RESEARCH PAPER

User satisfaction with mobility assistive devices: An important element in the rehabilitation process

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Abstract

Background. An assistive device often means an evident change in a person’s ability, more easy to notice than the effects of most of other types of physiotherapy or occupational therapy intervention. In spite of this, there is very little evidence in this area.

Purpose. The objective was to follow-up user satisfaction with and the use and usefulness of rollators and manual wheelchairs. The objective was also to determine any difference in satisfaction between users of the two different types of mobility assistive products.

Methods. A random sample of 262 users participated in the study, 175 rollator users and 87 wheelchair users. The Quebec User Evaluation of Satisfaction with Assistive Technology—QUEST 2.0 and an additional questionnaire were used for data collection.

Results. Overall satisfaction with both types of device was high and most clients reported use of their device on a daily basis. There was a difference in how the users estimated the usefulness and other characteristics as well as some service aspects related to prescription and use of the two types of device. Most users reported not having had any follow-up; however, most users had not experienced any need for one.

Conclusions. A standardized follow-up will give rehabilitation professionals continuous and valuable information about the effect of and satisfaction with assistive devices.

Keywords: QUEST 2.0, evaluation, rollator, manual wheelchair

Introduction

Historically, the biomedical model has significantly influenced the view of the rehabilitation process, client role and outcome measurement. Rehabilitation including the outcome has most often been described as a concept of interventions aimed to improve function and activity, with the focus on function. The definition and content of rehabilitation has changed and the definition of factors that make a change in each individual includes the role of assistive devices, which plays a natural and important part of a rehabilitation programme. In Sweden, occupational- and physiotherapists are responsible for most prescribing of assistive devices where mobility assistive devices are the most common. Assistive devices such as wheelchairs and rollators are used both for training and compensation and for many clients they are a prerequisite for maximum independence.

Prescribing assistive devices of different kinds is a therapeutic process, which is dependent on the competence of the therapist [1]. As a prescriber, one needs to have good knowledge about available products but also a knowledge and understanding of the physical, psychological, environmental presuppositions, needs and priorities of each client [2,3]. In addition to therapeutic knowledge and understanding, client participation in the prescribing process is probably just as essential to the outcome.

Mobility assistive devices in the Nordic countries comprise the number one group of assistive devices most frequently prescribed by occupational therapists and physiotherapists. In Sweden rollators are the most common assistive products and wheelchairs the most costly. The Health and Medical Services...
Act states that both county councils and municipalities have the responsibility to provide people who have a need for assistive devices with suitable products. The caregiver has the responsibility to ensure that prescribers of assistive devices have sufficient knowledge. What kind of knowledge does a prescriber need, and what kind of support in the prescribing process is recommended, to secure a good quality and evidence based supply of assistive devices? The health care provider must provide care (including assistive devices) that enhances the patient’s self-reliance, while maintaining quality in a cost-effective way [4]. An assistive device often means a very evident change in a person’s ability, far more easy to describe than most effects of other kinds of physiotherapy or occupational therapy interventions. Despite this, there is very little evidence in this area [5]. An assistive device should compensate for a decreased or lost function and ability to manage daily life, increase or maintain function and ability and prevent future loss of function and ability. The main prescribing process has been illustrated and described by the Swedish Handicap Institute [6].

Evidence-based practice should form the basis of all rehabilitation including assistive devices. This is a challenge, as few measures are available which target the measurement of assistive device outcomes. Therapists are under increasing pressure to base their practices more firmly on ‘evidence’ and to verify the effects of certain interventions. An empirical and useful ‘evidence base’ for the outcome of assistive devices requires more research based on relevant and valid evaluation tools as well as a client-centred working model. The selection and clinical evaluation of each device should, as far as possible, involve the client.

**Purpose**

The objective of this study was to follow up client satisfaction concerning products, service and the prescribing process related to manual wheelchairs and rollators. The objective was also to determine whether there was any difference in satisfaction between users of the two different types of mobility assistive products.

**Method**

**Design**

A cross-sectional follow-up study design was used. Three assistive device centres in three county councils in Sweden participated.

In Sweden, each county council decides the available selection of assistive devices possible to prescribe for occupational- and physiotherapists working in that county council. Each device is distributed through the device centre, which means that each device centre has a register of all prescribed assistive devices in that county council. Manual wheelchair users and rollator users 20–84 years of age, who had received their device during a 12-month period, were identified from each register. The size of each sub-group was proportional to the total number of prescriptions.

**Procedure**

A postal package comprising two questionnaires was sent to a random sample of 510 users of rollators \(n = 340\) and manual wheelchairs \(n = 170\) during summer 2004. One questionnaire included items concerning demographic data, questions about usage as well as user’s opinion of how the device had influenced activity and participation and the prescription process (Appendix). The other questionnaire was the QUEST 2.0 form (described below). Sampling was done using the county councils’ registers containing all prescriptions for rollators and manual wheelchairs over a 12-month period. The sizes of the sub-groups were proportional to the total number of prescriptions.

An addressed reply envelope and a letter explaining the objective of the study were enclosed. The letter also gave the user the option to not take part in the study by returning the letter with a mark saying that he/she did not want to participate. Type of device and product were already filled in in the questionnaire in order to clarify which assistive device was being referred to (if the user had more than one).

**Outcome measures**

**QUEST 2.0.** The Swedish version of QUEST 2.0 was used [7]. This paper and pencil format instrument was developed by an occupational therapist in Canada during the 1980s and can be either self-administered or completed with the help of an evaluator [8]. It is designed to evaluate a person’s satisfaction with his or her assistive device and can be used with adolescents, adults and elderly people who have acquired an assistive device as a result of physical or sensory impairment. QUEST 2.0 focuses on satisfaction with specific features of the assistive device as well as certain characteristics of the services related to the device [8]. The QUEST 2.0 form displays the scoring of the 12 satisfaction items in two parts; device (eight items) and services (four items). The satisfaction items related to the characteristics of the device are dimensions, weight, adjustment, safety, durability, simplicity of use, comfort and effectiveness. Each item is scored using a 5-point satisfaction scale, where 1 denotes...
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not satisfied at all’ and 5 ‘very satisfied’. The satisfaction items associated with the related services are service delivery, repairs and servicing, professional services and follow-up. The same 5-point satisfaction scale is used to rate these items. A checklist with the 12 satisfaction items is subsequently presented on the QUEST 2.0 form and the user is asked to select the three most important items. The psychometric properties of QUEST 2.0 have been tested in several studies [9 – 13].

The means for the sub-scale scores could provide useful summary statistics about the relative satisfaction or dissatisfaction of the Device and Services dimensions as suggested in the QUEST 2.0 manual [12]. Another method, also described in the manual, for interpreting the results is to perform an item-by-item analysis, which then gives the evaluator the opportunity to identify those areas where improvements should be made. The users who report that they are ‘more or less satisfied’ or less (scores 1, 2 or 3) could be treated as one group and those who are ‘quite satisfied’ or ‘very satisfied’ (scores 4 and 5) as one group. The groups could then be compared according to percentage [12].

Additional questions. Ten additional questions (Appendix) were used to illustrate the demography of the group (questions 1 and 2) and to examine and analyse the use of the devices, participation in the prescribing process (questions 4 and 7), effect on activity and participation (questions 5 and 6) and finally satisfaction and need for follow-up (questions 8 – 10). The answers are categorised in predetermined answer alternatives. Those questions selected from an earlier questionnaire were the questions validated through seven pilot interviews with users of mobility devices. Participants were asked whether questions were understandable, if they covered important areas and if the answer alternatives were clear [14].

Data analysis

Student t-test and the Chi squared test were used in the data analyses of QUEST 2.0 as well as the additional questions. The 5-point satisfaction level scale in QUEST 2.0 was split into two categories according to the manual [12]: Scores 1, 2 & 3 and 4 & 5, respectively. The additional questions were also categorised in a similar way, as described in connection to each results. Significance level was $p \leq 0.05$ in all analyses.

Results

A total of 368 (72%) users out of the original 510 returned the questionnaires. Of these, 106 (21%) declined participation. Included in the data analysis are 262 users of mobility assistive devices, i.e., rollators ($n = 175$) and manual wheelchairs ($n = 87$). In all, 165 women and 95 men participated. There was a significant difference in gender frequency ($p = 0.002$) as well as age ($p = 0.000$) between the user groups (Table I).

Respondents in both groups still used their prescribed assistive device to a very high degree (rollators 96% and manual wheelchairs 99%, respectively). An absolute majority reported that they used their device on a ‘daily basis’ or ‘several times/week’ (rollators 91% and manual wheelchairs 84%, respectively).

The users were asked to rate in what way the assistive device had affected their activity and participation possibilities (Table II). In the analysis, the answer alternatives ‘No influence’ and ‘Negative’ were summarized and compared with the ‘Positive’ alternative. There was a difference in how the users estimated the influence of the device insofar as the rollators seemed to have a significantly more positive influence on users’ feeling of ‘mobility’, ‘independence’, ‘self-esteem’ and ‘security’ than manual wheelchairs. However, the wheelchair seemed to have a more positive effect on ‘possibility to work’ and ‘leisure’.

One question in the additional questionnaire concerned the impact of the assistive device in daily life. The users considered both rollator and manual wheelchair to have a ‘significant’ or ‘very significant’ impact on their daily life, 72% and 65%, respectively.

The next question was; In what way do you feel that the prescriber has shown consideration for your needs, wishes and demands during the prescribing process? This question had three answer alternatives: ‘no consideration’, ‘some consideration’, ‘much consideration’. There was a difference between the rollator users, where 73% answered ‘much consideration’ compared to 57% of manual wheelchair users ($p = 0.01$).

Some of the questions in the additional questionnaire were about follow-up and expectations. One question concerned perceived need for follow-up.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Rollator</th>
<th>Manual wheelchair</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>121</td>
<td>44</td>
<td>165</td>
</tr>
<tr>
<td>Male</td>
<td>52</td>
<td>43</td>
<td>95</td>
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<table>
<thead>
<tr>
<th>Age</th>
<th>Mean ± SD (range)</th>
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<tbody>
<tr>
<td></td>
<td>Rollator (44 – 84)</td>
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<tr>
<td>Mean</td>
<td>74.2 ± 9.6</td>
</tr>
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</table>
A majority of both manual wheelchair (75%) and rollator users (83%) answered ‘No’ here. Only 28% of the wheelchair users and 21% of the rollator users answered that there had been a follow-up.

The last question in the additional questionnaire was about fulfilment of expectations. The answer alternatives were ‘Not at all’, ‘To a little extent’, ‘To some extent’, ‘To a great extent’ and ‘To a very great extent’. Wheelchair users answered ‘To a great extent’ or ‘To a very great extent’ in 61% of cases and rollator users had the same answers in 81% of cases ($p = 0.001$).

The five alternatives in QUEST 2.0 were grouped into two categories; Satisfied (4 & 5), Not quite satisfied (3, 2 & 1). User satisfaction with the assistive device and with service was high for both groups, as illustrated in Table III. A majority of all users rated most items 4 = ‘quite satisfied’ or 5 = ‘very satisfied’. There was a difference in satisfaction between users of the two device groups for most items. However, rollator users seemed more satisfied in all significant parts.

A separate analysis was performed to look for differences in estimated satisfaction with the characteristics of the assistive device as opposed to satisfaction with service and follow-up. The estimated satisfaction from the first eight questions, about assistive product qualities, was compared with the estimated satisfaction from the last four items on service and follow-up. The 5-point scale was divided into two categories as in the previous analysis. There was a difference in users estimated satisfaction with device characteristics compared to satisfaction with service. Both rollator and wheelchair users scored higher satisfaction with characteristics of the device than with service aspects (Table IV).

The two most important items identified were the same for both rollators and manual wheelchairs, viz. ‘Ease of use’ (88% and 69%, respectively) and ‘Safety’ (81% and 57%, respectively). The third most
Discussion

The results of this study show that QUEST 2.0 and additional questions could be an easy and useful method aiming to bring some light to the evaluation of mobility assistive devices and ideas to support future development of both assistive products and follow-up methods. The results from QUEST 2.0 showed that the overall satisfaction with device characteristics and service was high. However, there was a difference in satisfaction between wheelchair and rollator users in several items. The most significant differences were found for the items: ‘adjustment’, ‘ease of use’, ‘effectiveness’ and ‘service delivery’. In all these items, wheelchair users were less satisfied compared to rollator users. Overall, wheelchair users had a lower satisfaction score than rollator users. The difference could be an expression of the different kind, function and complexity of the mobility assistive devices in question. It might also be an expression of the fact that rollator users are generally less dependent on their devices than wheelchair users and that the rollator is more supportive than the wheelchair, which aims to compensate significant impairment or total loss of walking ability. The wheelchair is heavier and a more complex and extensive device than the rollator and a symbol for dependence. These aspects are important to consider and relate to when introducing a new assistive device to a client.

For both devices, there was a significant difference between estimated satisfaction with the characteristics of the product compared to estimated satisfaction with service and follow-up. This information is of great importance and interest in the development of service delivery organization and the development of a well functioning prescribing process, including the follow-up.

The most important aspects perceived by users were; ‘Ease of use’, ‘Safety’ and ‘Weight’ for rollator users and ‘Comfort’ for manual wheelchair users (47%).

Table IV. Percentage of all answers comprised into two answer categories: satisfied (scores 4 & 5) and not very satisfied (scores 1, 2 & 3). The p-value represents the difference between the estimated satisfaction with assistive device characteristics (items 1–8) compared to service and follow-up (items 9–12).

<table>
<thead>
<tr>
<th>Items</th>
<th>% subjects ‘quite satisfied’ or ‘very satisfied’ (scores 4 &amp; 5)</th>
<th>% subjects ‘somewhat satisfied’ or less (scores 1,2 &amp; 3)</th>
<th>n</th>
<th>p</th>
</tr>
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<tbody>
<tr>
<td>Rollator</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Items 1–8</td>
<td>90</td>
<td>10</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>Items 9–12</td>
<td>73</td>
<td>27</td>
<td>175</td>
<td>***</td>
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<tr>
<td>Manual wheelchair</td>
<td></td>
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<tr>
<td>Items 1–8</td>
<td>75</td>
<td>25</td>
<td>139</td>
<td></td>
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<tr>
<td>Items 9–12</td>
<td>58</td>
<td>42</td>
<td>74</td>
<td></td>
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</tbody>
</table>

***p < 0.001.

The important item was ‘Weight’ (27%) for rollator users and ‘Comfort’ for manual wheelchair users (47%).
different organizations. This might be useful in the local perspectives of all aspects included in the assistive device delivery system.

The additional questionnaire used in this study brought up some useful information about the use and usefulness of the devices. Those who answered the questionnaire reported a very high level of use in both user groups. This result is not in accordance with other studies like the ones summarized by Scherer [15], who reported prevalence of disuse of devices between 30–50% in aggregation, ranged from 8–75% for particular devices. Of course, abandonment is not the only indicator of user dissatisfaction and probably there are users who continue to use assistive devices despite dissatisfaction due to a lack of more suitable alternatives. An analysis of the external drop-outs in this study might have resulted in another interpretation. Those who answered the questions in this study might be the most satisfied.

The difference in the answers between the wheelchair and rollator users was significant for several items. When the users were asked to rate how the present device influenced the opportunity for activity and participation, the rollator users were more positive, in particular with regard to the feeling of safety/security and the feeling of independence. Users of manual wheelchairs considered the wheelchair to have a positive influence on their possibility to work and to have an active leisure life. Considering the purpose and field of application, there is a difference in rollators and wheelchairs and the body function of its users. A rollator user is able to walk with the support of the device. A feeling of insecurity and impaired balance might be the cause of prescription. The user is probably a person who expects a continuous active life in all areas of life. A rollator might then be experienced as a barrier in certain activities such as work and leisure. A manual wheelchair user is probably a person with a significantly decreased or total loss of walking ability. The wheelchair then means the possibility to be at work and enjoy certain leisure activities, which would not be possible at all without the device.

The answer to the question concerning to what extent the prescriber had shown consideration for needs, wishes and demands of the user during the prescribing process showed a difference between groups. It may be that rollator users are more active and resourceful than wheelchair users. This question is an important one to develop and needs further research.

An obvious and unexpected result was related to the questions about follow-up. Very few respondents in both groups answered that they had a need for follow-up and less than 30% of respondents had actually had a follow-up, according to what they themselves say. Perhaps the time-span from pre-scription to this survey was too short to get an idea of users’ need for a follow-up. Or is the need for a follow-up exaggerated? The authors do not think so, they believe that the follow-up is of extraordinary importance, both to the user and therapist. Without a follow-up, it is not possible to correct unsatisfactory solutions and extend the therapist’s knowledge and experience.

User expectation is probably one of the most important aspects in relation to satisfaction. In this study rollator users considered their expectations met to a greater extent than wheelchair users. This difference might be due to the fact that a wheelchair is a symbol of a handicap and not so easy to consider as something positive, as opposed to the rollator, which gives the user a greater opportunity to continue an active and social life to a greater extent.

**Limitations and considerations**

The objective of this study was to measure and compare client satisfaction concerning product, service and prescribing process for manual wheelchairs and rollators. These objectives are clearly related to relevant clinical questions, which are to be focused in today’s medical care, such as client satisfaction, cost-effectiveness and usability.

In all, 368 persons responded (72%) and 106 of these declined participation. Users of mobility assistive devices are often elderly and disabled, which might explain the high number of dropouts. No reminder was sent out which might have increased the number of participants. The responding groups in this study are heterogeneous in several aspects but representative of the user groups. There are several different types of manual wheelchairs and rollators used by the respondents and the experience, expectations, environment and personal characteristics of the users probably varies substantially. These aspects are not considered in this study, which means that the study has a limited explanatory value. However, this was never the intention. Neither did this study look at different age groups in relation to results. This might be very interesting but needs an increased number of included subjects.

QUEST 2.0 was chosen as a follow-up tool and an outcome variable as this is one (if not the only) standardized evaluation tool, especially developed to measure user satisfaction with assistive devices [8]. It has been used in several outcome studies and has been translated and is used in several countries [14,16,17]. QUEST 2.0 is suitable in studies with a large sample since it is possible to collect data through a postal survey. However, QUEST 2.0 does not include any questions about user characteristics such as age, living conditions, use of the device or the effects on activity and participation. An additional
questionnaire was used in this study to supplement and focus on other aspects of the effects achieved with assistive devices.

All subjects in the study had used their devices for 8–10 months, which should guarantee some experience and the possibility to answer most of the questionnaires. The questions about durability and service in QUEST 2.0 might be very difficult to answer since the expected durability of a mobility device should exceed the used time span. The questions included in QUEST 2.0 are a mixture of questions that require short, medium and long-term experience on the part of the user. This is a weak point and needs further discussion in the development of the instrument. Another weak point is the lack of ‘not applicable’ as an answer alternative. When analysing the answers from QUEST 2.0, it is not possible to know if an internal dropout depends on the fact that the subject has forgotten to answer or if he/she has no opinion due to lack of experience. The 5-point scale in QUEST 2.0 is not considered optimal since the answer alternatives are quite hard to differentiate, e.g., ‘not very satisfied’ and ‘more or less satisfied’. For this reason, it was chosen to dichotomise the scale and use the chi-square in the analysing process.

Assistive devices are used to compensate for functional limitations and to enhance and increase learning, independence, mobility, communication, environmental control and choice. Even though assistive devices have been used as obvious tools in rehabilitation programmes all over the world for many decades, the interest in outcomes of assistive devices is a relatively recent phenomenon [5]. Prior to 1996, there is little evidence to indicate any interest in the collection and use of outcome data in Assistive Devices [18].

Perhaps the new classification of Functioning, Disability and Health—ICF [19] has been of help to the professionals in thinking, describing and evaluating the role of assistive devices in the rehabilitation process [20]. Several authors state that assistive devices can empower people with disabilities in ways that go far beyond medicine and surgery [20–22]. Previous research suggest that the construct of Assistive Device outcome should be multidimensional and include changes in performance/function and participation, usage as well as user satisfaction [23].

Since assistive device often are a frame in the rehabilitation process, the need for a better understanding in the prescribing process, use and utility of assistive devices is of utmost interest to the profession. There are a lot of unanswered questions in the field and one should benefit from more studies dealing with both user experiences and underlying factors making a difference in outcome.

Acknowledgements

We wish to express our gratitude to The Health Research Council in the south-east of Sweden who supported this project financially. We would also like to thank all those who participated in this study and the three representatives from the different county councils.

References

Appendix: Additional questions

We kindly ask you to answer the following questions concerning your manual wheelchair/rollator.

1. Your age
   [ ] Male
   [ ] Female

2. Gender
   [ ] Male
   [ ] Female

3. Use of the assistive device.
   [ ] I still use the device
   [ ] I do not use the device any more

4. How often do you use the device?
   [ ] Every day
   [ ] Several times/week
   [ ] Several times/month
   [ ] More seldom

5. How would you say that the device has influenced the following?
   [ ] A. Your possibility to work
   [ ] B. Your possibility to lead an active leisure life
   [ ] C. Your possibility to socialize
   [ ] D. Your possibility to go shopping
   [ ] E. Your possibility to be mobile
   [ ] F. Your feeling of safety/security
   [ ] G. Your feeling of independence
   [ ] H. Your feeling of self-esteem

6. What impact do you think the assistive device has had on your daily life?
   (1) None at all
   (1) Little impact
   (1) Some impact
   (2) Great impact
   (2) Very great impact

To what extent do you think the profession has considered your needs, wishes and demands, during the prescribing process?
   (1) No consideration
   (1) Some consideration
   (2) Great consideration

7. Have you had a need for a follow-up?
   [ ] Yes
   [ ] No

8. Have you had any follow-ups regarding the device?
   [ ] Yes
   [ ] No

9. To what extent did the device fulfil your expectations?
   (1) Not at all
   (1) To little extent
   (1) To some extent
   (2) To a great extent
   (2) To a very great extent