with each other to facilitate the use. A separate control button is designed in the handle position of the hand-held shower head, which is used to control the switch of the portable shower head flexibly and conveniently in use according to the bath needs. (Figure 3)



Figure 3: Product detail design (Drawing by Fu Han)

#### 3.5.2. Side Water Outlet Design

The users of this product are the elderly or nursing workers of the elderly. Considering that the side of the body will be difficult to clean during the bathing process, several side water outlets are equipped in the bilateral inner walls of the product, so as to achieve better bathing effect and bathing experience.

### 4. Conclusion

To sum up, with the increasing number of elderly people, aging products catering to the daily life needs of the elderly have gradually aroused key concern of the society. The difficulty and danger in bath have always troubled the elderly. In view of this, this product is designed according to the elderly's requirements for bathing conditions. While considering the rationality of product design, it is more necessary to pay attention to the humanistic care of products and give more consideration to psychological healing needs of the elderly group. It is necessary to pay attention to the daily life of the elderly, care about every pain point in the life of the elderly, combine the knowledge learned in design and improvement to provide the society with real problem-solving aging products, thus meeting the real needs of the public.

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