

THE RELATIONSHIP BETWEEN PERSON-ENVIRONMENT FIT AND CARE-GIVER STRAIN FOR ELDERLY STROKE SURVIVORS

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Abstract

A qualitative, case-study methodology was used to explore care-giver characteristics that inhibited person-environment fit in households where a person over age 55 had recently suffered a stroke. Research questions addressed the relationship between person-environment fit and stroke-survivor characteristics, care-giver characteristics, and care-giver strain. A person-environment fit scale was developed to assess the congruence of fit for the stroke survivor within the home setting. Negative person-environment fit was associated with higher care-giver strain, more pre- and post-stroke ailments, more problems with activities of daily living, and the use of wheelchairs in homes that did not accommodate them.

Introduction

For any individual, young or old, healthy or disabled, a supportive physical environment can allow independence and the performance of needed tasks. Hiatt (1982) has summarized literature suggesting that the environment serves as a releaser of intelligence, giving humans the capacity to master their surroundings. Positive interactions between humans and their environment can elicit intelligent coping behavior, improved life satisfaction, and a reduction in frustration (Ittelson, 1975). The congruence between a person's capabilities and an environment that supports those capabilities is known as person-environment fit (Lawton, 1983).

This study explores research findings from a study involving older stroke survivors, their care-givers, and home environments. The purpose of the study is to examine characteristics of care-givers of stroke survivors that tend to support or inhibit achievement of person-environment fit. The relationship between person-environment fit and care-giver strain is assessed.

Literature Review

In the literature, person-environment fit theory has been applied to housing for the elderly (Altman, Lawton, and Wohlwill, 1984; Hiatt, 1982; Kahana, Liang, and Felton, 1980; Kiyak, 1980; Lawton, 1980, 1981, 1982, 1983; Lawton, Greenbaum, and Leibowitz, 1980; Lawton, Moss, Fulcomer, and Kleban, 1982; Rowles and Ohta, 1983). Additionally, Lawton (1980, 1981, 1982, 1983) has hypothesized the application of person-environment-fit theory to private residences. However, most of the research (Kahana et al., 1980; Kiyak, 1980) has focused on varying housing types for the elderly. Typically, this focus includes nursing homes and age-congregated housing or apartments for independent living. The unique component of this study is the assessment of person-environment fit and the analysis of the care-giver role in creating the fit.

Stroke is both the third leading cause of death among the elderly population and the major cause of disability for this group (American Heart Association, 1988). Stroke survivors may have varying states of physical and cognitive disability, in addition to environmental hurdles with which to cope. Patients may have little input in developing a

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person-environment fit for themselves. It is therefore important to attend to other individuals in the family who interact with the stroke survivor and may ultimately make these environmental decisions. When dealing with environmental issues, the care-giver may experience psychological as well as physical strain. Attending to the relationship between person-environment fit for the stroke survivor and care-giver strain can lend insight into a support network for care-givers.

Person-Environment Fit

Person-Environment Fit Theory addresses the person and his/her interaction and interdependencies with the environment, focusing on the fit between the two. Lewin (1935) has theorized about person-environment (P-E) fit concentrating on the interpersonal environment. He has developed the formula $b = f(p-e)$, meaning that behavior is a function of the P-E fit.

Expanding this concept to the physical environment, Lawton and Nahemow (1973) have observed that the level of human competence paired with the appropriate amount of environmental press (high or low physical and/or cognitive stimulation from the environment) would result in adaptive behavior or culturally appropriate behavior given the situation. A mismatch would render maladaptive behavior or the inability to perform the appropriate behavior or task.

Parr (1980) has developed a person-environmental interaction model. The basic precepts assert that behavior in environments is the primary interest of both theoreticians and practitioners. Complex systems can be explored by selecting behaviors or functions and noting environmental interaction. His theory identified personal and environmental characteristics and mediators of behavior. The mediator of behavior can be a person, and in the case of stroke survivors, care-givers may be the mediators.

Dejong and Branch (1982) developed a research model for predicting a stroke patient's ability to live independently. The model is based on the following equation: $O = f(S,D,E,I)$. Components of the model incorporate O for independent living outcome; S for socio-demographic characteristics of the stroke patient; D for disability related variables; E for environmental barriers; and I for an interface variable indicating the use of assistive devices, such as a wheelchair, to bridge the gap between functional limitations and environmental barriers. The components of the formula lend insight into the factors used in this study for measuring P-E fit.

Care-giver Strain

Providing care to someone in need can be a stressful experience, but care-givers are more or less affected by strain depending upon their particular situations. Brody (1985) identifies emotional strains that can result from care-giving such as depression, anxiety, frustration, helplessness, sleeplessness, lowered morale, and emotional exhaustion. The symptoms are related to restrictions on time and freedom, isolation, conflict from competing family or work demands, difficulties in setting priorities, and interference with lifestyle and social or recreational activities. The literature acknowledges that the concept of care-giver strain or burden is a perception of the care-giver compounded by a multitude of situational factors (Canter, 1983; George and Gwyther, 1986; Hooyma, 1986; Poulshock and Deimling, 1984; Robinson, 1983; Strong, 1984). Gallagher, Rose, Rivera, Lovett, and Thompson (1989) observed certain depression disorders to be more common among family care-givers than the general population.

Poulshock and Deimling (1984) have observed a link between care-giver burden and elders' impairment with the activities of daily living (Katz, Ford, Moskowitz, Jackson, Jaffe, and Cleveland, 1963) as well as cognitive impairments. These impairments are difficult to deal with and affect the family in varying ways, but both are connected with care-giver depression and thus care-giver burden.

Methodology

This research was qualitative and exploratory in nature (deLaski-Smith, 1989). Ten case studies of older stroke survivors and their care-givers were drawn from a larger study (Ames, Bond, Borland, and Chenoweth, 1986). The larger study involved a three-part series of in-home interviews with stroke survivors, their designated informants, and primary care-givers. The complete process of establishing rapport with the family, assessing environmental characteristics, and conducting the three interviews took approximately 6-8 hours divided over a two-day period. The 20 stroke survivors were 55 years of age and older and had suffered their first stroke or had few residual limitations from a prior stroke. Patients were living in private residences and had left institutional care one to six months prior to the interview.

For the larger study, three parallel instruments were designed to cover similar topics for the three populations. These instruments were Stroke Survivor Interview, Informant Interview, and Care-giver Interview. The following general topics were addressed in each of the three survey instruments: sociodemographics, housing, clothing, financial resources, social resources, mental health, physical health, nutrition, and community services.

The OARS Multidimensional Battery prepared at the Duke University Center for the Study of Aging and Human Development (Multidimensional Functional Assessments, 1978) served as the primary resource for developing the three instruments. Questions concerning sociodemographics, financial and social resources, mental health, physical health (including activities of daily living, ADL), and community services were adapted and modified to meet the format requirements for the three interviews. The Stroke Survivor Interview (SSI) was structured to generate yes/no answers should the respondent have limited communication skills. This interview was kept short to avoid tiring the respondent. The Informant Interview (II) was longer than the SSI, combining yes/no, Likert, and open-ended questions. This enabled the gathering of more in-depth pre- and post-stroke information about the stroke survivor. Parallel questions between the two instruments facilitated comparison between stroke survivors and informant's perceptions concerning the same topic.

The Care-giver Interview (CI) covered many of the same topics as the other two instruments. Its focus was on the changes that had occurred in the care-giver's life since the stroke survivor's stroke. The Care-giver Strain Index (Robinson, 1983) was a part of the CI. Robinson developed and validated a 13-item Care-giver Strain Index (CSI) used to note perceived strain with the care-giver role. It was intended to serve as a predictive device for identifying care-giver populations at risk.

Where standardized instruments were not available, sections for the three instruments were specifically developed for such topics as nutrition, housing, care-giving, and help-seeking behaviors. Housing questions were developed to assess house characteristics (e.g., stairs, number of rooms, and relationship of bathroom location to bedroom), physical changes made to the home since the stroke (e.g., addition of ramps, grab bars, and bedroom changes), and present and future housing needs and goals. Interviewers also made observational notes about the general housing conditions. Examples included level of cleanliness, maintenance, need for repairs, excessive clutter, and furniture or throw rugs that might impair mobility. Access to and use of mobility aids and devices such as walkers, canes, crutches, and wheelchairs were assessed by means of the questionnaire and observation.

A pilot study with a limited sample of five families was conducted to assess interview timing, format, question wording, and sequencing. Additionally, some of these interviews were observed by the research team as a part of interviewer training and for further instrument refinement. Modifications were made to all three instruments prior to conducting the final interviews.

Research Questions and Variables

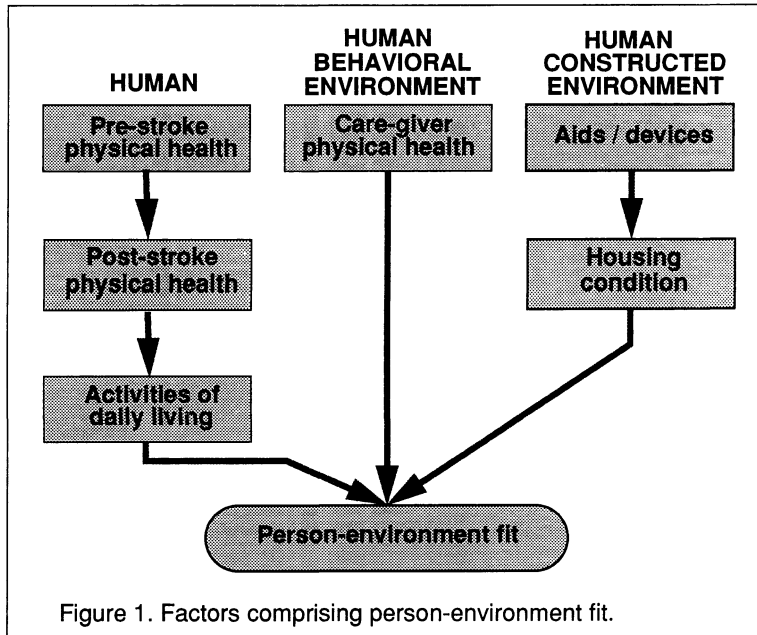
Three broad research questions were addressed in this study: (a) what is the relationship between P-E fit and stroke-survivor characteristics, (b) what is the relationship between P-E fit and selected care-giver characteristics, and (c) what is the relationship between the P-E fit score and CSI?

The dependent variable was P-E fit. Person-environment fit was a summative measure of six categories that rated the fit between the person’s physical ability to ambulate and the supportiveness of the environment. The categories included stroke survivor’s prestroke health, post-stroke health, activities of daily living, aids and devices, housing condition, and the care-giver’s physical health. Each factor was scored using a three-point scale with numerical values of 1, 0, or -1. Scores from each of the six factors were totalled for an overall P-E fit score. Table 1 lists the general definitions for the summative scores. A positive score would indicate a good fit, a zero score would denote some problems with the fit, and a negative score would mean poor fit. Figure 1 illustrates the relationship of case factors that lead to a summative P-E fit score.

Table 1. Person-environment fit scores and definitions.

Score	Definition
+6	Excellent person-environment fit: stroke-survivor characteristics in conjunction with the use of aids and housing characteristics allow for ease of self-ambulation; care-giver is in excellent health and can provide help if necessary.
+3	Good person-environment fit: stroke survivor may have minor problems with ambulation; aids and housing environment are generally supportive but may need minor changes; care-giver’s health generally allows for assistance if necessary.
0	Person is coping with the environment: stroke survivor and care-giver are holding their own at this break-even point. Stroke survivor has some problems with ambulation, and the housing environment may not meet his/her needs, but it can be changed with minor effort; the care-giver can provide some assistance with ambulation if necessary.
-3	Poor person-environment fit: stroke survivor has difficulty with ambulation with or without an aid; the housing environment may require minor or some major changes to enhance ambulation; care-giver may provide a little assistance, but may have a few physical limitations of his/her own to deal with.
-6	Severe problem person-environment fit: stroke survivor has a severe disability and the environment has structural problems that do not allow for self- or assisted-ambulation; the care-giver is not able to provide the needed physical help with ambulation.

The independent variables were characteristics of the care-giver. These characteristics included sociodemographic factors such as relationship of the care-giver to the patient, the care-giver’s gender, race, age, educational background, marital status, religious preference, employment status, and income adequacy since the stroke. Additionally, the care-giver’s physical health, psychological characteristics (care-giver behaviors, care-giver strain, help-seeking behavior), social and community resources, and housing resources were explored in the case studies.



Sample

For the 20 families in the larger study, P-E fit scores were tabulated. Ten cases had positive P-E fit scores, four cases had P-E fit scores of zero, and six cases had negative P-E fit scores. The cases with positive P-E fit had stroke survivors who had not suffered mobility impairment, used mobility devices, or made housing changes. In addition, their care-givers did not have high care-giver strain scores. The cases with zero and negative scores indicated that P-E fit was more problematic. The 10 families with zero or negative scores became the sample for case-study analysis. Qualitative case-study analysis provided insight into the relationship between mobility disabilities, the impact of the environment, and the needs of the care-givers.

Findings

Stroke-Survivor Characteristics

Of the many variables explored, a few characteristics about the stroke survivor provided some distinctions between P-E fit groups. Table 2 highlights stroke-survivor characteristics by P-E fit (negative or zero person-environment fit).

The negative P-E fit group was older than the zero P-E fit group and had more disabilities before and after the stroke. Increased disability and the use of an ambulatory aid (wheelchair) that could not move into or throughout the home created a problem P-E fit. This group did, however, make more housing changes than their counterparts, but these changes did not greatly affect ambulatory P-E fit.

There were problems with incontinence for most of the stroke survivors in the negative P-E fit group. This problem did not directly affect the P-E fit scale for this study, but poor ambulation certainly compounded an incontinence problem. Due to the incontinence, some care-givers expressed a desire to move the stroke survivor to a nursing facility. The literature confirmed that incontinence was a contributing factor in institutionalization (Office of Technology Assessment, 1985).

Table 2. Stroke-survivor characteristics by person-environment fit score.

Negative P-E fit score (N=6)	Zero P-E fit score (N=4)
Older	Younger
Males and females	All males
Half were married	All married
More pre-stroke ailments	Fewer pre-stroke ailments
More post-stroke ailments	Fewer post-stroke ailments
More bladder & bowel problems	Half with bladder problems
More problems with ADLs*	Fewer problems with ADLs
All used wheelchairs	One wheelchair user
More needed help with aids	One needed help with aids
Broad range of income	Less income

* ADL -- Activities of Daily Living

The negative P-E fit stroke survivors had a broad range of income. Those with higher income had more resources with which to plan future housing changes or moves. This group also indicated the following future housing changes: adding a ramp, moving to a ranch-style home, or placing the stroke survivor in a nursing facility. In spite of their having discussed potential changes, most of the group indicated satisfaction with the housing situation. Table 3 summarizes general housing characteristics by P-E fit score.

Table 3. General housing characteristics by person-environment fit.

Negative P-E fit score (N=6)	Zero P-E fit score (N=4)
More multi-story homes	All single-story homes
More exterior stairs	Some exterior steps
Made more housing changes: e.g.--added grab bars, hospital beds, made bedroom changes, bought bathing and toileting aids, and increased interior temperature.	Fewer housing changes: e.g.--toileting aids and increased interior temperature.
Smaller homes, big furniture i.e.--little space to ambulate.	
Had more future housing adaptation plans	No future housing adaptation plans
Most satisfied with housing	All satisfied with housing

The relationship between housing satisfaction and P-E fit of older individuals living in their own homes has not been explored extensively in the literature. Housing satisfaction dealt with a broader psychological involvement and long-term attachment to the home (Golant, 1982; Weaver and Ford, 1988). Perch (1983) observed that disabled individuals were also satisfied with their homes, even if these environments were not in good shape. This situation seemed to be the same for the negative P-E fit group. As Newman (1976) noted, considering any change could be a painful process for older individuals strongly attached to their homes. If physically compensating for a poor P-E fit were less painful than the thought of making an environmental change, then compensation could be continued until this pain outweighs that of a move (Nadler, 1983). Denial and continual decline can occur over an extended period prior to the time when change is unavoidable.

The zero P-E fit group had younger stroke survivors with fewer pre- and post-stroke disabilities (except one stroke survivor), but all had problems with ambulation. Their homes were more conducive to ambulation with the use of aids, since the only interior stairs led to basements. Exterior stairs were a problem, but they were traversed with assistance from the care-giver. The one stroke survivor who used a wheelchair had an exterior ramp to aid access in and out of the home. Once out of the home, however, the care-giver in that family had problems transferring the stroke survivor into the car by herself. The care-giver was not strong enough to lift the wheelchair into the trunk of the car. This prevented the care-giver and stroke survivor from going out on their own without assistance from other family members. As the environment supports the functions, so too can independence be supported with less demand on those providing care.

Care-giver Characteristics

Table 4 compiles the general trends that emerged among the many care-giver variables when sorted by P-E fit scores. The findings implied that persons in the zero P-E fit group may have been more prepared to take on the after-stroke care-giving role than their counterparts. All were older, female spouses serving as full-time homemakers and already providing care for their husbands. Physical health for some may have been a strain, but emotional health for the zero P-E fit group was better than the other group. Emotional health had not changed since the stroke. They saw friends less often and exhibited less help-seeking behavior, potentially because they perceived less help was needed. Their care-giving behavior was healthier, which means that they would let others help if needed, and they took care of themselves as well as the stroke survivor.

The negative P-E fit care-givers were younger than their counterparts, half being adult children. This group seemed less prepared for their care-giving role. The adult children may have been experiencing some of the pressure of multiple demands characteristic of mid-life, caring for children and parents while juggling career demands (Brody, 1981). Also, the stroke survivors of this group had more ailments than their counterparts; the care-givers may have had more demanding care-giving roles.

In both groups the care-givers felt that the housing needs of the stroke survivor were being met. Those in the negative P-E fit group were reportedly not as prepared to make housing changes, nor did they know who to contact for housing changes, as compared to some of the zero P-E fit care-givers. They had made more environmental changes, however, and had more income to do so, yet not all of the P-E fit needs were being met. It must be remembered that due to the research confines of the larger study, families were interviewed only one to six months after hospitalization. This was an unsettled period of adjustment to the disability and a time of hope for the stroke survivor's recovery from initial physical limitations. Creating P-E fit may not have been a key concern for these families, considering the other demands in their lives. Additionally, lack of recognition that a poor P-E fit existed may have been part of the problem. Psychologically, the negative P-E fit group may not have been ready to recognize or explore P-E fit issues or solutions. Follow-up interviews with these care-givers will lend insight into long-term responses to environmental needs.

Person-Environment Fit and Care-giver Strain

Figure 2 compares the CSI scores (Robinson, 1983) with the P-E fit score by family-case numbers. Except for two cases--25 percent for the zero P-E fit group and 16 percent for the negative P-E fit group--the general pattern seemed to be that households with zero P-E fit scores had care-givers exhibiting lower care-giver strain, and households with negative P-E fit scores had care-givers who report higher care-giver strain.

For the two cases that did not fit this pattern, the male care-giver had a good support system, and his wife's mental health remained good. This may have contributed to less care-giver strain despite the poor P-E fit. The female care-giver had a higher care-giver strain score, yet the physical environment appeared to meet her husband's needs. Further analysis of this case indicated that this care-giver faced both her husband's incon-

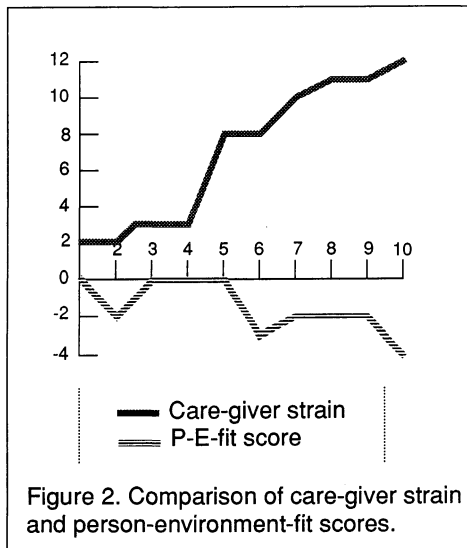
tinence and his poor mental health. These two areas of strain were indirectly addressed on the CSI but not accounted for by the P-E fit scale. For this study, the P-E fit scale focused on physical mobility issues rather than psychological issues. Psychological issues will be considered for future inclusion in the scale.

Table 4. Care-giver characteristics by P-E fit score.

Negative P-E fit score (N=6)	Zero P-E fit score (N=4)
Mostly female; two males	All females
Spouses and adult children	All spouses
Younger average age	Older average age
Higher income	Lower income
Some had health problems affecting care-giving	Some had health problems affecting care-giving
Most could not get out to exercise	One was concerned about exercise
Most had changes in dining out and time with meal preparation	Half dined out less often and less with friends
Half had good emotional health	All had good emotional health
Two felt emotional health had worsened	Emotional health had not changed since stroke
Most worried often	Most worried often
Less-prepared overall for care-giving	More-prepared overall for care-giving
Not as healthy care-giving behavior	Slightly healthier care-giving behavior
Most had not received visits from friends since stroke	Had visits from friends since stroke
Saw friends more often	Saw friends less often
More help-seeking behavior	Less help-seeking behavior
All felt housing met their needs	All felt housing met their needs
Not prepared to make housing changes and did not know who to contact for changes	Not or somewhat prepared to make housing changes: half did not know who to contact to make changes
Two had problems caring for home	One had problems caring for home

Specific care-giver strain items from the CSI (Robinson, 1983) were compared by P-E fit scores for the ten cases. In general, all care-givers from both groups were strained by sleep disturbance. For the negative P-E fit group, factors that seemed to contribute to high care-giver strain were as follows: feeling that changes in the stroke survivor were upsetting, feeling overwhelmed, making emotional adjustments, finding some of the stroke-survivor's behaviors upsetting, making changes in personal plans, and feeling confined due to restricted free time. Other stressors for some care-givers included family adjustments, the inconvenience of helping, physical strain, and work adjustments.

The zero P-E fit group reported four stressors that affected half of the group. These included emotional adjustments, feeling overwhelmed, and finding the stroke-survivor's behaviors and physical changes upsetting. Separate individuals noted problems with the physical strain of care-giving, restricted free time, and changes in personal plans.



Discussion

This study has taken an initial look at the relationship between person-environment fit and care-giver strain. The use of a qualitative, case-study approach does not lend itself to broad generalizations, but raises issues for future research.

Experiencing care-giver strain is consistent with Carp (1977), Hiatt (1982), and Lawton's (1983) concern that the physical environment can negatively affect individuals. Frustrations with the environment can lead to frustrations with other facets of one's life, including stroke-survivor behavior. The specific nature of the relationship between care-giver strain and the physical environment needs to be more fully explored including additional examination of this sample. Future research could control for the patient's physical condition while noting the impact of a supportive versus nonsupportive environment on care-giver strain. This would more effectively highlight the role of the physical environment in health-care strategies for patient and care-giver.

Care-givers frequently initiate and implement environmental changes such as building ramps, adding grab bars, removing furniture, and placing a hospital bed in the family room while trying to create privacy. If these individuals are under a great deal of strain, then researching solutions for changes would be an additional burden. For some, it would be easier to continue to aid the stroke survivor with such tasks as walking, climbing stairs, and making transfers than to find alternative solutions. The duration of providing continual assistance in light of personal physical limitations would certainly compound the care-giver strain. Springer and Brubaker (1984) address this concern particularly for older care-givers. However, younger care-givers could also injure themselves from lifting or become physically drained as they care for two households.

From this study one could infer that there is a cyclical relationship between P-E fit and care-giver strain. A poor fit leads to more work on the part of both the care-giver and stroke survivor. This leads to psychological strain as a result of both care-giver and stroke-survivor frustration. Psychological strain could lead to physical strain for both parties. Care-giver strain could worsen the already poor fit, and the cycle repeats itself.

Consider the example of the female stroke survivor who has suffered from incontinence but has refused to use supportive aids and devices (e.g., walker, portable com-

mode, bathroom grab bars, raised toilet seat). She frequently becomes upset when her unsteady gait does not enable her to reach the bathroom when passing through a cluttered home environment. This daily, if not hourly, problem has led to a refusal to consume liquids and subsequent dehydration. It has also discouraged any outings from the home. The care-giver has been frustrated by her mother's refusal to use the aids provided, by the continuous laundry problem posed by the incontinence, and by the requisite cleaning of floors, carpet, and furniture. Increases in household work has led to physical strain for the care-giver. Psychological strain for the care-giver has resulted due to internalization of the mother's humiliation, her own frustration, and worrying about the physical harm dehydration could cause. Frustrations have led to a lack of household maintenance and have generated care-giver anger toward the stroke survivor.

This cycle may have been broken by environmental alterations such as removing clutter to allow a walker through the home, providing privacy for the stroke survivor to use the portable commode, and changing surface materials to those that are easier to clean and do not support bacterial growth.

As the above case implies, alterations to the environment may reduce care-giver strain. A good P-E fit could support and encourage both the care-giver and stroke survivor, thus reducing care-giver strain. It is important to realize that fit may change over time. Over the course of the day, for example, as both the stroke survivor and care-giver become fatigued, needs may change. The care-giver may be less physically capable of lifting or aiding a weakened stroke survivor, thus requiring more environmental interventions. Over the course of months or years of rehabilitation or physical decline, needs may continue to change. For example, if the one stroke survivor who was bedridden became wheelchair mobile, the home would not accommodate the spacing requirements, yet P-E fit remained good while she remained in bed. Longitudinal studies accessing the changing needs of these families are necessary to document P-E fit requirements over time. Additional research with these families may open professional avenues for collaboration regarding environmental issues.

Care-giver characteristics also may guide decisions regarding dissemination of P-E fit information. From the larger study of 20 families, it is noted that female care-givers tend not to pursue environmental changes as much as their male counterparts (Newman, 1976); yet more so than males, they seek other kinds of help (Nadler, 1983). Since the literature confirms that there are more female care-givers than males, strategies for developing readable and easily understood materials that explain environmental changes may encourage action.

Environmental information is currently available through existing housing and design professionals, yet few families contact these professionals during the initial months following a medical emergency such as stroke. Bringing the information to the care-giver through existing medical-helping channels such as visiting nurses, occupational therapists, speech therapists, social workers, and family therapists may alleviate the frustration of not knowing what changes to make or who to contact for making the changes. Environmental intervention could function like other medical interventions; currently, however, the advice is given by medical personnel with no specific training in environmental assessments. It is recommended that housing and design professionals take an active role in training in-home service providers with the ability either to make environmental assessments or recommend a network of design resources so accurate information can be disseminated.

When professionals aid in the delegation of care-giving roles, such as providing physical care and emotional support, coordinating in-home services, and researching environmental changes, they are assisting in the preservation of the care-giver's health (Horejsi, 1982). Keeping the care-giver healthy prevents family breakdown (Gray, 1984) and truly assists the patient or stroke survivor overall (Neubacher, 1987).

Implications

The elderly population will continue to grow, and the aged, disabled population will do likewise. The public policy implications from this study revolve around policies for environmental assessment, information dissemination, and funding for environmental changes. Current public and private funding policies for the acquisition of "non-medically necessary" devices that support independence also have important implications.

Medical insurance does not cover the expenses associated with environmental assessments. Because of this, professionals providing in-home services cannot bill insurance companies for the time it might take to provide clients with environmental guidance. These services need to be recognized as a part of a viable team approach to rehabilitation treatment.

Funding policies for insurance coverage of supportive aids and devices should be reconsidered. Coverage should include those devices that encourage self-assistance, as well as those that are medically necessary (American Occupational Therapy Medical Handbook, 1984). Encouraging stroke-survivor independence is medically necessary in the long run for support and medical well-being of the care-giver.

More public and private funding sources need to be accessible to varying income groups for supporting the acquisition of aids and devices and making environmental changes. Lower-income families have a greater range of funding options than do middle-income households. Many families are unaware of devices that can be obtained from organizations like the United Way. Additionally, many families are unaware of the tax laws that allow the deduction from personal income taxes of environmental changes or expenses for aids as medical expenses. However, the environmental changes or items need to be prescribed by a physician (a doctor can write a prescription for a ramp) before they can be considered tax deductible. Unfortunately, environmental changes are not a part of the training curriculum for physicians, and often the patient or care-giver must ask for such a prescription. Nonetheless, initial outlay of capital is required and this may be cost prohibitive if other medically related needs have to be paid out-of-pocket. The middle-income households with limited insurance could be hardest hit.

Funding is needed to enhance community support for services that enable persons to remain in their homes as long as possible. Persons are seeking the security of their home setting as a stable component in their lives. Many do not want others to know that they can no longer handle the home by themselves and fear other housing options. Many remain in housing that is dilapidated or provides a poor P-E fit. Individuals tend to adapt to the conditions of their environment instead of changing the environment to meet their needs. Whether to remain or leave becomes a stressful decision. As a recent study from the American Association of Retired Persons (1990) noted, seniors prefer to stay in their own home or move to a familiar neighborhood. Additional state and federal funds for home repair and chore services would reduce much of the physical stress for the older persons caring for their homes. Providing financial incentives to family caregivers may support their involvement, thereby avoiding or delaying placement of older individuals into nursing homes. The need for these incentives will grow as the baby-boom generation ages and as the demand for services increases.

Conclusion

This case-study approach has offered the opportunity to test a person-environment fit scale that may be useful to practitioners to predict functional problems for both patient and care-giver. As stroke is one of many disabling conditions of aging, the person-environment fit scale needs further testing on a larger sample with varying physical conditions affecting ambulation. Research on single-family dwellings needs to continue since the majority of the current and future health-impaired population will reside in their own homes. Learning to consider the physical environment as a tool for physical and psychological well-being will benefit those experiencing disabilities, those caring for the disabled, and those providing services.

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