

# Satisfaction of Aged Users with Mobility Assistive Devices: A Preliminary Study of Conventional Walkers

Josiele Aparecida Marques Boiani<sup>1,2</sup>, Frode Eika Sandnes<sup>2,3</sup>, Luis Carlos Paschoarelli<sup>1</sup>, Fausto Orsi Medola<sup>1\*</sup>

<sup>1</sup> Post-graduation Programme in Design, Sao Paulo State University (UNESP), Av Eng Luiz Edmundo Carrijo Coube 14-01, 17033-360, Bauru, Brazil.

<sup>2</sup>Department of Computer Science, Oslo Metropolitan University, Oslo, Norway

<sup>3</sup>Department of Technology, Kristiania University College, Oslo, Norway

fausto.medola@unesp.br

**Abstract.** Elderly users' satisfaction with their walkers was evaluated. A sample of 13 institutionalized aged participants were interviewed and responded to the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST 2.0) questionnaire, with eight questions that address their level of satisfaction with different aspects of the device. In general, the users reported to be satisfied with their device, with the highest levels of satisfaction with durability and easiness of use. The lowest scores were associated with device weight, ease of adjusting and device stability and safety. The users' indicated the device safety, easiness of use and comfort as the most relevant aspects of the device. Elderly users' satisfaction with their mobility devices is likely to correlate with users' device needs and expectations.

**Keywords:** Walkers · Elderly · Mobility · Satisfaction · Assistive Technology

## 1 Introduction

The proportion of elderly is increasing globally due to the increase in life expectancy and lower birth and death rates. The aging process is associated with a decrease in physical function that may ultimately affect the ability to walk safely and independently. The study of Araujo et al. [1] found that impaired physical mobility among institutionalized elderly people was 100% of the sample, and that it was related to physical aspects such as muscular weakness, reduced strength and resistance, and cognitive impairments.

This context highlights the need for solutions that enable independent life [2, 3], and mobility function is a key part benefiting both social participation and quality of life. Assistive technology represents a potential solution to the maintenance and improvement of users' functionality and independence, contributing to a dignified life.

One of the devices most commonly used to assist the mobility of the elderly is the walker. The conventional walker design in Brazil is a folding frame made of alumi-

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num with four points of contact with the floor that increase the contact area, thus improving forward stability [4]. Although the main goal of conventional walkers is to improve stability and walking independence, some users do not satisfactorily recover mobility function. Despite the mobility benefits, walkers demand users to adapt an unnatural walking pattern, as the user needs to lift the walker, put it forward and then step forward, thus requiring the user to pay attention in locomotion [5].

Aspects of the walker design might be associated with this failure to provide means for independent mobility. Addressing the users' satisfaction with the mobility device may therefore shed some light onto the aspects of the walker design that is most influential to users' mobility. This study therefore evaluated elderly users' satisfaction with their walkers.

Table 1. Participants.

<b>Part.</b>	<b>Age (ys)</b>	<b>Gender</b>	<b>Weight (kg)</b>	<b>Height (m)</b>	<b>Time of use (months)</b>	<b>Device Acquisition</b>	<b>Training of usage</b>
<b>1</b>	96	F	65	1.56	84	own resources	No
<b>2</b>	76	F	67	1.65	48	own resources	No
<b>3</b>	68	M	63	1.7	9	health professional	No
<b>4</b>	91	F	77	1.53	24	family	No
<b>5</b>	66	M	50	1.65	2	family	No
<b>6</b>	87	F	65	1.60	2	family	No
<b>7</b>	87	F	48	1.55	24	family	No
<b>8</b>	87	F	62.5	1.68	12	health professional	Yes
<b>9</b>	75	M	47	1.65	18	health professional	No
<b>10</b>	99	F	54	1.55	3	health professional	No
<b>11</b>	85	F	48.5	1.52	60	health professional	Yes
<b>12</b>	68	F	45	1.68	12	health professional	Yes
<b>13</b>	76	F	65.5	1.60	12	friend	No

F: female; M: male.

## 2 Method

The procedures involved interviews with elderly walker users from two institutions, namely Vila Vicentina in the cities of Bauru and Arealva. The procedures were approved by the Ethics Committee of the School of Architecture, Arts and Communication – FAAC-UNESP, Bauru (Process N. 1.835.531), and participants were informed about the study objectives and procedures and voluntarily signed an Informed Consent Form.

Thirteen persons over 65 years with a mean age of 81 years ( $\pm 10.9$ ) were recruited. They had used a conventional walker for a median time of 12 (min 2, max 84) months. None of the participants had cognitive impairment and were able to comprehend and respond the questionnaire. Table 1 presents the participants.

The evaluation was performed through interviews using the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST 2.0) questionnaire, translated and validated for Brazilian Portuguese by Carvalho et al. [6]. This instrument assesses user satisfaction with its AT device in two main domains: feature and services. We only applied the first eight questions referring to the satisfaction with the device in this study as most of the participants acquired the device by themselves or through their families. Data were analyzed descriptively by means of the frequency of answers of the participants' sample, using Microsoft Excel.

### 3 Results and Discussion

Overall users' satisfaction with their walkers was high. The device aspects with higher levels of satisfaction (very and quite satisfied) were durability (100%), ease of use (100%), comfort (92.3%) and effectiveness (92.3%). Accordingly, high levels of satisfaction with mobility assistive devices have been reported [7,8]. On the other hand, the lowest levels of satisfaction (not satisfied at all and not very satisfied) were found with the aspects of adjustment (38.4%) and weight (15.4%). Table 2 presents the detailed analysis of the frequency of responses of satisfaction level for the eight aspects of the device.

Table 2. Item by item analysis of walker aspects affecting users' satisfaction

Items	Satisfaction				
	Not satisfied at all	Not very satisfied	More or less satisfied	Quite satisfied	Very satisfied
Dimensions	0 (0)	0 (0)	3 (23.1)	4 (30.8)	6 (46.1)
Weight	2 (15.4)	0 (0)	2 (15.4)	4 (30.8)	5 (38.4)
Adjustment	5 (38.4)	0 (0)	1 (7.7)	4 (30.8)	3 (23.1)
Safety	1 (7.7)	0 (0)	2 (15.4)	1 (7.7)	9 (69.2)
Durability	0 (0)	0 (0)	0 (0)	5 (38.4)	8 (61.6)
Ease of use	0 (0)	0 (0)	0 (0)	3 (23.1)	10 (76.9)
Comfort	0 (0)	1 (7.7)	0 (0)	7 (53.9)	5 (38.4)
Effectiveness	0 (0)	0 (0)	1 (7.7)	5 (38.4)	7 (53.9)

\*n (%)

From the users' perspective, the three most important aspects of their walkers were safety (92.3%), ease of use (84.6%) and comfort (53.8%). This finding highlights the importance of providing users with a stable device that is simple and safe to operate (see Fig.1). The study of Zhou et al. [9] found that impaired balance and the use of a walking aid are factors associate with a greater number of falls among older community dwellers.

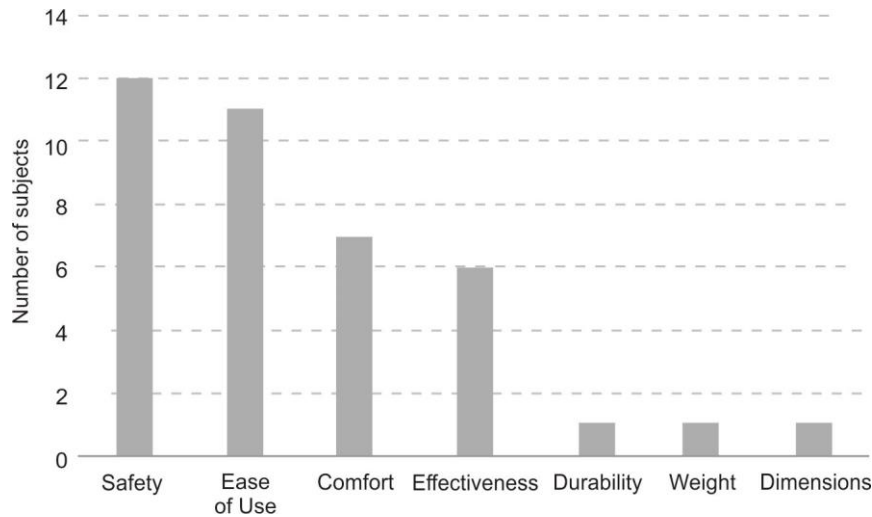


Fig. 1. Important assistive device characteristics from the users' perspective.

Several issues may have influenced the current findings. First, the small sample size may limit the extent to which the findings can be generalized to the whole population of walker users. Secondly, the responses may have been biased positively as some participants received the device from a family member or friend. Finally, this paper addressed satisfaction of aspects most associated with practical function. From a design perspective, it is interesting to explore products' aesthetical and symbolic functions, as it may play a role in technology acceptance. A recent study explore these aspects from the perspective of non users' perceptions about mobility devices [10].

#### 4 Conclusion

This study explored elderly users' satisfaction with their walkers. We found durability and easiness of use were the device aspects associated with highest levels of satisfaction. Indeed, conventional walkers are simple, robust and very durable. Although the overall satisfaction with the device was high, important factors for the interface ergonomics such as weight, easiness of making adjustments and stability were associated with the lowest levels of satisfaction. Taking into account that walkers are most commonly used by aged users with decline in overall physical condition, providing a lightweight device that ensure stability and can be easily adjusted can positively influence one's ability to walk safely and independently. Additionally, the comprehension of the main aspects of the walker influencing users' satisfaction may contribute to the improvement of the design, prescription, provision and maintenance of mobility assistive devices.

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