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Emerging Concerns of Older Stroke Patients About Assistive Device Use¹

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Abstract

Assistive devices minimize limitations from physical impairment and are integral to rehabilitation. Little is known about older patients' concerns, perceptions, and beliefs about assistive devices. This study used a structured, qualitative approach to describe device perceptions of 103 stroke patients in rehabilitation. Six dimensions of patient concerns were identified, including the operation and utility of devices, social contexts and consequences, and attributions of cultural meanings of use. Initial device use posed cultural value dilemmas originating in discrepancies between sociocultural beliefs and conflicting normative expectations. Knowledge of these dimensions suggests new areas for social science research and refinements to clinical practice.

Keywords

Patient views; Self-care; Rehabilitation; Disability

There is increasing interest in examining the role of assistive devices as life-enhancing and cost-effective self-care strategies for older adults with functional limitations (Gitlin, in press). National representative surveys consistently show a trend toward increased device use and a decline in reliance upon personal assistance among community-living elderly people (Manton, Corder, & Stallard, 1993). Most older people first acquire devices and learn about their use in a hospital setting. Assistive devices are an important rehabilitative strategy that can enable older patients with physical impairments to retain functional abilities and return home. It is in the hospital that perceptions of devices and their utility are first formulated by elderly people. However, little attention has been given to understanding this

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initial stage of device use and why some older patients choose to use devices and others do not.

One key factor that has been shown to influence device use is the perspective of the user. Research on disability suggests that perceptions of devices may be influenced by factors such as the stage in the person's life when the device is acquired, the person's beliefs and values, and the nature of the disabling condition (Gitlin, 1998; Luborsky, 1993; Verbrugge, 1992; Verbrugge, 1994; Verbrugge & Jette, 1993). These studies suggest that there is great variation in the personal meanings associated with device use and that interpretations of devices are independent of the age, gender, or level of impairment of patients.

What remain unknown, however, are empirically based, systematically derived insights into the contents of concerns and perspectives of older patients with different disabling conditions as they learn how to use their newly acquired devices in the hospital. Although the therapeutic community tends to view devices as value-neutral tools, individuals may not uniformly welcome or embrace assistive devices for independent living. The use of a device modifies the way in which even the most basic personal or self-care activities are performed (Frank, 1994; Gitlin, 1998). Devices may remind individuals of abilities that have been lost or diminished at the same time that their use may enable individuals to continue to perform valued activities. Furthermore, public, social and personal consequences of device use, such as lowered prestige, stigma and being viewed as a dependent person, may become a central feature of a person's thoughts about accepting or rejecting a device (Fine & Asch, 1988; Zola, 1985).

The study described here was designed specifically to examine the early interpretations of devices by one group of elderly patients, those in rehabilitation following a stroke. There is no research, to our knowledge, that examines the perspective of this group of users, especially in the initial stage of learning to use devices. Stroke, or cerebrovascular accident (CVA), afflicts more than 550,000 people in the United States each year, most of whom are elderly (Agency for Health Care Policy and Research, 1995). Stroke brings on a sudden and complete change in cognitive functioning and physical ability. These changes may be minimal, moderate or severe and typically require a process of rehabilitation during which the patient must learn how to function using a range of compensatory mechanisms and assistive devices (Kelly, 1990). Stroke patients enter inpatient units following postacute care and receive assessments by multidisciplinary teams of health professionals including nurses, psychiatrists, occupational therapists, physical therapists, and social workers. Based on such a team's assessments, an individualized rehabilitation program is developed that involves the provision of adaptive equipment by occupational therapists and physical therapists. Patients tend to receive in-hospital instruction for an average of eight devices intended for home use (Gitlin, Schemm, Landsberg, & Burgh, 1996). Devices tend to be introduced in a series of short training sessions that last from 10 to 25 minutes. During each training session, several devices are introduced to the patient (Schemm & Gitlin, in press).

Stroke patients, for the most part, represent first-time device users for whom the need for a device occurs in late life and is usually long-term. Patients with stroke may be particularly susceptible to cultural attributions of stigma. Previous research has shown that stroke

patients experience extreme disruption in their sense of personal identity as a consequence of the acute onset of the illness. The life course disruption to family, employment, and community roles consequent to a stroke and the personal renegotiation of self-identity are particularly heightened during the recovery process in rehabilitation (Becker, 1993; Kaufman & Becker, 1986). However, the ways in which assistive devices inform the process of renegotiating a sense of self-identity, for example by providing a concrete and public marker of physical impairment during the initial phase of recovery, remain unknown. Thus, understanding the initial device experiences of stroke survivors would provide insight into a form of self-care that has broad medical and financial importance and long-term implications for the ability of this group of elderly people to remain in their homes and achieve quality of life.

Main Orientations in Research on Assistive Devices

Despite the central importance of devices to the rehabilitation process, intensive research on the acceptance and use of devices is recent. Assistive device use has been studied primarily from three perspectives: human factors research, national and regional descriptive surveys, and investigations into the personal interpretations of using assistive technology (Gitlin, in press). Human factors research has examined the capabilities of older people and environmental task demands in order to design technological systems that offset age-related changes or those due to impairment (Czaja & Barr, 1989; Czaja, Weber, & Nair, 1993; Faletti, 1985). The focus of such research has been on the quantification of the biomechanical, sensory and cognitive demands imposed by a person-task transaction as a basis for understanding the potential roles and benefits of devices and technological systems. These studies have provided important advances in the development of new and more efficient equipment. However, social and psychological factors related to implementation in daily life by individuals have not received systematic attention through this approach.

National and regional surveys have described the frequency with which devices are used and the reasons associated with nonuse or device abandonment. The evidence from large-scale survey research, including the National Health Interview Survey (LaPlante, Hendershot, & Moss, 1992), three waves of data collection from the 1989 National Long-Term Care Surveys (Manton et al., 1993), and the National Self-Care Study (Norburn et al., 1995), has consistently shown that assistive devices are used by older people with functional limitations who live at home. Likewise, regional surveys have suggested that older adults use and express the need for a wide range of technologies to support their continued engagement in daily activities of living (Gitlin et al., 1996; Mann, Hurren, Tomita, & Charvat, 1994). Nevertheless, community-based surveys have reported use rates as low as 36% (Neville-Jan, Piersol, & Kielhofner, 1993) and as high as 82% (Bynum & Rogers, 1987). In a study of older adults discharged from rehabilitation, 38% of issued devices, including those for ambulation, dressing, and bathing, were seldom to never used in the home (Gitlin, Levine, & Geiger, 1993; Gitlin et al., 1996). The variation in reported use rates may be due to differences in the types of devices, the times of onset of disabling conditions, and the types of impairments that are examined in these studies. Reasons for non-use reported in the literature include lack of adequate training, lost or broken devices, or preference to carry out

the task differently (Gitlin, 1995). Clearly, further research is needed to identify the factors that impact use and nonuse by disabled older adults.

The third research approach to the study of assistive devices attends to the individual's interpretations of device use and perceived consequences for social life and well-being. In a qualitative study of 21 individuals with severe visual impairments, both positive outcomes and negative consequences were associated with the use of travel aids (white canes and guide dogs). Important benefits included being able to work, travel and engage in social activities. Yet, the use of these travel aids also required managing physical discomforts and overcoming perceived social stigma (Gitlin, Mount, Lucas, Weirich, & Gramberg, 1997; Mount, Gitlin, & Howard, 1997). Studies of individuals with post-poliomyelitis (Kaufert, Kaufert, & Locker, 1987; Scheer & Luborsky, 1991) and spinal cord injuries (Scheer & Groce, 1988) also indicate that using devices presents dramatic compromises in social participation, role definition and self-identity such that other adaptive and coping strategies are required to enable their continued use. These studies have shown that despite the liberating aspects of technology, and even when necessary to sustain life as in the case of ventilator-dependent patients, individuals may choose not to use equipment due to the social consequences of being visibly disabled.

In summary, much has been learned about how to design and manufacture effective adaptive equipment and about the extent to which device use can improve functioning in a variety of daily life tasks. However, less attention has been paid to the reasons why older rehabilitation patients choose to use or not to use the devices provided in the hospital. The variation in use rates suggests the need for a systematic inquiry as to the meanings and experiences of patients as they come to terms with needing and adapting to medically prescribed equipment.

This study used a structured-discovery, qualitative approach to examine the personal meanings associated with first-time encounters with device use following the acute onset of illness. The approach draws upon the ethnographic interpretative tradition in which linguistic accounts, or the narrative form, are the tools of inquiry (Geertz, 1993; Josselson, & Lieblich, 1995). The narrative study of human experience has a long and rich tradition in qualitative research; narrative is viewed as a way in which individuals organize personal experiences and interpret life events. The principal goal is to elicit through verbal statements the significance of an experience and its meaning to an individual (Bruner, 1990).

The focus of this study, to elicit personal meanings of device use for one group of disabled elderly patients, is consonant with the emerging perspective in disability research concerning the need to identify disease-specific patterns from which to aggregate analyses across all conditions (Verbrugge, 1992). This study adds incrementally to research on disability and assistive device use by characterizing the specific issues that one group of elderly patients confronts at a critical juncture in the trajectory of device use and personal recovery. Furthermore, it contributes to the growing body of literature on the personal interpretation of illness, the personal meaning of assistive technology, and the relationship between technology use and the renegotiation of self-identity of the older adult with stroke.

Method

This research was part of a larger project that examined long-term device use by older rehabilitation patients. Participants in the larger study were recruited over a 20-month period from two urban, freestanding rehabilitation hospitals in the Philadelphia region. The study included individuals 55 years of age or older who had been hospitalized with a primary diagnosis of either a CVA, orthopedic deficit, or lower-limb amputation.

Study Participants

To be eligible for study participation, patients had to be cognitively intact, able to participate in a 1-hour personal interview, planning to be discharged home or to the home of a family member, and issued one or more assistive devices for use in that environment. Because the focus of the larger study was the extent to which devices were used in the home, individuals who were unable to return to their homes were not eligible.

For this qualitative study, those patients with CVAs that had resulted in perceptual distortions, moderate attention deficits, aphasia, mental confusion, psychoses, or dementia were excluded from the study. These criteria were established to exclude individuals who would be unable to effectively communicate their evaluations of devices or who might not have received aids due to the severity of their cognitive impairments. Thus, the study sample included only those patients who were medically stable, who were returning to their homes, and who were cognitively competent to use an assistive device and report their evaluations of its use. Patients who met the study criteria, and for whom physician and personal consent were obtained, were interviewed in the hospital by a trained member of the research team. Of the 250 subjects in the larger study, 103 had been hospitalized with a primary diagnosis of a CVA. The focus of this article is the device perceptions of this group of subjects.

Measures

The questionnaire developed for this study included three main areas: adaptive devices, functional status and psychosocial well-being, and patient statements about devices. In addition, sociodemographic data was collected, including basic information on the patient's age, sex, and marital status. All interviews occurred within five days prior to the participant's hospital discharge.

Devices—Over 100 different assistive devices that were issued in rehabilitation were included in this study. The research team, which involved occupational therapists and social scientists, grouped the devices that were issued to stroke patients into five categories. These included devices for mobility (wheelchair, cane, walker), dressing (reacher, shoe horn, stocking donner), bathing and toileting (grab bar, commode, long-handled sponge), feeding (dycem, rocker knife), and seating (seat board, cushion, support wedge). Except for a few mobility aids (e.g., electric wheelchair), these devices represented low-cost items at the low end of technological complexity.

Prior to each interview, the project interviewers obtained a list of the specific devices that had been issued for the participant. These lists were obtained from a master roster that was routinely maintained by each hospital facility. At the start of each interview, the interviewer

confirmed with the participant that each device on the list had been received and that instruction in its use had occurred. Participants were asked to rate their perceptions of each issued device along seven dimensions (awkward, durable, ugly, tiring, embarrassing, painful, makes you feel different). These dimensions have been identified in the literature as important aspects of the device use experience.

Functional status and *well-being* were assessed using standardized measures. The Functional Independence Measure (FIM; Granger & Hamilton, 1992) was used to establish the level of assistance required for self-care and mobility and was assessed at discharge by the attending occupational therapist and physical therapist. Psychological well-being, as measured by a modified version of the Philadelphia Geriatric Morale Scale (Lawton, 1975) and the Bradburn Affect Balance Scale (Bradburn, 1969), were also administered.

Patients' Statements About Their Equipment—Given that our aim was to describe the early perceptions and meanings attributed to assistive devices by older stroke patients, we selected a design that would maximize the discovery of meanings. We selected a version of the random probe technique (Liang, Bennett, Akujama, & Maeda, 1992; Schuman, 1966) that builds on the modifications described by Perkinson, Albert, Luborsky, Moss, & Glicksman (1994) and includes sociolinguistic methods for the analysis of discourse (Luborsky, 1994). The random probe method involves adding open-ended versions of items in standardized research instruments. The interviewer asks the subjects to briefly explain in their own words the reasons for their answers to a randomly selected item from the instrument. The method is used to assess the validity of scale items and response categories and to provide illustrations of the content of subjects' thoughts.

Our modification, which we label the elected-probe method, involved instructing participants to feel free to elaborate at any point in the structured interview as to their thoughts and experiences with the use of the devices they received in the hospital. Participants were informed that their opinions and comments were important and would be recorded verbatim in order to obtain a better understanding of how persons like themselves felt about assistive devices. These instructions were standardized and were provided at the beginning of the interview and again prior to introducing the structured set of questions on perceptions of devices. Interviewers were trained to elicit and record verbatim comments that were offered spontaneously by participants during the interviews. The specific device and/or question that had triggered the particular comment was also systematically noted by interviewers.

Our approach is in contrast to other probe methods and the more formalized prompting of Liang et al. (1992) or Perkinson et al. (1994). We did not predefine specific items in the structured interview from which to elicit and record elaborations. Rather, participants were free to elect questions or devices on which to provide spontaneous commentary at any point in the interview.

The goal of this approach was to elicit self-descriptions of the issues and topics about devices that were most salient or of concern to stroke patients. It is important to recognize how the research goal influenced our design choice. We wanted to provide understandings

that were relevant to actual clinical practice (Putnam & Stiles, 1993; Roter & Frankel, 1992), and to preserve for research the naturally occurring patient verbal behaviors that clinical staff would encounter when instructing patients in equipment use. That is, we wanted to develop insights into the factors that emerge in face-to-face encounters in the hospital setting, where general knowledge about the mechanics of devices is transmitted and becomes part of the early experiences of people learning to live with new impairments. Clinical research highlights the need for clinicians to understand the self-care practices and preferences of consumers (Frank, 1994; Gitlin, 1993; Gitlin, Corcoran, & Leinmiller-Eckhart, 1995; Hasselkus, 1988) and the situationally specific concerns (Wortman & Silver, 1989) that shape the acceptance and use of new self-care strategies. Therefore, we selected a methodology best suited to provide data on patients' perceptions and meanings and one that would be relevant to clinicians and families working with individuals in recovery. A further design consideration was that the research was conducted within the context of a large controlled study using standardized assessments. While this design enhanced generalizability, it mitigated against the incorporation of more in-depth, ethnographic interviewing approaches.

Analytic Approach

Systematic content analysis was conducted and included the entry of comments into a database system to organize and conduct multiple sorting of the data. This facilitated the use of multiple, independent coding judgments by team members and the establishment of coding criteria while retaining the original form of the statements. Sorting of the data was performed according to device type, question item, and participant characteristics.

Content analyses were conducted in a stepwise fashion in order to assess the data from several perspectives. This approach has been used in other qualitative studies to identify common themes (Fischer, Rolnick, Jackson, Garrard, & Luepke, 1996). First, in order to determine the overall perception or stance of patients about the acceptability of the equipment, we categorized and sorted the comments to reveal positive, negative, or mixed attitudes. Next, we constructed a list of all the topics or main points stated by patients in order to discover and describe the entire range of topic ideas from the patient's viewpoint. Then, building from the list of all topics, we conducted a thematic analysis to understand the most salient dimensions of early device use. Luborsky (1994) has defined two necessary criteria for thematic analyses. These are the identification of both recurrent topics or statements that reflect underlying beliefs, values or sentiments and direct statements of importance or salience by the speakers.

Scientific rigor for the methodological approach of this study included a number of strategies. These strategies have been referred by Lincoln and Guba (1985) as ways of achieving "trustworthiness" or "credibility" of one's findings. The strategies used in this study included the following tactics. First, verbatim transcription and verification of its accuracy occurred. Second, we used multiple coders or an analytic team. An analytic team generates multiple perspectives for enhanced interpretation and is a check against investigator-imposed subjective meanings. Third, we used a process of peer debriefing, whereby the research team reviewed and then discussed sample quotes and negotiated to

determine their intentions and meanings. Finally, in each coding step, reliability assessments were performed to ensure interrater consistency among members of the investigative team.

Results

Participant Characteristics

During the period of the study, 103 eligible persons with a CVA were interviewed. Of these, 52 individuals or 51% of the stroke sample offered spontaneous comments. To identify potential sources of bias between the subjects who made comments and those who did not offer comments, we compared the two groups along all major study domains using student's *t*-test analysis for continuous variables and chi-square tests for categorical variables. As shown in Table 1, there were no significant differences between those participants who offered spontaneous comments (referred to here as *speakers*), and those who did not (referred to as the *nonspeakers*) with regard to living arrangement, marital status, age, years of education, number of devices in the home prior to hospitalization, number of devices issued during rehabilitation, and satisfaction with device training. Both groups had similar overall functional levels as measured by the FIM and similar psychological profiles as measured by the Bradburn Affect Scale and the Philadelphia Geriatric Morale Scale. However, of significance was the difference in the proportion of Caucasians (60%) and African Americans (38%) who chose to comment ($\chi^2 = 5.14, p < .05$) and the difference in the proportion of men (63%) and women (41%), ($\chi^2 = 4.56, p < .05$) who chose to comment.

The 52 stroke patients who provided comments were offered an average of 7 devices (range of 1 to 18) during rehabilitation for home use. The average length of stay was 21 days, during which time speakers received instruction in device use and had repeated practice opportunities. This group represented, for the most part, new consumers of devices in that 59% reported not having any type of assistive device in the home prior to the current hospitalization. On the other hand, 41% indicated that one or more devices were already in their homes but were not in use at the time just prior to hospitalization.

Characteristics of Comments

A total of 131 spontaneous comments were stated by the 52 speakers. Each speaker provided an average of 2–3 comments that were typically one or two sentences in length. We first explored the possibility that certain types of devices evoked more comments than others. Devices for mobility generated the greatest number of comments (63 comments), followed by those for dressing (28 comments), feeding (17 comments), bathing (13 comments), and seating (10 comments). However, analyses also indicated that there was not a linear relationship between the number of comments generated for a particular device category and the number of devices issued in that category. Of interest is the fact that although more dressing and seating devices were prescribed to speakers than other types of devices, mobility aids received the greatest number of comments.

Stance Toward Devices: Positive, Negative and Mixed Perceptions

To gain an initial understanding of the speaker's stance or judgment toward a device, our first analytic step involved the categorization of the 131 comments as either positive,

negative, or mixed (both positive and negative). Examples of representative comments are provided in Table 2. We believed this a priori categorization reflected a basic evaluative strategy, indicated by previous research, that would be used by speakers in their initial approaches to thinking about devices.

We defined positive statements as those indicating either the acceptance of a device or a benefit derived from its use. These comments were consonant with the medical view of a device as a strategy to promote independent performance. Negative comments were defined as those indicating an unfavorable opinion, devaluation or rejection of a device, or an undesirable outcome as a consequence of its use. These comments were in dissonance with the therapeutic purpose of the device. Mixed comments were those in which a speaker stated both a benefit and an adverse outcome associated with using a device. These comments reflected either a complex perception including both positive and negative features, the patient's uncertainty as to the present and future, or the patient's perception of a trade-off between the benefits and drawbacks of using a device. Mixed comments most clearly suggested a tension between the medical world view of functional benefit and personal feelings of loss and change.

Of the 131 comments offered, 51 comments (39%) were coded as positive, 41 comments (31%) were coded as negative, and 35 comments (27%) were characterized as mixed. Four comments (3%) were unclear (e.g., "don't know," "can't say") and were discarded in this set of analyses.

Types of Devices Evoking Comments—There was a proportionately greater number of positive comments about dressing devices (65% of comments) as compared to comments about devices for feeding (44%), seating (40%), and mobility and bathing (31%). Proportionately more negative comments (50%) were offered for seating devices, followed by bathing (46%), feeding (39%) and mobility (31%). Finally, mobility devices received proportionately more mixed comments (39%) than the other device types.

Devices for seating and mobility may have received the most negative and mixed-type comments because they were the most public and socially visible aids considered in this data set. From a sociological viewpoint, the devices present, in a tangible and objective fashion, the visible reality of the increased dependencies of speakers and represent the personal need to adapt to functioning in public as an adult with impairments (Deppen, Luborsky, & Scheer, 1997; Luborsky, 1995; Murphy, 1987). As such, these devices may have the most pervasive negative personal burden on the conduct of daily life activities.

Individual Response Patterns—We next examined whether speakers uniformly responded either positively, negatively, or mixed concerning each of their devices. We found that speakers who were positive about a particular device were just as likely to express a negative or mixed comment about another issued device. There were also no differences in the number of speakers' positive, negative or mixed comments based on their gender, age or race. That is, both men and women, African Americans and Caucasians, as well as those who were younger (55 to 70) and older (71 to 89), had proportionally equivalent positive, negative, and mixed types of comments. We were unable, therefore, to

identify a group of speakers who consistently expressed one type of opinion about the devices they had received. Furthermore, the type of comment varied for each particular device. Thus, there was not one type of device for which participants expressed similar viewpoints, whether they be positive, negative or mixed. The range of opinions expressed by an individual about his or her devices, as well the range of opinions expressed by individuals about a particular device category, suggest that neither personalities nor set responses influenced the type of comments that were generated. Rather the extreme intra- and interindividual variations in perceptions among speakers suggest the personalized nature of the device experience and the complex feelings that were evoked by each device category and specific devices.

Main Topics

Our next analytic step used a discovery-oriented approach and was designed to identify the ideas, meanings, concerns, and issues related to adaptive equipment that were embedded in the 131 comments. In this step, the *analytic unit* was defined as the specific topics that made up each comment, rather than the subject or the device. Thus, the topic list was not limited to one topic per subject, nor were topics mutually exclusive. Any one statement may have had multiple and interrelated embedded topics (Luborsky & Rubenstein, 1997).

For this analysis, a pile-sorting technique was conducted following procedures described by Luborsky (1994) and Spradley and McCurdy (1972). Two staff members independently read each comment and then sorted comments into categories based on perceived similarities and differences. Staff members were instructed to read the comments at face value and not to base their judgments on inferences or background knowledge about the speakers or their situations. For example, "It's good for picking things up" represents a comment that focuses explicitly on the instrumental utility of a reacher. Additionally, in preparing the list of topics, the staff members were instructed to remain as close as possible to the actual phrases and ideas of the speakers rather than reducing them to broader analytic categories, such as "family," "dislikes," or "comfort." Each staff person prepared a summary list and description of the groupings. The two staff members and the second author met to compare lists, discuss differences, and refine the categories and descriptions. A final comprehensive list was then prepared and reviewed by all investigators.

This inductive analytic strategy yielded a total of 11 topics from the set of 131 comments. The topics were then grouped into six larger categories or dimensions as shown in Table 3.

The dimension *the device itself* was represented by two topics. One topic addressed by speakers was the mechanisms or physical features of a device. Comments focused on the object and its operation. The other topic was the speaker's overall judgment of the adequacy of the device as good or bad, awkward or durable. These comments were grouped based on their simple references to the device and did not include discussion of the specific details about the focus of the judgment (e.g., how it was used, what it enabled the person to accomplish).

The dimension *instrumental utility* was represented by one topic that addressed the purpose of a device. Speakers talked about the capacity of the device to be useful for the task for

which it was designed. These comments contained no references to other issues concerning the contexts of its use or the users.

The dimension *transitional perspective* was also represented by one topic and reflected comments that placed the use of the device in a longitudinal or process view. In these comments, speakers discussed devices as temporary aids for use during the rehabilitation process that would eventually be left behind or abandoned. In this dimension, devices were viewed as transitional objects that were necessary to enable the person to progress from his/her current level of ability to a desired future level of improved functioning. For example, the comment, “I will use it until I can support myself,” reflected this perspective.

Statements that placed the use of the device in a *learning curve* or skills acquisition context represented another dimension. These comments reflected one topic and expressed concerns related to transient problems in becoming accustomed to a device. For example, “Tub seat was given to me but I haven’t learned to transfer onto it yet” and “Good – not too handy with it yet,” represent issues of learning, getting used to, or adapting to the peculiarities of a device.

Issues posed by the use of the device was an important and multifaceted dimension that included four topics. These topics ranged from concerns about the physical interface between the equipment and the user to the social consequences of being a device user.

One topic area in this dimension was the fit between the object and the body of the patient. Some comments reflected the personal costs and benefits of use (“Doesn’t do me any good – hurts”). Others revealed physical risk taking (“It can be difficult to use but it makes me independent”). Patients’ comments also reflected acceptance of physical limitations (“I know I’m not strong enough to get around without a wheelchair”), and the likelihood of device use (“I am not used to using a power chair. I have a little trouble, it is very awkward.”). Another topic area in this dimension concerned the feelings evoked by using the object. For example, “It makes me feel more confident” or “This whole experience makes me feel different.” The fit between a device and a valued activity was another topic area. In these comments, speakers raised concerns about integrating the device into their daily lives or the lifestyles to which they hoped to return (“Difficult to get close to a table with device”). The consequences for adult social identity, the fourth topic, emerged in comments as a reflection of speakers’ appraisals of the wider social consequences to their identities as adults using devices. Speakers used language associated with stigma and disability such as “cripple” and “handicap” to describe their situations and differed as to their judgments about implications of devices (“The wheelchair makes me a cripple,” “Changes your characteristics, but I am not different,” and “I am the same person, I just can’t walk”).

Another critical dimension was one we labeled potential *value dilemmas*. Value dilemmas were comments that reflected the perception of conflicting sets of sociocultural beliefs and values relevant to devices or contrasting normative expectations or ideals. In the one topic area of this dimension, alternatives and choices, speakers identified undesirable situations that activated choices either to use or not to use devices. For some, the alternative to not

using a device, such as confinement or immobility, propelled their acceptance of the device. This tension was reflected in comments by speakers who stated they would use a device despite disliking its look, feel, or image because it was “the only way for me to get around,” “I don’t like being in bed for too long,” or “don’t like confinement so will use whatever I need to get around.” For others, using the device was not viewed as an acceptable alternative (“I don’t like to be dependent on these devices and others, I was very independent before my stroke”).

Finally, the category labeled “*Don’t know*” described those statements in which speakers stated they did not have an opinion or idea about the device.

These six dimensions and their 11 topics reflect a broad range and diversity of physical, personal, and sociocultural issues that extend beyond the initial categorization of devices as either positive or negative and the singular rehabilitative view of devices as objective tools to enhance function. Some of these dimensions and topics have been cited in the literature as reasons for device abandonment, such as an inadequate fit between device and body, concerns about poor device design, durability, comfort, and aesthetics. Less recognized are the dimensions related to the fit of a device with a valued activity, consequences of use for the person’s sense of adult identity, the cultural meanings attributed to aids, and the intrinsic value dilemmas that are posed by devices, at least in this formative period of recovery.

The two topics “consequence for social identity” and “alternatives and choices” are of particular interest. They illustrate the intrusion of sociocultural and psychological processes into routine clinical instruction for and practice with the use of assistive devices. In these topics, speakers revealed the multiple value sets and dilemmas they faced as they tried to balance perceptions of the adaptive equipment in terms of competing, socially defined categories of aesthetic appeal and ideals of functional competence and independence, of personal and social comfort. Examining the value dilemmas as reflecting a cultural perspective rather than a psychological problem (e.g., lack of motivation, resistance to treatment, or medical noncompliance) illuminates the basic concerns of patients and highlights the inherent sociocultural context in which recovery occurs.

Personal and Social Implications of Changed Physical Function

The emerging concerns about assistive devices as reflected in these dimensions and topics can be understood from the viewpoint of the life-course disruption caused by an impairment such as a stroke. As described by Becker (1993) and others (Charmaz, 1983; Kaufman & Becker, 1991; Kleinman, 1988; Luborsky, 1995), the disruption caused by a stroke results in a slow recovery process whereby individuals attempt to create a sense of continuity in their daily lives in face of the physical, cognitive, and social discontinuities they are experiencing.

The six dimensions and their topics illuminate the role of assistive devices in this recovery process and suggest that two broad themes underscore this formative stage of device acquisition: rebuilding and biographical management. First, for these speakers, acquiring a device was part of a rebuilding process that involved identifying and comparing aspects of the self that were the same, “normal” or continuous, to those aspects that were different or discontinuous in the context of device use. Although the theme of rebuilding was evident in

each dimension, it was particularly exemplified in the transitional perspective. In those comments, speakers tried to establish a link or bridge between an old self and their new abilities and there was a persistent comparison of past physical capabilities to the present: “I am the same person, I just can’t walk”; “I don’t function as fast”; “I resent being sick. My life is changing drastically.”

Other comments that denoted continuity in the speaker’s sense of “self” extending from past through present to the future, emphasized the independence gained from devices (“I don’t have to depend on people”; “Best thing ever invented – can put on my own shoes now”), the sense of well-being (“It gives me confidence”; “They benefit me”), and device usefulness (“Easy to get in and out of shoes”). These comments reflected an orientation toward devices that emphasized device use as a way to accomplish valued and familiar activities and to continue or preserve a “self” that is independent.

Comments that denoted discontinuity in the speaker’s sense of personal identity emphasized dependence (“I don’t like to be dependent on these devices and others. I was very independent before my stroke.”); insecurity (“Not safe not to use a device right now”); discomfort (“The wedge is not comfortable. I made one myself but maybe this one will get better when I become more used to it.”); and awkwardness (“I can maneuver every which way the wheelchair moves, quickly, only it is a little awkward”; “The wheelchair makes me a cripple”). The comments also suggested the recognition that life is now different than before (“Sometimes I feel my life is over”); a longing for lost abilities (“When I see other people walking, I wish I could walk”); and a sense of uncertainty as to the future (“You have to keep trying. If you keep looking back you won’t get anywhere.”). Similar types of concerns have been reported in the research literature on chronic disability. For example, the concept of “liminality” (Murphy, Scheer, Murphy, & Mack, 1988) describes the state of being “in-between” previously valued notions of self and present capabilities and may be applicable to understanding this stage of device acceptance.

Second, these comments, as they embody notions of independence and dependence, continuity and discontinuity, suggest that the speakers are engaged in a form of biographical management. The theme of biographical management involved the negotiation of multiple values that were connected to visions of the “self” as a device user. Biographical management was evident in the way speakers tested new personal definitions as a consequence of assistive device use, such as “crippled,” “handicapped,” or “sick,” while retaining a prior valued status of being “still independent.” Comments such as “changes your characteristics, but I’m not different” and “I still am able to do things for myself so I am not handicapped” typify internal biographical negotiations and reflect the personal need to maintain a sense of self in light of bodily changes and newly created value dilemmas posed by device need.

These two themes, rebuilding and biographical management, suggest that devices may be visual reminders of the loss and disruption caused by the stroke and yet provide a mechanism for continuing valued roles and activities. Therefore, the apparent dual outcome of assistive device use is important. It simultaneously promotes the ability for stroke patients to continue core aspects of their adult identities (e.g., daily routines and social life) while

also contributing to the emotional, physical and social disruptions experienced in their life biographies.

Discussion

The introduction to and instruction in the use of assistive devices is a key rehabilitative strategy for older people who have had a stroke. Although this strategy has the potential to maintain or enhance functional performance and is an integral part of the delivery of health care services, little is understood as to how stroke patients approach and initially adapt to their devices in rehabilitation. The literature remains dominated by a focus on use rates and reasons for nonuse by community-living elders.

This study provides the first insights as to how one group of elderly people, those with stroke who return home, perceive the assistive devices they receive during the period of recovery involving rehabilitation. The data presented suggest that the emerging meanings attributed to devices in rehabilitation are more complex than is implied by simply looking at use rates or evaluating perceptions in terms of likes and dislikes, positive and negative. That is, the liking or disliking of devices as objects is more fully explicated and, hence, understood in the context of the six dimensions and 11 topics that were derived in this article. In the empirical data on these dimensions and topics, we see evidence that personal interpretations and social judgments shaped concerns of newly acquired physical limitations and the need to use devices. It is our belief that improved empirical insight into the actual conduct of rehabilitation and the experiences of patients in first acquiring devices provides clinical and scientifically productive avenues for improving the effective utilization of devices as older patients transition from hospital to home. It is clear that further research is required to understand the trajectory of the experiences with devices for this group and others following hospitalization and over time.

Methodological Considerations

The approach used in this study, the elected-probe methodology, complements and extends established research techniques of random probes and represents the development and extension of qualitative methods. The elected-probe method has two important advantages. It allows researchers to observe and identify, naturalistically, the test items or topics that elicit discussion or concern. It also enables discovery of individual-specific styles of communication in specific settings, such as the rehabilitation clinic. In contrast, the random probe technique does not discriminate more from less salient or controversial items, nor does it facilitate the examination of individual differences in styles of responding to assessments. The elected-probe method is systematic to the extent that all subjects have the opportunity to voice their opinions spontaneously on any topic they elect. In contrast, the random probe technique limits participants' responses to the one item preselected for them by the researchers. We believe the elected-probe technique produces practical information about the content and types of information patients present to practitioners in actual clinical settings and complements questioning methods that rely on the a priori identification of salient topics.

However, there are a number of methodological considerations in the use of this approach. First, this approach may be best suited to clinically driven research questions for which there are developed bodies of literature or theories for specific research populations. This condition may be important to enable the interpretation of brief commentaries that are elicited from probes. The interpretative scheme that was subsequently derived in this study was consonant with other in-depth qualitative studies involving stroke patients. Specifically, the framework of life course disruption developed by Becker and others provided a context for interpreting the words and statements of those who chose to speak in this study.

Second, we recognize that singular statements reflect thoughts and ideas that are removed from the context of a larger narrative or patient story. It may be argued that brief commentary may represent decontextualized data and therefore only partially reflects underlying personal meaning. Nevertheless, rearranging and decontextualizing longer narratives into core statements and then codes is a basic analytic step in qualitative research and part of the process of deriving thematic and interpretative frameworks. Indeed, in this light, the spontaneous comments that were offered in the interviews may reflect what people felt most strongly compelled to express about their initial feelings and first-time encounters with using devices. As such, the comments may legitimately represent personal meaning.

Third, these comments may represent the initial perceptions shared implicitly by most subjects but spoken by those who were more articulate or vocal or perhaps more comfortable with this particular interview technique. This view is akin to the key informant models of qualitative research that build knowledge from informants who are most adept at expressing basic shared cultural values and beliefs in the cultural system of interest. Nevertheless, it is not possible to determine why some study participants chose to speak and others did not, and whether nonspeakers shared the same meanings that we derived from speakers. That is, we cannot discern from this data set if nonspeakers were reluctant to speak because they held different meaning, or whether their non-response was a consequence of the particular method used to elicit commentary. Clearly, there is a role for further research to establish the generality of the data and to determine whether the decision not to speak implies different meanings or is an artifact of the methodology.

Finally, we believe the methodology outlined in this article offers an approach that complements survey data and enables investigators to integrate qualitative insights with experimental or controlled studies. Anecdotal comments are often used by investigators to explore new research ideas or to gain insight into research hunches (Fischer et al., 1996). The elected-probe technique offered here provides a systematized process for examining spontaneous comments frequently contributed by study participants who wish to explain and elaborate their responses to structured questions.

Practice Implications

The data presented in this article have several important implications for clinical practice in hospital settings. The statements analyzed in this article may reflect the short verbal exchanges that typify patient-clinician interactions in the therapeutic context. That is, these comments may exemplify what people routinely bring up in therapeutic sessions involving device instruction. As such, the elected probe methodology is a systematic approach to

documentation and analysis of the comments of patients that can be easily incorporated into clinical practice. It is an approach that may enable clinicians to systematically examine the underlying thoughts and feelings of patients as they participate in assistive device instruction. The comments also suggest the importance of listening carefully to the utterances expressed by stroke patients during rehabilitation in order to derive an understanding as to how individuals are making sense of these early device experiences. By listening sensitively and actively addressing specific emerging concerns during the course of instruction, clinicians may enable patients to manage effectively the biographical negotiations that appear to occur in the initial stage of device use.

Furthermore, the comments suggest that the reluctance to use a device cannot simply be interpreted as patient denial or noncompliance. The world view of rehabilitation as a process to restore function implies a moral imperative of patient motivation and acceptance of therapeutic practices. The emphasis is on functional gain and independent performance so that typically, patients who reject assistive devices during rehabilitation are viewed as unmotivated or uncooperative. This rehabilitative framework, however, has been shown to be in conflict with the perspective of the patient and his or her family members (Becker, 1994; Becker & Kaufman, 1988; Chiou & Burnett, 1985; Gitlin, 1993) who often are focused on issues surrounding the patient's personal identity. The perspective revealed by the speakers of this study, confirms the potential for conflict between patients and the therapeutic community. In this study, personal device evaluations reflected, in part, a need to resolve conflicting sociocultural values and, in this way, extended beyond therapeutic concerns for functional independence. Device use evoked complex concerns involving value dilemmas and biographical efforts to sort out new and emerging images of "self."

Another implication of these comments for clinical practice is that stroke patients may derive important benefits from device use that extend beyond a medical perspective. That is, using devices may enable stroke patients to engage purposely in daily life activities that have personal meaning and contribute to rebuilding a sense of self, personal continuity, and well-being.

Findings from this current study serve as guideposts to key issues for exploration in future studies. Clearly, the next step in research is to apply the insights gained in this study to design a standard set of interview questions that can be used with diverse populations and at different points in time in the process of recovery.

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Table 1

Comparison of Speakers and Nonspeakers on Major Domains

	Speakers (N = 52)	Nonspeakers (N=51)	t Value	χ^2
Gender				
Men	26	15		4.56*
Women	26	36		
Race				
African American	18	29		5.14*
Caucasian	34	22		
Living arrangement				
Alone	20	23		.46
With other	32	28		
Marital status				
Married	27	22		3.21
Widowed	17	21		
Divorced	4	2		
Separated	2	1		
Never married	2	5		
Mean age	72.6 (\pm 8.86)	70.2 (\pm 8.34)	1.46	
Mean education	11.16 (\pm 2.85)	11.06 (\pm 3.52)	.15	
Mean total FIM	91.86 (\pm 13.29)	92.54 (\pm 14.26)	-.80	
Mean morale	8.6 (\pm 1.66)	9.2 (\pm 1.84)	-1.75	
Mean negative affect	20.79 (\pm 3.86)	21.06 (\pm 3.80)	-.36	
Mean positive affect	12.65 (\pm 4.15)	13.30 (\pm 4.38)	-.81	
Mean training satisfaction	7.71 (\pm .64)	7.78 (\pm .58)	-0.57	
Mean number of devices	7.4 (\pm 4.12)	8.6 (\pm 4.27)	-1.60	

Note: Standard deviations are in parentheses. FIM = Functional Independence Measure.

* $p < .05$;

** $p < .01$.

Table 2

Examples of Positive, Negative and Mixed-Type Comments for Different Devices

Device	Positive Comments	Negative Comments	Mixed Comments
Mobility			
Quad cane	"It makes me feel more confident."		"Changes your characteristics, but I am not different."
Wheelchair	"I feel independent."	"It is very uncomfortable to use."	"I can maneuver every which way the wheelchair moves, quickly, only it is a little awkward. The wheelchair makes me a cripple."
Walker	"It gives me confidence."	"It makes me feel unsteady."	
Dressing			
Shoe horn	"I don't need to depend on anyone."	"It is a pain in the neck. If I can't use it, I will wear loafers."	"I don't like it. I use it when I have to."
Dressing stick		"It is not durable. The hook has broken off two times."	"Good – not handy with it yet."
Feeding			
Rocker knife	"Works very well. Does something for me which is very important – can feed myself."	"I don't like it. It pulls the food apart rather than cut it."	
Swivel spoon		"It spills my food."	
Seating			
Seat board	"Works for me."	"Doesn't do me any good – it hurts."	
Bathing			
Long-handled sponge	"It's helpful."	"I can't use it real well."	

Table 3

Dimensions and Topics in Comments on Assistive Devices

Dimension	Topic	Examples
Device itself	Mechanical features	<ul style="list-style-type: none"> • Too small. • It spills my food. • It's not durable, handle has broken off two times.
	Stance toward the device	<ul style="list-style-type: none"> • Fantastic. • It's great!
Instrumental utility	Purpose	<ul style="list-style-type: none"> • It's good for picking objects up. • Perfect, my back feels much better. • Have to keep arm elevated so have to use all the time.
Transitional perspective	Bridge between current and desired future functioning	<ul style="list-style-type: none"> • Until I get my balance. • I will use it until I can support myself. • Hope not to have wheelchair. • Don't have a wheelchair at home, hope I will walk without one.
Learning curve	Familiar problems in getting accustomed to devices	<ul style="list-style-type: none"> • Cane was a little awkward in beginning. No problems now. In the beginning, I'll use the cane all the time. • Good – not too handy with it yet. • Tub seat was given to me, but I haven't learned to transfer onto it yet.
Issues raised by use of devices	Fit to the person and other devices	<ul style="list-style-type: none"> • Doesn't do me any good – hurts. • Sometimes hard to take off. • Difficulty using left hand. I have to ask for help with it. • It helps me. Hope I will be strong enough to use it. • Interferes with brake.
	Feelings evoked by use	<ul style="list-style-type: none"> • It makes me feel more confident. • This whole experience makes me feel different. • It's not like before. I used to feel sorry for people who had to use a wheelchair.
	Fit to valued activities	<ul style="list-style-type: none"> • Difficult to get close to a table with device. • Hard to push with one hand. • Works very well, does something for me which is very important – can feed myself.
	Consequence for social identity	<ul style="list-style-type: none"> • The wheelchair makes me a cripple. • Changes your characteristics, but I'm not different. • I am the same person, I just can't walk. • Glad to have gone outdoors and to have seen people's reactions before I went home.
Value dilemmas	Alternatives and choice	<ul style="list-style-type: none"> • Don't like confinement, so will use whatever I need to get around.

Dimension	Topic	Examples
		<ul style="list-style-type: none"> • The only way for me to get around. I don't like being in bed for too long. • Sure because I don't need to depend on anyone. • When you have a problem, who cares? • I don't like to be dependent on these devices and others, I was very independent before my stroke.
"Don't know"		<ul style="list-style-type: none"> • Don't know now.