

# Chapter 95

## User Needs and Limitations of Existing Mobility Devices: A User Perspective

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### ABSTRACT

*The use of gait assistive devices, although can provide precious help can also have limitations or adverse consequences. The performance of daily activities is partially restrained by a series of factors having to do with the assistive device limitations or the limitations emerged from environmental causes. Valid and reliable assessment tools to classify and clarify their limitations or users' satisfaction do not exist. An extended literature search was performed for some of the most commonly mentioned assistive device limitations or dissatisfaction reasons and identified the most appropriate tools to be able to study such limitations and conclude in valid outcomes. A study was conducted in a rehabilitation hospital using the IPA, EQ5D and SF-12 tools. The size of the sample combined with the uncertainty related to the satisfaction of normal distribution prerequisite, led to use several statistical analysis tools and methodologies. A summary of the results from both the literature review and the real case study on a mixed group of mobility aid users are presented in the paper.*

### INTRODUCTION

The use of gait assistive devices, although can provide precious help for the elderly (Cetin, Muzembo, Pardessus, Puisieux & Thevenon, 2010) or the mobility-impaired, can also have limitations or adverse consequences. Studies show that 30% to 50% of people prescribed with a gait assistive device abandon their device soon after receiving it, mainly because they do not meet the needs of individuals. In one survey, almost half of the reported problems were associated with the difficulty or risk to use the prescribed device (Bateni & Maki, 2005). Another study reveals that 58.3% of knee osteoarthritis patients abandon the mobility aid due to adverse outcome and feeling of stigmatization (Akinbo, Sokunbi & Ogunbameru,

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2008). According to (Lezzoni, Rao & Kinkel, 2009) the vast majority of persons with multiple sclerosis (MS) own more than one type of mobility aids. Persons with MS appear to “mix and match” different devices to suit their specific mobility needs. Canes and crutches are prescribed for people with moderate levels of mobility impairment, and walkers are prescribed for people with generalized weakness, poor lower-limb weight bearing, debilitating conditions, or poor balance control, while wheeled walkers are favored for patients with Parkinson disease (Minor & Minor, 2013).

Some of the most commonly mentioned assistive device limitations or dissatisfaction reasons, as mentioned by users and health scientists, are: (1) handling the rollator gait assistive device (Brandt, Iwarsson & Ståhl, 2003; Hallén, Orrenius & Rose, 2006), (2) the weight of the device (Brandt, Iwarsson & Ståhl, 2003; Hallén, Orrenius & Rose, 2006; Hill, Goldstein, Gartner & Brooks, 2008), (3) the brake-use of rollator devices (Thomas et al., 2010), (4) users are prone to falling because of the dependence on memory to activate the rollator’s parking mechanism, (5) the inability of the current rollator to effectively park when the braking mechanism is engaged (Siu et al., 2008), (6) social stigmatizing (association with aging and physical decline) (Hallén, Orrenius & Rose, 2006) (Hill, Goldstein, Gartner & Brooks, 2008; Thomas et al., 2010; Resnik, Allen, Isenstadt, Wasserman & Iezzoni, 2009), and (7) upper-extremity pathologies because of the extended use of walking aids (i.e. tendonitis, osteoarthritis, and carpal tunnel syndrome) (Bateni & Maki, 2005).

It is evident from the above that the performance of daily activities by device-assisted walkers is partially restrained by a series of factors having to do with the assistive device limitations or/and the limitations emerged from environmental causes. Nowadays, there is no valid and reliable assessment tool able to identify and classify the limitations of walking aids or the users’ satisfaction. One of the most common instruments used in the bibliography is the Quebec User Evaluation of Satisfaction with assistive Technology - QUEST 2.0. QUEST 2.0 was designed to measure the level of satisfaction attribute to assistive technologies. It does so by using variables that are scored in terms of perceived importance and satisfaction (Demers, Weiss-Lambrou & Ska, 2000; Demers, Monette, LaPierre, Arnold & Wolfson, 2002; Koumpouros, Karavasili, Papageorgiou & Siavelis, 2016). However, being a generic assessment tool, some potential items, relevant to specific pieces of technology or delivery systems, are absent. For example, for gait assistive devices, the information extracted is limited to describing the satisfaction level of the user in terms of certain aspects (dimensions, safety feeling, effectiveness, etc.) (Demers, Weiss-Lambrou & Ska, 2000). Thus, it cannot be used to point out specific problems or limitations to be exceeded. In our study, we tried to identify the right tools in order to measure the limitations of the most commonly used mobility aids (rollator, frame walker and crutches) from a user perspective.

## **METHODOLOGY**

The study was conducted in a Greek rehabilitation hospital, and utilized semistructured individual interviews for data collection, using a combination of already valid and reliable tools.

### **Patient Selection**

In order to understand the user needs of assistive gait devices and get an impression about their limitations, we interviewed 20 people (8 males and 12 females) depended on mobility aids. The participants were grouped in two main categories: (1) rehabilitation group (the ones that were undertaken rehabilita-

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