Rural/Urban Differences in Health Care Needs of the Elderly After Hospital Discharge to Home

by

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CHAPTER 1

Statement of the Problem

Continuity of care beyond the walls of the acute hospital setting has always been a major emphasis in nursing. Yet, very little is known about the specific health care needs of elderly patients and their families in the early days at home following hospitalization for an acute condition. Further, the care needs of the elderly at time of discharge from acute care facilities have been affected by recent changes in the demographics of the elderly population, in legislation affecting the availability and accessibility of formal services, and in the availability of capable informal caregivers for the ill and disabled elderly (Kromminga & Ostwald, 1987; Shine, 1983; Simmons, 1986).

Approximately 12 percent of the present population is over the age of 65 with a projected increase to 21 percent by the year 2030 (Spiegel, 1987). Furthermore, elderly over 85 years of age who now number 1.1 percent of the population will increase to 2.8 percent by the year 2030. These increases will result in even greater demands on the health care system because the elderly are high users of health care services (Zarit, 1988).

While it is recognized that age alone is not a predictor of care needs, the number of individuals needing assistance with activities of daily living increases from 6.7 percent in the 65-74 year old group to 39.3 percent in the over 85 group (Kingston, Hirshorn, & Corman, 1986; Zarit, 1988). In addition, it is estimated that 18-25 percent of those over age 65 have significant mental health symptomatology, creating increasing behavioral needs (Harper, 1988). If the present trend

continues, by the year 2000, Alzheimer's disease, whose victims require continuous caregiving in the later stages of mental and social regression, will be the single most prevalent health problem of the elderly (Maraldo & Solomon, 1987).

Occurring simultaneously with the aging of our society is the federal government's attempt to decrease escalating hospital costs through a prospective payment system (Newcomer, Wood, & Sankar, 1985; Wood, Hughes, & Estes, 1986). With this system, many elderly individuals are being discharged "sicker and quicker", either to home or to long-term institutions for further assistance that prior to prospective payment had been performed through nursing services in acute care hospitals (Kornblatt, Fisher, & McMillan, 1985; Krup, 1985). The average length of hospital stay was 4.9 days in Oregon's urban hospitals and 4.0 days in rural facilities in 1987 (Office of Health Policy, 1988). These are short hospitalizations as compared to an average length of stay of 9.8 days in 1974 and 6.0 days in 1984 (Bragg & Lovdale, 1986). Earlier discharge suggests that families must be prepared and willing to perform technically difficult, often painful, procedures for family members in the home.

Earlier changes in Medicare regulations resulting from the passage of the Omnibus Reconciliation Act of 1980 were intended to make acute home care services more accessible to the elderly and reduce the overall costs of an acute episode. However, the limited number of formal services provided through the current medically oriented reimbursement system and the increasing number of home care service denials have only

served to widen the gap between care needs and care available (Bowers & Musser, 1988; Goodman & Tate, 1988; Reif, 1988).

Accessibility to home health nursing care in rural areas is even more limited by the geography, harsh weather, the 30 mile catchment area of many home care agencies, and the limitations of the current reimbursement system. While home health agencies have proliferated nationwide since the advent of the prospective payment system, these agencies have developed primarily in heavily populated urban areas (Bergthold, 1987; Newcomer et al., 1985). Rural home care nurses travel great distances and are expected to increase productivity while visiting elderly patients who are sicker and who have fewer unemployed caregivers available to meet their health care needs. Recent data suggest that rural elderly enter nursing homes two years younger than their urban cohorts due to the lack of alternative community care programs (Greene, 1984).

The successful maintenance of an elderly, disabled individual at home is primarily dependent on the availability and capability of an informal system. However, the availability and structure of the informal support system is changing due to the increasing age of many caregivers, the multiple roles of the middle-aged caregivers, greater geographic distances between offspring and parents, and the increasing possibility that the informal caregivers will be employed outside the home (Brody, 1985; Brody, Johnsen, & Fulcomer, 1984; Cantor, 1983; Stone, Cafferata, & Sangl, 1987).

Demographic changes affecting the informal caregiving system are particularly apparent in rural areas. The 1980 census revealed that 43

percent of Americans over age 65 live in rural settings and 60 percent are women (Talbot, 1985). The migration patterns of the 1970s have resulted in older adults moving to rural areas while the younger people have moved away, potentially isolating the elderly from accessible family support. In addition, the recent economic crises in the agricultural and logging industries have encouraged an increase in the number of rural working women; thereby, limiting their availability to provide in-home care (Hughes, 1987). These recent social changes make the elderly, particularly the rural elderly, vulnerable to lack of home caregiver resources to meet their care needs.

A lack of congruency between what patients and families and health care providers perceive as needs impacts the discharge planning process and the appropriate match of needs with resources (Caradoc-Davies, Dixon, & Campbell, 1989; Kromminga & Ostwald, 1987; Michels, 1988; Waters, 1987; Wolock, Schlesinger, Dinerman, & Seaton, 1987). Furthermore, it is often assumed that no outside help or planning is needed for discharge to home if a family member is available (Michels, 1988; Wolock et al., 1987). An inappropriate match between the individual needs and environmental resources may result in unmet health care needs, in early admission to an institution, unneeded hospitalizations, duplicative health care services, poor health outcomes for the patient, or an exhausted, frustrated family support system. Thus, it is imperative that the continuity of care needs of elderly patients and their families following hospital discharge are understood and that planning is provided to assure an appropriate fit between individual needs and environmental resources.

Purposes of the Study

No systematic examination has been made of the comprehensive continuity of health care needs of the elderly, from their perspective, and the utilization of resources, following discharge from acute care to home. For the nursing profession to impact the continuity and quality of care delivered to our rapidly growing elderly population, more research and instrument development are clearly necessary (Anderson, 1985; Lauver, 1985; Mundinger, 1984; O'Connor, 1984; Phillips & Cloonan, 1987; Reinhard, 1986). Thus, the purposes of this study are to: (a) explore the rural/urban differences in the health care needs of the elderly, from their perspective, during the transitional period following discharge to home from an acute care facility; (b) examine the extent to which the formal and informal support systems are meeting the care needs; and (c) evaluate an instrument that identifies health care needs and resource utilization, from the patient's perspective, following discharge.

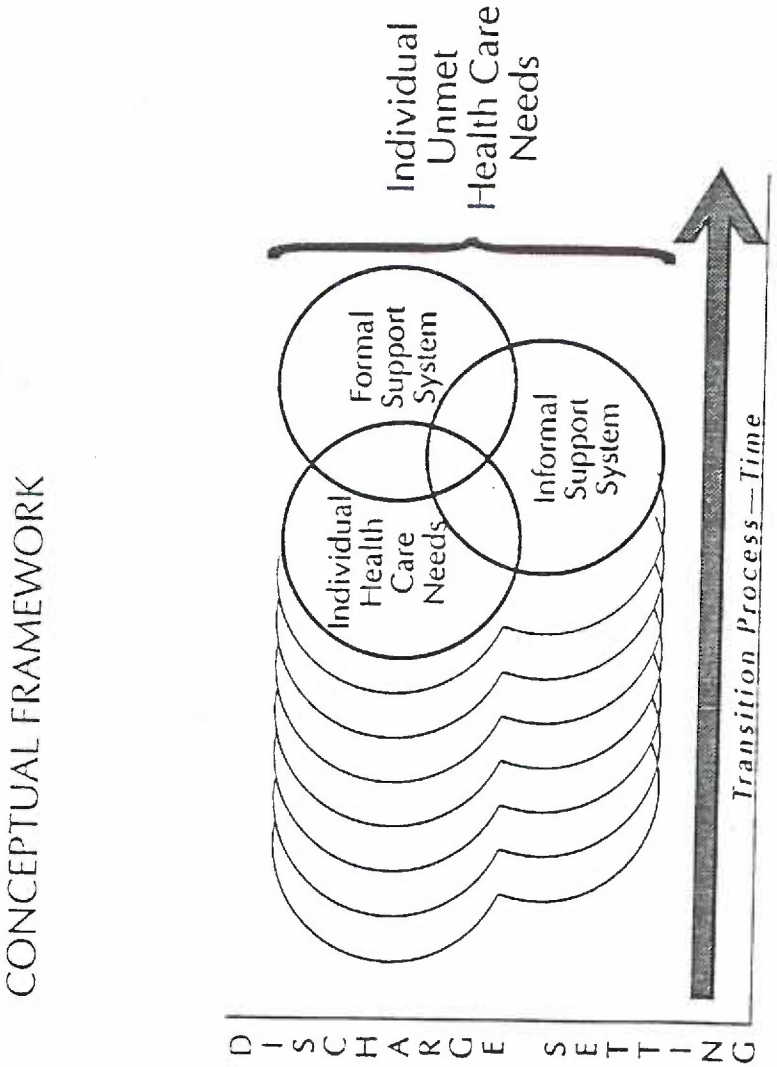
CHAPTER 2

Conceptual Framework

The conceptual framework for this study is based on the theoretical perspective of person-environment fit (P-E Fit). Cassel (1972) used the P-E Fit theory to study the relationship of environmental structure, particularly housing, and mental health. Kaplan, Cassel and Gore (1977) adapted Cassel's conceptualization of P-E Fit to explore the mechanism in a social environment that maintained, produced, or removed the supply of supports available to an individual. The use of P-E Fit in this study was founded on the notion that "goodness of fit between person and environment depends upon a match between the demands of the environment and the person's abilities to meet them on one hand and the needs of the individual and the resources from the environment available to satisfy these needs on the other" (Broadhead, Kaplan, James, Wagner, Schoenbach, Grimson, Heyden, Tibblin, & Gehlbach, 1983, p. 528). Using this conceptual framework, meeting the needs of the discharged elderly is based on an appropriate match between the health care needs as identified by the patients and their families and the utilization of services that are provided by their formal and informal support systems (see Figure 1).

Within this framework, the antecedent demographic variables of age and gender are associated with individual characteristics while financial resources, marital status, and living arrangement are associated with environmental resources. The discharge setting, whether rural or urban, is the demographic variable of primary interest. The conceptual model depicts discharge from an acute care facility as the

Figure 1. Conceptual Framework



transitional event. The health care needs and the environmental resources are first perceived at the time of this event. Intersecting circles, representing the health care needs and resources of the elderly person, portray the need to study these variables collectively, rather than in isolation.

The process of transition into self-care or informal caregiving that occurs after an individual is discharged from an acute care institution has been defined as a time of change and development. During this transition period, studies have shown that the health care needs may not only change but also become more realistically identifiable. These changing health care needs of the ill or disabled individual are met through a complement of self-care and the services of the informal and formal support systems. The transition period ends when the individual has become independent in meeting his/her own health care needs or the informal system and the formal system have developed a complementary profile of services to meet the health care needs of the ill individual. It is this complementary profile or match of resources with the care needs of the individual, conceptualized as P-E Fit, that will determine the extent to which a continuing array of unmet care needs continues to exist. In this study, the health care needs as defined by the patient and/or a family member were assessed at 2-4 days and 19-23 days after discharge. The availability and utilization of the formal and informal systems were determined at each contact point. Unmet needs were defined as those needs that were still present due to the unavailability, inaccessibility, or non-utilization of the formal and informal systems.

Selected Review of the Literature

Using the framework of Person-Environment Fit, the literature review begins with a discussion of the transition into the home caregiving situation, followed by a critique of the major demographic variables affecting care needs. The health care needs, identified as functional, behavioral, knowledge and skilled care needs, and the availability and accessibility of the formal and informal systems are defined and critiqued from research conducted primarily since the advent of a prospective payment system in 1983. Included in this section is a selected review of instrumentation previously used to identify needs from the patient's perspective. This section ends with the assumptions of the study and the research questions. Support for the study of rural/urban differences is incorporated within the discussion of each section.

Transition to Care at Home

Transition is a multiplex concept related to change and development over time, with movement from a period of disruption to a period of more stability (Chick & Meleis, 1986). The days following discharge can be a period of great vulnerability and anxiety, because the discharged person is unlikely to have fully recovered his health and strength at time of discharge. Further, the total care offered in the hospital environment can create dependency, making the return to self-care more difficult (Waters, 1987). A smooth transition from acute care to home depends on a collaborative effort among patients, families, and health care professionals. Patient needs must be identified and

evaluated and provision must be made to prepare patients for movement from one level of care to another (Kromminga & Ostwald, 1987).

Personal experience and the literature suggest that there are at least two pivotal times in the early stages of family caregiving when the changing needs of the ill elderly may influence the ability and the decision of the informal system to maintain care at home. These periods are from 24 to 72 hours and from two to three weeks after discharge (Michels, 1988; Waters, 1987).

Only one qualitative study was found that investigated the early transitional period from hospital to home. Michels (1988), in an exploratory study of 40 patients, concluded that the transition process from hospital care to home care was not completed during the first week after discharge. He reported that while most of the sample had received discharge instructions, more than 50 percent still had questions about their aftercare. Most of the sample could identify changes in health status, but could not assign the importance of these changes. Only one-third of the sample reported that someone had discussed what changes or problems to anticipate. Michels concluded that a caregiver network was essential in maintaining an ill individual in the community. While this study identified early care needs following discharge, a longer exploration of the transitional period is needed. Furthermore, while the average age of the sample was 62 years, the ages ranged from 21 to 89; therefore, caution is necessary in generalizing these findings to an elderly population.

Three studies examined the care needs of elderly persons discharged from acute care to home, with the times of assessment varying

from three days to six weeks (Caradoc-Davies et al., 1989; Waters, 1987; Williams & Fitton, 1988). In interviewing 58 patients at one week and six weeks after discharge, Caradoc-Davies and colleagues (1989) found that the adaptive skills which had improved during the hospital stay, particularly independence in mobility and continence, were poorly transferred to the home. Further, health professionals placed more emphasis on functional ability as the primary predictor of discharge needs while patients and their families perceived social and psychological problems as warranting the greatest attention (Caradoc-Davies et al., 1989). Specific changes in health care needs during transition were not reported.

Support for the findings of Caradoc-Davies and colleagues (1989) was reported by Waters (1987). Waters conducted structured interviews, five to ten days after discharge, and found increased disability in activities of daily living (ADL), particularly bathing, and in instrumental activities of daily living (IADL) that require heavier labor. This decrease in functional ability occurred after an average hospital stay of 23 days, a length of stay that is hardly comparable to the current average stay of 4 to 5 days. It is not known if today's shorter lengths of stay increase or decrease the functional status of the elderly after discharge from acute care. Again, specific changes in care needs were not reported.

Another recent study surveyed a case matched sample of 133 elderly persons readmitted to the hospital within 28 days after discharge. It projected that 59 percent of the readmissions could have been avoided with proper support and management at the time of discharge (Williams &

Fitton, 1988). They further reported that six percent of the sample experienced unplanned readmissions, within a median of nine days, that were basically contributed to caregiver problems and/or too early discharge. Overall, the studies reported that care needs changed during the transitional period, with needs generally increasing after return to the community.

Nurses and patients also disagree about health care needs of the patient. For instance, in examining the needs of a younger population of cancer patients at discharge, at three days, and three weeks after discharge, Arenth and Mamon (1985) found disagreement between nurses and patients in the ability of cancer patients to perform ADL. In assessing the ability of the patient to perform bed/chair transfers, there was 74 percent disagreement. Disagreement increased to 89 percent when determining the ability of the patient to perform unassisted bathing. Overall, the more complex the ADL, the greater the percentage of disagreement. While their study explored the transitional period into home care after discharge, variations in health care needs between discharge and three weeks were not reported. It is possible that since the sample for this study was younger, the patients may not have been suffering from the chronic conditions which often accompany the acute problems of the elderly and require continuing care.

In another study, public health nurses, who also functioned as discharge planners, interviewed forty-four patients by telephone from three to ten days after discharge. The investigators reported that 91 percent of their patients' discharge needs were met by formal and informal services (Kromminga & Ostwald, 1987). During this transition

period following discharge, however, thirty-seven percent of the subjects had additional questions, unanswered at discharge, that required referral.

In a longitudinal study conducted prior to the prepayment reimbursement system, one hundred and one individuals over age 70 were interviewed prior to discharge and then at home at two weeks, two months, six months and twelve months after discharge (Johnson & Fethke, 1985). The average length of hospital stay was 15.92 days. Discharge problems were identified as changes in health status, hospital readmission, non-compliance, increased dependency, decreased mental status, or death. Thirty percent were readmitted during the first six weeks in the study. Two-thirds of the sample experienced declining health during the year, with 14 individuals moving to less independent living situations. More than half of the subjects reported problems with discharge orders. While 86 percent of the subjects needed discharge planning according to a high risk protocol, only 20 percent received such preparation. In addition, the study reported that only 35 persons had regained or exceeded their pre-hospital health status. Unfortunately, the study did not report what specific changes occurred in health needs or health status at each point in time.

In summary, a number of studies have examined the immediate discharge needs of various populations during the transitional period from care in the hospital to care in the home. The studies, however, either reported the needs at only one point in time or did not report specific changes in needs found at various points in time. The research, therefore, leaves unanswered questions regarding specific

needs following discharge and how care needs may change over time. Further, patients and families were able to identify their health care needs and were able to identify needs more specifically after a period of caregiving. Finally, the literature suggested that health care professionals and patients and their caregivers differed considerably in determining which health care needs were important after discharge.

Demographic Variables

The elderly population is a heterogeneous group; however, there are census and aggregate data that are helpful in planning for the demand and utilization of health care resources for this segment of our society. Based on the literature review, geographic location, age, gender, marital status, financial status/insurance coverage, and living arrangement were selected as the major demographic variables affecting continuity of care following hospital discharge.

Geographic Location

Rural Americans have been depicted throughout the media as independent and reliant on family and friends rather than formal services. As the American population ages and as more young people move from rural to urban settings to find work, rural elderly may not have the informal services to remain self-reliant. Therefore, Coward and Lee (1985) have strongly urged that any research designed to expand the knowledge and information on rural residents must be approached with an examination of rural/urban differences.

Population density is one method used to define rurality. This definition is particularly relevant in rural areas where the number of people per square mile poses problems in accessibility and availability

of resources. The criterion of fewer than 500 people per square mile is often used to designate rural (Rosenblatt & Moscovice, 1982). Elison (1986), proposed that fewer than six people per square mile represents the continuing American frontier and may be a more appropriate designation of rurality for many western states. Nationally, Oregon ranks sixth as a frontier state with 27 percent of its land in frontier status. In the state of Oregon, only Multnomah county has a population density of greater than 500 people per square mile with eleven of 36 counties having population densities of fewer than six persons per square mile. Eight additional counties have fewer than 20 people per square mile. This vast variation in population density and services among Oregon counties, often result in a fragmented health service delivery system (Oregon County Public Health Profiles, 1988).

In the 1970s and 1980s, migration patterns resulted in faster growth in non-metropolitan areas than in metropolitan areas (Aday & Miles, 1982; Hughes, 1987). While it has been suggested that the trend is reversing, this migration pattern, along with the aging trend, has increased rural elderly populations with 43 percent of the nation's elderly currently living in rural areas (Talbot, 1985). In Oregon, for example, twenty-eight of the 36 counties now have greater than 13 percent of their populations aged 65 and older as compared to 12 percent of the national population in this age group. In 1988, Oregon had 15 counties with an elderly population of more than 15 percent of their general population, compared to thirteen counties in 1986. In one county, 23.6 percent of the people are over age 65 (Oregon County Public Health Profiles, 1986; Oregon County Public Health Profiles, 1988).

One-half of all Oregonians are considered rural dwellers (Office of Health Policy, 1988) as compared to one-third nationwide (Bigbee, 1984; Mutel & Donham, 1983; Reilly, Legge, & Reilly, 1980; Rosenblatt & Moscovice, 1982).

In 1987, Oregon Senate Bill 27, categorized hospitals according to size and location. By consensus of the state task force, thirty-six or nearly half of all the state's hospitals were considered to be located in rural areas. Eight of the 36 rural hospitals were designated as "essential" rural hospitals. These "essential" rural hospitals have fewer than 50 beds and are located between 44 and 130 miles from the next nearest hospital. There are 25 rural not-for-profit primary health clinics in the state, of which 17 are operated by nurse practitioners or physician assistants (Office of Health Policy, 1988). Thus, it is not enough to identify health care needs after discharge. An examination of the availability of services in particular geographic settings must also be considered when evaluating continuity of care after discharge.

Age

The general population in America continues to age as mortality rates decrease. For elderly between 75 and 84 years and for those over 85 years, mortality rates have decreased 31 percent and 23 percent, respectively, between 1960 and 1983 (Rabin & Stockton, 1987). Further, it is estimated that mortality rates for those over 65 will continue to drop at a rate of two percent a year for the next 50 years (Brody, 1988). Yet, increasing age, by itself, has not been identified as a critical variable in determining hospital discharge needs. "Elderly people suffer from relatively few illnesses that are unique to their age

groups. What makes illness more severe in the elderly is the prevalence of multiple chronic health problems and the possibility that treatment for one disease might exacerbate the problems caused by another disease" (Phillips & Gaylord, 1985, p. 14). Eighty-seven percent of the rural elderly suffer from at least one chronic condition while only 80 percent of the urban elderly report chronic problems. Chronic disability in adults over age 65 results in 50 percent more restricted days of activity per year than is found in adults, age 45 to 64 (Phillips & Gaylord, 1985). While only 6.7 percent of those individuals between the ages of 65 and 74 need assistance with activities of daily living, this percentage increases to 39.3 for those over the age of 85 (Kingston et al., 1986; Zarit, 1988). Coward and Lee (1985) reported that men living on farms, aged 65 to 74, have more restricted activity days than their urban cohorts or women of the same age. Farm men, however, also reported fewer days of restriction to bed. Farm men and women, beyond 75 years, reported more days of restricted activities than nonfarm residents. These statistics support a major caveat expressed by many gerontologists; that is the need to recognize heterogeneity in the aging population, particularly in relation to dependency needs.

Marital Status

Eighty-three percent of men, aged 65 to 69, are married as compared to 54.8 percent of women of the same age. An even greater discrepancy in marital status occurs as one ages beyond 70 years. Forty-eight percent of men over age 85 are married as compared to only 8.4 percent of older women (Coward, Cutler, & Schmidt, 1988). In comparing the marital status of older rural and urban residents, 52.0

percent of persons aged 65 years and over in metropolitan communities are married, while 73.3 percent of the non-metropolitan farm elderly and 56.1 percent of the non-metropolitan nonfarm elderly are married (Coward et al., 1988).

Gender

Aging, in general, has been called a woman's issue (Robinson, 1986). In 1900, the number of men and women in the United States was about equal. In contrast, by 1980, there were approximately 100 women for every 68 men. The discrepancy in numbers increases as one ages, with only 55 men for every 100 women over age 75 and 44 men for every 100 women after age 85 (Cowling & Campbell, 1986).

Elderly women are more likely to reside in urban areas or non-metropolitan communities than in rural areas (Coward & Lee, 1985). Yet, sixty percent of all rural elderly are women (Talbot, 1985). Elderly widows are more likely than elderly widowers to leave the farm and migrate to small towns (Coward & Lee, 1985). This migration pattern may result in more elderly widows moving away from the informal support of family and friends (Mercier, Paulson, & Morris, 1988).

Living Arrangement

Eighty to 90 percent of all home care is provided by families with only five percent of home care provided by a formal agency (Brody, Poulschock, & Masciocchi, 1978; Cantor, 1983; Newhouse & McAuley, 1987; Rabin & Stockton, 1987). McCann (1988) reported that 50 percent of her sample (N=12) cited the lack of family support as a problem. Forty-two percent reported that family members were available but were unwilling to provide caregiving. McCann's findings are extremely important since

the availability and accessibility of a spouse or close family member has been shown to be a major predictor of discharge to the community (Narain, Rubenstein, Wieland, Rosbrook, Strome, Pietruska, & Morley, 1988; Wachtel, Derby, & Fulton, 1984; Williams & Fitton, 1988).

Only one in six rural elderly reportedly live alone as compared to one in three urban elderly. This statistic is skewed, however, by rural men since only 48 percent of rural elderly men live alone as compared to 62 percent of urban elderly men (Coward et al., 1988; Mercier et al., 1988). Shanas (1979) reported that, when ill, men were more likely to be cared for by their spouses while women were usually cared for by their children. Narain and his colleagues (1988) found that within six months after discharge from an acute care setting, an elderly individual was more apt to be admitted to a nursing home if informal care was provided by children than if care was provided by a spouse. Women were two to three times as likely as men to report that no one cared for them when they were ill. Being a woman and living alone or with children has been shown to increase the risk of institutionalization (Caradoc-Davies et al., 1989; Grauer & Birnbom, 1975; Narain et al., 1988; Rabin & Stockton, 1987; Simmons, 1986; Wachtel et al., 1984).

Financial Status/Insurance Coverage

Financial needs are defined as the lack of adequate financial resources necessary to meet current health needs or additional care needs resulting from illness or poor health. The financial means to pay for needed services has been identified as a major variable in determining community or nursing home placement (Johnson & Fethke, 1985; Lowe-Phelps, 1988; Marks, 1987; Rabin & Stockton, 1987; Shine, 1983;

Simmons, 1986; Synder & Keefe, 1985; Wolock et al., 1987). Additionally, the ability to pay for long-term care continues to be the major factor in determining the demand for and availability of home care (Bowers & Musser, 1988; Rief, 1988). Reif (1986) suggested that while about four percent of the American elderly are receiving home health care services, at least ten percent of the elderly could use this service if the financial and eligibility barriers were removed.

According to National Long-Term Care data, fourteen percent of all homecare expenditures come from individual pocketbooks (Stone et al., 1987). The financial needs of the elderly are often dependent on the retirement program for which they are eligible. While many urban elderly are eligible for retirement plans from their work, many of the rural elderly were self-employed and, therefore, not eligible for such benefits. Since the rural elderly also represent a large proportion of the nation's poor elderly, they are often unable to afford the Medigap insurance that shields many elderly from the throes of poverty due to illness (Coward & Seward, 1985). In addition, many rural elderly own their homes or farms which are difficult to sell during the current farm crisis, leaving them isolated and trapped when illness does strike.

Results of a recent survey of 333 elderly community residents indicated that the demands for long-term care are strongly biased by costs unless the services are covered by third party payers. "Approximately 85% of the respondents indicated that they would use long-term care services when the need arose if the costs were covered by insurance" (Taylor & Chapman, 1986, p. 13). However, only 25 percent of the respondents reported that they would use these same services if

required to pay out-of-pocket. Thirty percent of the respondents had discontinued services for financial reasons. Further analyses revealed that as incomes rose, the interest in self-pay for services increased. Those elderly with incomes above $15,000 were significantly more interested in long-term services.

In contrast, Marks (1987) in his study of 50 caregivers, found that financial burden was not identified as a problems by 66 percent of caregivers with incomes below $15,000. Azzarto (1986) argued that families can provide the care but cannot afford the respite or alternative services; therefore, their responses to financial questions are based on the caregiver's interpretation of the questions and not necessarily on how families could be supported to provide services over longer periods of time. While Walker and Walker (1987) reported rural families experienced greater financial and business strain than their urban cohorts, Marotz-Baden (1988) reported that 52 percent of the urban families (N=94) as compared to 31 percent (N=83) of the rural families experienced increased strain on family finances due to medical and dental expenses. The unknown economic and stress characteristics of the non-respondents were limiting factors in both studies.

In summary, while the elderly may need community-based care services, income levels as well as third-party eligibility, specifically Medicare and Medicaid regulations, limit access to services. The current Medicare system, narrowly focused on skilled care needs, severely limits access to services for the functional, mental, and psychosocial limitations that often accompany illness episodes in the elderly. This creates caregiving situations which promote premature

institutionalization. Age, gender, marital status, living arrangement, financial resources, insurance coverage and geographic location have not been shown as predictive of continuing health care needs after discharge from acute care. Yet, studies and statistical reports suggest that increasing age and low incomes, particularly for women, may correlate with greater unmet health care needs. Furthermore, widows, particularly in rural areas, may not have the informal support network necessary to maintain living in the community following acute illnesses or degenerative changes due to chronic diseases.

Individual Health Care Needs

The assessment of health care needs is based on the assumption that an individual condition requiring relief has a solution that can be translated into a set of services corresponding to the identified deficiencies (Kane & Kane, 1987; McKillip, 1987). Reif (1988) would contend, however, that needs are often incorrectly identified because they are based on services that have been developed and funded. Thus, needs, as perceived by the patient, may be conditions that cannot be translated into a set of services. It is important that nurses are prepared to assess both needs that can and are being met by the informal and formal systems as well as those that are not being met by these systems. Based on a literature review and personal home health nursing experience, health care needs of elderly discharged to home require assessment in four major areas. These areas are: (a) functional needs defined by deficits in activities of daily living (ADL) and instrumental activities of daily living (IADL); (b) behavioral needs including the need for frequent supervision, and safety and/or protective care

resulting from cognitive deficits and/or depressive or anxious states; (c) knowledge deficits due to the lack of information or understanding of changes in health, nutritional requirements, emergency services, caregiving skills, and/or alternative services availability; and (d) skilled health service needs (Arenth & Mamon, 1985; Grauer & Birnbom, 1975; Johnson & Fethke, 1985; Michels, 1988; Rinke, 1988). Studies conducted primarily since the advent of a prospective payment in 1983 that reported assessment in one or more areas of need were selectively reviewed.

Functional Needs

Functional needs are associated with personal care needs, commonly known as activities of daily living (ADL) and instrumental activities of daily living (IADL), and the management of these needs. ADL are usually defined as eating, continence, transferring, toileting, bathing, dressing and grooming, and ambulating. Personal care management activities such as meal preparation, shopping, performing household chores, yard work, and laundry, managing finances and medications, and transportation arrangements are usually defined as IADL (Brubaker, 1987). While most elderly can perform daily activities without assistance, fifty-six percent of those over 75 are limited in one or more ADL due to chronic conditions, with 86 percent of all elderly suffering from one or more chronic conditions (Harper, 1988). Functional health is of particular importance to rural residents who define health as "the ability to do work or to be productive in one's role" (Coward & Lee, 1985; Weinert & Long, 1987). For the rural dweller, seeking health care is one indication of losing control of one'

health, one's independence and/or one's ability to work. Yet, functional needs are not always associated with the need for personal care nor home care (Rabin & Stockton, 1987).

The need for assistance with functional ADL and IADL has been studied using a variety of methods and assessment instruments. These variations have resulted in conflicting reports describing functional needs. Using the 1979 and 1980 National Health Interview Survey data, Weissert (1985) divided dependency needs into personal care (ADL), household activities (IADL), mobility, and health services. Personal care needs did not include help with incontinence problems. Weissert found that 7.1 percent of the total noninstitutionalized population between 65 and 74 and 20.6 percent of the population over age 75 needed some assistance with primary ADL needs. From the 1982 National Long Term Care Survey, Rabin and Stockton (1987) described bathing as the primary indicator of loss of independence. They further reported that when ADL and hygiene functions were impaired, the elderly were more likely to be dependent than when IADL functions were impaired. While national surveys are helpful in identifying functional needs of large population groups, they are usually too non-specific to be useful in ascertaining the definitive discharge needs of a smaller sample. Furthermore, these two large surveys were conducted prior to the prepayment system and may not accurately reflect the functional needs of elderly living in the community in 1990.

Dichotomous scales developed by Katz, Ford, Moskowitz, Jackson, & Jaffe (1963) and Lawton and Brody (1969) were used to assess functional status in three studies of elderly after hospital discharge. Within six

months after hospital discharge, functional status was found to be the strongest predictor of nursing home placement, length of hospital stay, and mortality in 396 people over age 70. The average length of hospital stay in this study was 17.3 days (Narain et al., 1988). Wachtel, Fulton, and Goldfarb (1987) concurred with these findings in their study of 337 persons, aged 65 years and older. They found, however, that the availability of a home caregiver was also a major predictor of placement decisions following acute care. Waters (1987) found household ADL, defined in the other studies as IADL, and bathing to be the most difficult tasks for patients to complete. Over 50 percent of the respondents in her study of 32 elders required assistance with bathing after hospital discharge. Average length of stay in this study was 30 days. The findings in these studies suggest that functional needs do affect the ability of a patient to function independently after discharge. The studies also supported the need to look at which ADL and IADL are the most common indicators of care needs after discharge and the length of time that discharged persons require assistance in each of these activities. Average hospital stays of 17 and 30 days in these two studies, respectively, are certainly not congruent with the post-prepayment system average hospital stay of approximately four to five days (Office of Health Policy, 1988). It is not known if shorter hospital stays increase or decrease an older person's ability to perform ADL and IADL after discharge.

Wolock et al. (1987) interviewed 69 subjects with life-threatening or complicated diagnoses six to eleven months after discharge. While only 70 percent of this sample was over age 60, 43 percent were still

experiencing difficulty ambulating outside the home and 42 percent needed assistance in performing IADL. This study validates the continuing need for personal care and management by a large percentage of persons many months after discharge.

To further compound the conflicting reports of discharge care needs, it has been demonstrated that disabilities in ADL and IADL often increase after discharge from the hospital to home (Caradoc-Davies et al., 1989; Michels, 1988; Waters, 1987). In a study of 58 elderly, Caradoc-Davies and colleagues (1989) reported that patients experienced a decrease in mobility, an increase in urinary incontinence, and poor transfer of adaptive skills between hospital and home. Brown (1988), in her continuing assessment of the discharge needs of veterans, suggested that an instrument such as the Barthel Index, which differentiates between urinary and fecal incontinence is very important in determining discharge needs. With as many as 16 percent of all elderly experiencing incontinence episodes, lack of bowel and bladder control has been identified as a major determinant in nursing home placement (Rabin & Stockton, 1987). These studies support assessment of specific ADL and IADL needs and personal care management by the formal and informal systems following discharge.

Transportation problems have also been identified as major IADL obstacles for the rural elderly (Johnson, 1988; Nelson, 1980; Talbot, 1985). Immobility compounded by inadequate transportation resources increases the experience of isolation and accessibility to health care and shopping. While elders may be physically able to perform their own shopping, they have no public means of getting to the store,

particularly in rural areas. Many rural elderly continue to own a car but are unable to drive. Not only are public transportation systems nonexistent in rural areas but Greyhound and Trailways have eliminated many of their rural stops, thereby diminishing a former source of transportation for many rural elderly to physicians and to visit hospitalized or disabled family members (Talbot, 1985). Yet, this problem has not been included in any of the research studies.

Thus, all ADL, particularly mobility, bathing, and continence, and all IADL, particularly transportation in rural areas, have been identified in the literature as functional care needs following discharge. Functional needs, however, represent only one domain in the assessment of personal care needs following discharge from acute care. Other studies have also identified behavioral, knowledge, and skilled care needs as important areas in planning for continuity of care.

Behavioral Needs

Behavioral needs are defined as the need for frequent supervision, safety and/or protective care resulting from cognitive deficits and/or anxious or depressive states. Mental health providers estimate that from 18-25 percent of those over age 65 have significant mental health symptomatology that increases with age (Harper, 1988). With an increasing prevalence of Alzheimer's disease, whose victims require continuous caregiving in the later stages of mental and social regression, the percentage of older persons needing mental health assistance will only increase (Maraldo & Solomon, 1987).

The most common psychopathologic condition in the elderly is depression, which affects men more often than women. It is estimated

that 20 to 50 percent of those over age 65 experience depressive episodes that interfere with functioning (Brown, 1988; Harper, 1988). In addition, suicide in elderly white men occurs at four times the national average for other groups (Harper, 1988). These figures emphasize the need to determine cognitive and social or behavioral impairments in determining health care needs.

Polypharmacy in the elderly represents yet another major health problem. Currently, the elderly account for 33 to 40 percent of all prescriptions, with an expected increase to fifty percent by the year 2000. Older Americans are given an average of ten different medications after each hospital admission. Further, 243,000 elderly, almost 17 percent of annual elderly hospital admissions, are admitted specifically because of adverse drug reactions. This is in comparison to only three percent of total hospital admissions for drug reactions (Eskeli, 1989; Harper, 1988). In addition, 163,000 older adults suffer from serious drug-induced cognitive impairments with 60 percent of hospital admissions of men over age 60 related to drug or alcohol consumption (Eskeli, 1989). These somber statistics emphasize the need to assess for polypharmacy causes of mental or functional dysfunctioning in determining care needs and referrals.

Social dysfunction and disruptive behaviors have been found to consistently influence caregiver stress. The effect of behavioral dysfunctions of care receivers on 614 caregiving families was studied by Deimling and Bass (1984). Social functioning of the care receiver, determined by the elder's level of cooperativeness, withdrawal, and isolation, predicted problems with family relations and caregiver

health. Disruptive behaviors were identified as yelling and swearing, lack of respect for others' privacy, and criticizing and complaining. While cognitive incapacity in the elder was seen as the result of illness or age, social dysfunctioning and disruptive behaviors were seen as deviance by the caregivers. Cognitive incapacity was statistically non-significant when social functioning and disruptive behaviors were entered into a predictive regression model of caregiver stress. This finding supports the need to assess the elder patient's communication and interaction patterns more thoroughly than cognitive impairment when determining care needs at the time of discharge.

The notion that cognitive impairment can be embedded in the assessment of other variables was further supported by Wachtel and colleagues (1987) who found cognition to be strongly correlated with IADL. When IADL scores were entered in a multiple regression equation predicting discharge placement, the statistical effects of both age and thought processes were significantly reduced.

In a more recent qualitative study of 60 rural and urban caregivers of cognitively impaired elderly, Bowers (1987) divided the caregiving tasks into five categories. The first category, anticipatory, included possible caregiving needs. The second, preventive, included preventing illness and illness complications. The third, supervisory, included tasks that were primarily case managing. The fourth category, instrumental, included physical care tasks and is the category often studied in the caregiving literature. The fifth category, protective caregiving, included the behaviors and tasks directed toward protecting the elderly person from consequences that

could or could not be prevented. Fundamental to this category were behaviors that protected the elderly person from realizing that he or she was becoming more forgetful or a danger to self. From Bowers' work, protective caregiving was identified as the most difficult task of the caregiving phenomenon. The caregivers in this study explained that the stress of caregiving was not related to physical care tasks but rather to emotional tasks. Distinguishing among tasks and time spent in tasks was not relevant to understanding care receiver needs and further supports the need to use multidimensional assessments. While Bowers studied rural and urban caregivers, she did not report any differences in the perception of caregiving tasks related to geographic setting.

Unfortunately, cognitive impairment has often been used to exclude subjects from studies of discharge needs (Waters, 1987) or has not been reported (Arenth & Mamon, 1985; Caradoc-Davies et al., 1989; Kromminga & Ostwald, 1987; Michels, 1988; Wolock et al., 1987). Thus, the number of studies reporting a correlation between cognitive impairment and service needs is limited. Deteriorating mental status has been shown to increase the stress on the care providers resulting in the decision to institutionalize (Birkel, 1987; Bowers, 1987; Cantor, 1983; Clark & Rakowski, 1983). In addition, diminishing mental status has been implicated with greater mortality in-hospital and following discharge (Narain et al., 1988) and predictive of nursing home placement post-hospital discharge (Narain et al., 1988; Wachtel et al., 1987). It has been reported that rural elderly are less apt to admit mental health problems than their urban counterparts (Scheidt, 1985). Therefore, assessment of behavioral needs must not be overlooked in deference to

the more easily addressed ADL and IADL needs and changes in mental status. In addition, when selecting an assessment instrument, consideration must be given to whether the psychometric evaluation has been conducted in an institutional or noninstitutional setting (Harper, 1988), since the tolerance level and identification of troublesome behaviors may be dependent on setting.

Knowledge Needs

With shorter hospital stays, health care instructions are often given to patients and their families at the time of discharge with no provision for follow-up. Yet, the need for health care related instructions at the time of discharge and reinforcement of those instructions after discharge have been identified as critical in the informal caregiving situation (Arenth & Mamon, 1985; Caradoc-Davies et al., 1989; Drew, Biordi, & Gillies, 1988; Michels, 1988). Using structured interviews with 56 cancer patients at three days and three weeks after discharge, Arenth and Mamon (1985) determined that more follow-up instructions were needed in the home. The researchers found that while documentation and patient or nurse reports indicated that most of the patients had received discharge instructions, disagreement as to the content of that teaching existed 53 percent of the time in relation to ambulation and 33 percent for instruction in the disease process and site for infection. In addition, nurses underassessed the need for home equipment for minor mobility problems 78 percent of the time.

In a study of 58 elderly discharged from a geriatric assessment unit to the community, professional staff felt that patients and families had received adequate educational preparation for care at home while the patients and families felt that they had only been partially prepared (Caradoc-Davies et al., 1989). Similarly, Michels (1988) found that although most of the patients discharged to home could identify signs and symptoms of changing conditions, they could not assign importance to them. Patients and their caregivers expressed need for information to substantiate their uncertainties and concerns regarding their conditions and caregiving needs. The need for follow-up of important discharge instructions in the home is supported by these findings.

In a comparison study of how non-nurse discharge planners and home health nurses viewed the needs of discharged patients, Drew and colleagues found that nurses focused on physical care needs, health teaching and promotion of independence while discharge planners focused on the means and techniques to support care. With or without referral, nurses reported that the major barrier to care at home was lack of knowledge about care needs with 50 percent of the patients described as poorly prepared to manage care at home. In contrast, a recent study in a small, rural Midwestern community hospital suggested that by using public health nurses as discharge planners, 91 percent of the discharge needs of patients and families were met (Kromminga & Ostwald, 1987). Thirty-seven percent of the subjects, however, had questions regarding access to community-based services.

In a secondary analysis of the 1984 Senior Citizens Needs Assessment, Starrett (1986) found only 50 percent of a stratified sample of 400 elderly individuals were aware of the availability of home care services. Nonetheless, 46 percent of the sample indicated that their ADL were limited by a recent illness and they had inadequate informal support during recovery from that illness. One can presume from this study that the elderly were unaware of the local service options and did not seek out knowledge about the health care options until the time of need. In addition to the lack of knowledge by patient regarding community service availability, general consensus among home-care staff indicated that physicians, the required referral source for Medicare reimbursed home care, were also unaware of the broad spectrum of home-based services (Taylor & Chapman, 1986). Word of mouth appears to be the best advertising but is limited to those with first-hand knowledge (P. Erickson, personal communication, November 4, 1988).

Although Bishop (1984) cited patient and family education and training as an important component in discharge planning, no other studies were found that assessed knowledge needs during the transitional period to home. Clearly, knowledge needs, defined as deficits in information and awareness of: changes in health, nutritional requirements, emergency services, caregiving skills, and/or availability of alternative resources, need to be included in planning for continuity of care.

Skilled Care Needs

One consequence of the prepayment reimbursement system has been earlier discharge of patients from hospital to home who require more

intensive and sophisticated home care. Increasing technological demands have created several issues that need to be considered in discharging patients with acute, high technology needs. Bishop (1984) identified patient screening and selection, patient and family education and training, availability of equipment and supplies, formal psychological and sociological support, clinical management and coordination through one homecare professional, and availability of qualified staff for all services as important factors to consider in discharging patients with high technological needs. It is not clear from the literature if all these factors are currently assessed.

Procedures that were formerly performed only by hospital professional staff are now expected to be accomplished by families in their own homes (Krup, 1985). It has been reported that 83 percent of the current home care caseload are sicker than prior to the implementation of DRGs (Bergthold, 1987) with an increase of 196 percent in the demand for skilled care (Harper, 1988). It is generally agreed that the primary components of high technology home care include total parenteral nutrition, enteral nutrition, intravenous antibiotic therapy, continuous intravenous chemotherapy, and other infusions for pain or dehydration (Anderson, 1985). These high technology services have been added to the skilled home care procedures that were implemented with the original Medicare program. Skilled procedures, such as catheter instillation, ostomy care, wound care, and complex dressing changes, long a mainstay of home health services, have now been identified as requiring lesser technical skills (Patterson, Coe, & Wilkinson, 1988; Spiegel, 1987).

No studies were found that specifically explored the number or types of skilled care needs that the elderly experience following hospital discharge. Neither were any studies found that addressed who is meeting the skilled care needs, how long these needs exist after discharge, and if there are needs that are left unmet by the formal or informal systems. Furthermore, it is not known if skilled care needs are similar or different in rural and urban areas.

Environmental Resources

Informal Social Support

The aim of discharge planning is to ensure that patients who need further care have a continuing care program which follows through on the gains made in the hospital. If the care needs are to be met, the ill and/or disabled elderly must be linked with an adequate support system. A social support system is defined as those informal and formal functions and services which enable an older person to remain independent in the community (Cantor, 1979). The informal support system is generally defined as the care or services provided by a spouse, friend, or relative without a contractual agreement. As the population ages, family caregiving is becoming a frequent phenomenon in today's society, with 70-90 percent of the dependent elderly cared for by family and/or friends (Cantor, 1983; Newhouse & McAuley, 1987; Rabin & Stockton, 1987). Currently, only 1.2 million people receive care in nursing homes as compared to five million elderly people in the community who require care (McCann, 1988). Thus, the myth that families abandon their elder members as the elders become more mentally and physically impaired is not supported in the research literature (Brody,

1981; Brody et al., 1978; Robinson & Thurnber, 1979; Shanas, 1979). Unfortunately, it is often assumed that if a family member is present in the home, no formal services are necessary (Michels, 1988; Wolock et al., 1987).

Conceptually, the notion underlying informal social support networks is the provision of assistance during times of crisis. There are several social forces, however, currently contributing to changes in the availability and structure of the informal network (Sauer & Coward, 1985). With the current aging trend in the population, many elderly may be cared for by elderly spouses or even elderly children. Brody (1985) writes that "while the largest proportion of parent caring daughters are in their 40s and 50s, as many as one-third are either under 40 or over 60" (p. 22). The 1982 National Long-Term Care Survey (Stone et al., 1987) found that one-third of the caregivers were over age 65, with incomes in the poor to near-poor category. They further reported that 10.1 percent of the caregivers were aged 75 or older. The capability of the caregiver can be affected by his/her age and the multiple dimensions of caregiving required by the care receiver.

As the population lives on to older ages, it is not uncommon to see three and four generational families with one-fifth of the caregiver population also reporting the presence of children under the age of 18 in the home (Stone et al., 1987). In their study examining the impact of elder impairments on alterations in family life, Poulshock and Deimling (1984) reported that 20 percent of the sample (N=614) were from three generational families. In homes where demented elderly were provided care, the number of visits by family members and an increased

household size decreased caregiver strain (Birkel, 1987; Zarit, Reever, & Bach-Peterson, 1980). However, when the elder was experiencing physical or functional impairment, increased family size increased caregiver strain.

A major study on caregiving in the Philadelphia area found several subtle differences in the opinions of three generations of women (N=403) regarding a hypothetical transition into family caregiving (Brody et al., 1984). Results indicated that all generations agreed: (a) non-working children should adjust family schedules to accommodate care needs of the elderly; (b) children should provide financial support if necessary; (c) caregivers should not adjust work schedules but if necessary women should adjust schedules before men; and (d) if it becomes necessary to share a household, it should be with the unmarried working or non-working child. There was some disagreement with this last variable by the middle generation. In addition, the middle generation preferred that personal care, meal preparation and housework assistance be provided by formal care systems in contrast to the opinions of the youngest and oldest generations. These findings reflect the realistic view of middle generation women who are approaching the age of parent caregiving at the same time as they are looking at decreasing other demands in their life. All generations recognized the need for a complementary mix of the formal and informal systems in meeting the increasing needs of the aging population. The use of hypothetical rather than actual situations limits the generalizability of these findings.

A five-year longitudinal study of 49 parent-caregivers suggested that: (a) the negative feelings of caregiving increased as the dependency levels of the care receiver increased and (b) women experienced greater emotional and responsibility drain than did men (Robinson & Thurnher, 1979). Only 12 percent of the elders in this study actually lived with the caregivers, with 47 percent of the caregivers visiting their parents on a daily or weekly basis. Generalizability is limited due to the diversity of living situations.

With 60 to 65 percent of parent caregivers employed outside the home, there is the increasing possibility that the daughter or daughter-in-law caregiver will not be available for 24-hour in-home care (Brody, 1985; Brody et al., 1984; Cantor, 1983). The National Long Term Care Survey found that 44 percent of the adult daughters and 55 percent of adult sons were employed. The survey reported almost 12 percent of the daughters and 5 percent of the sons experienced employment termination as a result of caregiving duties. However, the survey cited another 20 percent of the caregivers, primarily daughters, experienced a reduction in work hours, 30 percent rearranged work hours, and almost 19 percent took time off work without pay to fulfill their caregiving obligations (Stone et al., 1987). In addition, Narain et al. (1988) found that elderly who were cared for by children were more likely to be institutionalized within six months of hospital discharge than were elders cared for by spouses.

Due to the unavailability of formal services, the rural aged are often more dependent on the availability of an informal support system (Mercier et al., 1988). Newhouse and McAuley (1987) reported that rural

elders received 90 percent of their necessary in-home care from their informal support system, with only three percent receiving care from formal sources. Further, they reported that those rural elders who did not own a car, were in poor physical health, had more economic resources, and had a friend living close by received more in-home services than did rural elders who did not have these characteristics. Hughes (1987) found that 46.7 percent of farm women and 51.5 percent of non-farm women are now employed outside the home. Yet, only 1.1 percent of the rural elderly reside in homes for aged as compared to 1.7 percent of the urban elderly. These figures jump to 7.8 percent and 10.8 percent, respectively, for the elderly 75 years and older (Hennon & Brubaker, 1988). Clearly, the need to further explore the use of informal resources by rural elderly is warranted by these studies, particularly the need to explore the informal support systems of the isolated, less mobile aged.

In comparing the availability of informal support for rural and urban elderly, Scott and Roberto (1987) found that rural women received more help from friends and children when ill or in need of financial assistance than did urban women. However, the reverse finding was reported for men. Reciprocally, rural elderly provided more support to children and friends than did their urban counterparts. In comparing the "extended familism" among the elderly population, Lee (1988) reported that the phenomenon was experienced more frequently in the eastern regions of the United States than in western regions. Furthermore, he reported that there was more interaction between farm men and their children while the children of rural non-farm elderly were

more likely to have moved away and, therefore, were unavailable to provide in-home care. Lee further reported that 20 percent of elderly women and 24 percent of elderly men saw one child about once a week. These findings do not support the earlier findings of Shanas (1979) who reported that 50 percent of older Americans saw one child at least once a day, with 75 percent of the elderly living within one-half hour of one child. The on-going changes in demographics may account for the differences found in this ten year period.

Thus, families and friends continue to be the major providers of home care needs and the presence of an adequate informal support system is important in maintaining a dependent elderly in the community. Several changes affecting the availability of informal care, however, are occurring in the family structure. There is an increase in women working outside the home, smaller family size, a higher divorce rate, and more families with two generations of elderly, resulting in elderly caring for elderly or younger caregivers caring for two generations of elderly (Rabin & Stockton, 1987; Zarit, 1988). Zarit (1988) suggested that the impact of these changes on family sponsored care will be even greater in the future. Furthermore, provision of informal care varies with the relationship of the informal caregiver to the elderly care receiver, the complementary formal support provided to the ill elderly, and the geographic location of the ill elderly. Lack of an adequate informal support system may result in care needs not being met, institutionalization, or an increase in the use of formal services.

Formal Support System

The formal support system is generally identified as care or services provided by a profit/non-profit or voluntary agency based on a contractual agreement. Formal community resources to the homebound elderly include skilled care services provided through Medicare while personal and homemaker services are provided by Medicaid, Title XX and Title III legislation. In the 1970s, there was a growth in the number of skilled home care agencies (Goodman & Tate, 1988). Prior to 1980, many county health nurses made home visits to the elderly and/or conducted clinics addressing the chronic health problems of the elderly in their communities. However, privatization of health care fostered by Reagonomics resulted in: (a) a 540 percent increase in for-profit home care agencies aimed to meet the needs of the wealthy, urban elderly; (b) an 89 percent growth of non-profit home care agencies, accompanied by a severe decline in home care services by public health agencies; (c) a 21 percent cut in social services when state matching requirements were eliminated with the creation of block grants; and (d) the expansion of multifacility organizations and vertical program implementation in urban settings (Bergthold, 1987; Roemer, 1988). The last public health home care agency in Oregon closed in 1987 due to the lack of state and local funding and support (D. Dodson, personal communication, August 17, 1988). At the present time, there is no known formal cooperative effort between the public health service and the Senior Service Department and/or the Area Agencies on Aging to provide care to non-institutionalized elderly within the state of Oregon (H. Berman, personal communication, August 17, 1988).

From 1969 to 1984, total Medicare expenditures for home care ranged from one to three percent (Spiegel, 1987). Medicare expenditures for home care have doubled since 1983 but still account for less than four percent of the total Medicare budget. Lawmakers are increasingly concerned that the current expenditures, while rising rapidly, are not providing quality care for home care needs (Bowers & Musser, 1988; Butt, 1986; The Nation's Health, February, 1990). Less than 2 percent of all Medicaid expenditures went to home care from 1974 to 1983 compared to the 40 percent for nursing home care (Spiegel, 1987).

Since the advent of a prospective payment system in 1983, the demand for case management services, in-home skilled care, housekeeping services, and in-home personal care has accelerated (Bergthold, 1987; Harper, 1988). Nevertheless, there has been an increase in home care agencies as targets for cost containment (Omdahl, 1987). Since home health care agencies are still paid by a retrospective payment system, many agencies realize too late that the care they have been providing for the elderly is no longer reimbursable under tighter fiscal constraints. For example, intermittent care is "a medically predictable, occasional need for nursing, usually not less frequent than once every 60 days" (Curtiss, 1986, p. 125). The Health Care Financing Administration (HCFA) further defines intermittent care to include daily skilled care for a two to three week period. If the daily care demands exceed the two to three weeks allowed, fiscal intermediaries have usually denied the ensuing visits by claiming that the ill individual is in need of the more expensive institutional care. The number of home care denials increased from 3.5 percent in 1984 to 6.9 percent in 1987,

with some agencies reporting a 30 percent denial rate (Omdahl, 1987). These denials are devastating to the smaller rural agencies who are limited in funds and often provide the only health services to the isolated rural elderly (S. Erickson, personal communication, February 24, 1988).

Continuum of care services are fragmented for all elderly, with greater gaps for rural dwellers. The case management approach to long-term care has been cited as one solution to coordinating and dividing the home care responsibilities of the formal and informal systems (Wahlstedt & Blaser, 1986). But, continuity of care in the community requires respite, day care, in-home care, nutritional services, skilled care, social services, foster care, and capable and available informal caregivers for implementation, services sadly lacking in the rural areas (Coward & Lee, 1985).

There are five areas of concern in the delivery of health and social services in the rural settings; availability, accessibility, service utilization, quality of service, and costs (Coward & Rathbone-McCuan, 1985). In a study of service availability, Nelson (1980) found that rural agencies offered only about two-thirds of the services offered by urban agencies. Forty percent of the rural agencies offered from one to three services as compared to only fourteen percent of urban agencies offering such limited diversity. Funding and professional availability were found to be the primary factors influencing diversity of services.

In 1981, when monies became available under Section 2176 of the federal Reconciliation Act, Oregon received the first Medicaid Waiver

grant. By combining Medicaid monies with funding from the Older Americans Act and Title XX, the Oregon Senior and Disabled Services Division was able to develop a Senior Services System known as Oregon Project Independence (OPI). OPI is coordinated by a case management system where all persons requesting services or referred for nursing facility placement are screened by a registered nurse or social worker who then determines which services are needed by the individual. Services include companionship, home-delivered meals, home care, congregate meals, and special volunteer services. However, only those eligible for Medicaid or those who can afford self-payment receive the services. Therefore, utilization of the program services is limited by financial eligibility. Even with this program, three primary areas of concern were discussed at the 1988 Oregon Conference on Aging. They included the denial of in-home services to many Oregonians, the lack of adequate care in nursing homes, and the lack of adequate, accessible, and safe transportation to provide access to needed services (Report to Governor Neil Goldschmidt, 1988).

Coward (1987) reported, from a sample of 900 elderly, that 17.2 percent were simultaneously using the services of both formal and informal systems. He also found that combined utilization increased as the elder aged. While only 10.9 percent of the elderly between the ages of 65 and 74 were using both services, the percentage increased to 27.7 percent for those 75 to 84 years and 25.5 percent in the over 85 group. Krout (1985) reported that while one-half to one-third of the elderly have heard of senior service centers, hot lunch sites and transportation

help, less than one-third were aware of information and referral programs and home health care.

In conclusion, it has been reported that all elderly are reticent to use public and/or formal services (Sauer & Coward, 1985). The rural elderly, in particular, are often described as self-reliant, independent, and wary of "outsiders" (Coward & Rathbone-McCuan, 1985; Weinert & Long, 1987). Further, formal services for mental health needs are often unavailable and/or underutilized by the elderly population due to stigmatization (Harper, 1988; Johnson & Fethke, 1985; Simmons, 1986; Synder & Keefe, 1985; Wolock et al., 1987).

Although Oregon has addressed the shortage of home-based services to the elderly with Oregon Project Independence, the need for more services still remains a state-wide priority, particularly for people ineligible for Medicaid. There is increasing concern that the shift to community based care may not be appropriate in all situations, particularly when the elderly person may not meet the strict eligibility requirements or when the necessary alternative care services are not available (Bergthold, 1987; Kelly, Shea, & Ross, 1987). The distance or accessibility to services in rural areas is compounded by harsh weather, poor road conditions, increasing costs of fuel, lack of public transportation, and a poor telephone system (Barber, Jelinek, Barbe, Libo, & Randals, 1985; Chen, 1982; Coward & Lee, 1985; Coward & Rathbone-McCuan, 1985). Eighty-two percent of the rural elderly as compared to ten percent of the urban elderly perceive themselves as living far from services. Since the advent of the Area Agencies on Aging, the availability of information and referral services has been

mandated but no comparison of urban/rural utilization of services was found.

The OMPRO Study

Only one study was found that combined the many variables identified as important by this literature review (Bragg & Lovdale, 1986). In 1985, HCFA requested studies looking at the allegation of "sicker and quicker" discharges. The Oregon Medical Peer Review Organization (OMPRO) responded with a study to: (a) assess the effect of the earlier discharges and (b) develop an instrument that would identify those patients most at risk of suffering adverse effects from early discharge.

The study was designed with five phases. Phase one was a retrospective chart review of 343 Medicare paid claims, stratified for variations in hospital size and location and the frequencies of diagnostic-related groups (DRG). The Dependency on Discharge tool developed by Patterson and colleagues (1988) was used to determine needs. Phase two included 220 follow-up telephone interviews, using an OMPRO developed instrument, to determine if discharge had been appropriate. In phase three, 211 patients, identified by discharge planners as having received discharge planning services, were interviewed just prior to discharge using the Dependency at Discharge instrument and the OMPRO extension. In phase four, eighty-four patients and/or caregivers were interviewed at two and five weeks post-discharge, using the same instruments. The last phase included a second retrospective review of 154 hospital selected charts of participants from earlier phases of the study.

Three instruments were developed for use in the study. The Discharge Readiness Scale was developed by gerontology experts to determine medical readiness for discharge. The Level of Care Instrument was an extension of the Dependency at Discharge instrument and divided the patients into four dependency categories. The OMPRO Extension, developed from expert input and a literature review, addressed predictors of poor patient outcome at discharge in addition to the functional/physiological areas in the Dependency at Discharge instrument. The extension included psychosocial factors, chronic illness severity, and formal and informal support factors. The third instrument used in the telephone interviews, questioned ADL and IADL in addition to subjective responses on social support needs, discharge plans and services, and suggestions for improvement.

The study found that only a small percentage (14.3%) of the most dependent patients were not seen by a discharge planner, with the majority of the severely dependent patients being discharged to nursing homes. Follow-up interviews uncovered two cases involving inappropriate placements that were causing serious problems for the patient. It was mentioned that other serious problems were identified in the study, but that family members were able to intervene. Explanations of the "serious problems" were not documented. Patients that lived alone prior to admission were more apt to need fewer services upon discharge. No explanation nor discussion of this finding was reported.

Limitations recognized in the study were: (a) the inability to pre-test the OMPRO extension of the Dependency at Discharge instrument; (b) use of only paid Medicare data to select the first sample resulting

in a 2-3 month time lapse between discharge and the first telephone interview; (c) sample bias in the concurrent sample related to discharge planner selection; and (d) quantifying success of discharge by scoring self-reports of only ADL and IADL abilities. While the study has several limitations, it was the only study that explored functional status, psychosocial factors, the informal support system, and the formal care system in relation to discharge needs. The OMPRO study, while comprehensive and longitudinal, was methodologically flawed. Additionally, it is unfortunate that neither the data nor any psychometric evaluation of the instruments, other than the Dependency at Discharge instrument (Patterson et al., 1988), are available for further analyses.

Review of Selected Instruments

The literature review called attention to the lack of a simple comprehensive assessment instrument that could be used to determine discharge needs from the perspective of the patient and family. "Continued care in the community is determined by whether the patient and carer can manage themselves rather than whether a professional team perceives that they should be able to manage" (Caradoc-Davies et al., 1989, p. 28). Several instruments have been developed to assess functional needs and mental status, but no instrument was found that assessed and evaluated the four domains of care needs, i. e. functional, behavioral, knowledge, and skilled care, identified in this review as important to continuity of care at home.

Functional Scales

The Katz Index of ADL is widely used to determine functional needs (Katz et al., 1963). Katz and his colleagues based their functional assessment on the primary biological and psychosocial functions of feeding, continence, transferring, going to toilet, dressing, and bathing. Independence in each functional area meant performing that function without assistance or supervision. A ranking of performance adequacy in the six functional areas provides a total score. Katz et al., (1963) found the scale to be predictive of the recovery cycle for activity and the need for assistance in personal care in the six functional areas. From personal experience, however, the Katz scale is limited by a single continence score and the inability to differentiate between the need for one or more persons to provide assistance in a functional area.

The Instrumental Activities of Daily Living scale developed by Lawton and Brody (1969) has been widely used to assess patient care management tasks such as shopping, telephone use, food preparation, housework, laundry, mode of transportation, responsibility for medications, and handling finances. As discussed earlier, the IADL are often as predictive of placement needs as are ADL (Waters, 1987; Wolock et al., 1987). The original IADL scale was described as having gender differences; therefore, the potential total scores were corrected for gender. While many of the items may be gender-linked, the items represent skills or functions that are required for daily management of survival for both men and women. Elderly living alone and caregivers may have to perform tasks that have been previously performed by a

spouse, regardless of the gender-linked orientation. Like the Katz ADL scale, this IADL scale is dichotomous with no differentiation between different levels of difficulty or need for assistance in performing a task. Thus, the scale is inadequate in determining individual and specific continuity of care needs. While inadequacies exist in both the ADL Index and the IADL scale, these instruments provide the basis for the development of a more comprehensive, yet simple, assessment of functional activities necessary to maintain community living. Both scales have been designed to be completed by a health care provider, but could be answered by patients and families with simple rephrasing of the statements.

The Barthel Index (Mahoney & Barthel, 1965) is another well-established instrument for measuring functional status. The Barthel Index (BI) is composed of 15 items in two conceptual areas; self-care and mobility. Points are given for each item that the individual can perform independently. The number of points varies among the functional areas with ambulation and transferring functions weighted more heavily than the other areas. The scale can be used as a summative index (0-100) or with separate ordinal scoring for each area. The BI has been shown to be sensitive to slight changes in functional capability (Fortinsky, Granger, & Seltzer, 1981). This sensitivity is particularly important in determining patient needs after discharge as it allows identification of areas where the caregiver needs instruction and/or the patient needs varying levels of assistance. In addition, the BI has been used to classify patients into levels of dependency (Granger, Sherwood, & Greer, 1977). Bowel and bladder continence, grooming, and

eating were found to be predictive indicators of community living at six months post-discharge in stroke patients (Granger, Albrecht, & Hamilton, 1979; Granger, Hamilton, Gresham, & Kramer, 1989). Thus, the BI supports the notion that weighting functional areas is helpful in discriminating care and knowledge needs. However, incontinence scores were weighted the same as bathing, dressing, feeding and stair climbing. Statistical data support incontinence as a major predictor of nursing home placement (Rabin & Stockton, 1987). Thus, incontinence should probably be weighted more heavily than other functional areas. The categorical scores of the BI do differentiate the amount of assistance that is needed to perform transferring and ambulatory activities. The summative score of 0 for complete dependence and 100 for complete independence, however, is counter-intuitive to the conceptual notion of higher scores for increasing needs.

Several studies discussed earlier in this review point out the need to assess and evaluate both ADL and IADL in determining self-care capability. For example, Waters (1987) found that only 25 percent of her sample followed the hierarchial order of self-care capability suggested by Katz et al. (1963), with IADL representing the most difficult functions for the recovering patient to perform.

Disagreement in the determination of needs by health care providers and patients and families, particularly as the ADL and IADL become more complex, has also been reported (Arenth & Mamon, 1985; Caradoc-Davies et al., 1989). Further, Wolock and colleagues (1987) reported that 43 percent and 42 percent of their sample (N=69) still had limitations in ambulating outside the home and in performing IADL,

respectively, six to eleven months after discharge. These findings exemplify the need to develop a functional scale that discriminates between levels of assistance needed and changing needs within each functional area.

Cognitive/Behavioral Scales

Various instruments were evaluated for assessing the cognitive/behavioral domain. For example, the Folstein mini-mental status examination (Folstein, Folstein, & McHugh, 1975) is a valid and reliable tool for assessing cognitive status. However, the tool is rather lengthy and can provide inaccurate findings for persons with visual and dexterous handicaps.

Two behavioral self-assessment scales were evaluated. The Self-Assessment Scale-Geriatric is a self-rating scale, consisting of 18 items that assess mood, cognition, sociability and self-care (Yesavage, Adey, & Werner, 1981). The second scale, the Irritability, Depression, and Anxiety Scale, was developed to measure behaviors expressed as difficult to manage by informal caregivers (Snaith, Constantopoulos, Jardine, & McGuffin, 1978). Neither of these scales was selected for use because neither could be answered by proxy, if necessary due to frailty or cognitive impairments in the subject. Further, the scales were limited in their overall assessment of cognition, social functioning and disruptive behaviors.

The Behavior and Mood Disturbance scale (BMD) was selected for use in the study because, with minor changes, it could be answered by the caregiver or the subject. Further, the BMD assesses depression, social functioning, and disruptive behaviors (Greene, Smith, Gardiner, &

Timbury, 1982). The BMD is further described in the instrumentation section in Chapter 3.

Health Care Need Scales

Two scales that measured more than one domain of health care needs upon discharge were evaluated for potential use in this study. Patterson et al. (1988), in response to the charge of premature hospital discharges post-prepayment implementation, evaluated dependency needs upon discharge from a large metropolitan hospital. Recognizing that prepayment reimbursement categories do not reflect the variations in nursing care requirement, these investigators were interested in developing a tool that would reliably measure dependency as an indicator of service needs by either reviewing charts or using direct observation. Pilot testing resulted in four subscales, using Likert type scaling of 0 to 6, to measure activity and mobility, bathing and hygiene, procedures, and signs and symptoms. The scores categorized patients into four dependency groups. Final testing of the instrument on 2,622 hospital records representing five DRG categories supported earlier findings that the instrument could differentiate levels of dependency needs. While this tool was the only one found that combines the assessment of skilled care and functional needs, it does not include any behavioral or safety needs. Furthermore, the instrument is designed to be used with patient charts or by health care providers, and, therefore, does not reflect the patient/family perspective.

The Alberta Patient Classification System for Long-Term Care Facilities (1988) was developed to categorize patients according to care needs within an institutional system. It was not designed for use by

patients and their families for assessing needs. However, the functional assessment is based on the need for assistance by one or two persons. Additionally, the Behaviors of Daily Living (BDL) subscale assesses a variety of behaviors that indicate the potential for injury to self or others and/or ineffective coping mechanisms that require intervention or assistance. The examples of behaviors used in the Alberta system were used to evaluate the instruments assessing behavioral needs.

No instruments were found that assessed broad knowledge needs or skilled care needs. An advisory panel has been appointed by the Health Care Financing Administration (HCFA) Office to develop a uniform needs assessment instrument to be completed by health care providers. The draft of this instrument includes broad categories of therapeutic needs and educational needs and was reviewed as a guide for assessing skilled care needs and knowledge needs in this study.

The literature review of selected studies and instrumentation development did not produce a comprehensive assessment tool capable of determining discharge needs from the perspective of patients and their families/caregivers. None of the instruments asked about the availability and utilization of a capable caregiver nor determined which needs were left unmet by formal and informal systems. Thus, it was concluded that an instrument assessing functional, knowledge, and skilled care needs and the availability and utilization of formal and/or informal care providers would be developed for this study. The Behavior and Mood Disturbance Scale was selected for the assessment of behavioral needs.

Conclusion

In conclusion, only a few studies have addressed the comprehensive care needs of the elderly after discharge from an acute care facility. Using a Person-Environment framework, this study explored the functional, behavioral, skilled care and knowledge needs of the patient at three days and three weeks following discharge. Functional needs are based on capability for self-care in tasks of daily living. Behavioral needs are more difficult to measure but have been identified as the most difficult care needs to manage by the informal system. The present reimbursement system limits access to service through its narrowly designated skilled care and personal care definitions. While discharged patients may receive patient teaching prior to discharge, patients and their families may not remember the teaching once they arrive at home. The ability to correctly project for the service needs of the elderly after discharge is essential in planning for comprehensive, cost-effective quality care. Yet, discharge needs are often determined by the availability of the informal and formal systems prepared to meet these needs, rather than by the needs as perceived by the patient/care receiver. The paucity of the existing literature calls for more research to identify the health care needs of the elderly during the transition period after discharge from the hospital to home.

If the ill and/or disabled elderly are to be maintained in the community, there must be an appropriate fit between the identified needs of the elderly patient and provision of services by the informal and formal support systems. However, the availability and capability of the informal system is changing as a result of an aging population,

increasing migration of adult children away from parents, and the changing roles of women. Elderly spouses are often responsible for providing difficult care to their ailing partners while working women are caught "in the middle" of caregiving roles. Simultaneously, legislative changes are affecting the availability and accessibility of formal services. These changes are particularly threatening to the rural population of elderly.

Assumptions

Nursing is a profession and a discipline that emphasizes the health of a human being as a whole rather than isolating body systems or subsystems. The value system of nursing reflects self-respect and self-determination of individuals and the fosters self-care through the enhancement of optimal functioning. In community based care, the patient and his/her informal caregiver are viewed as a unit; thus, it is assumed that the needs of the care receiver can be best identified through an interview with the caregiver and the care receiver if such a dyad exists.

A basic assumption in this model is that there are health care needs of the care receiver that require continuity of care following discharge from an acute care facility (Michels, 1988; Waters, 1987). It is this continuing need for care that requires ongoing assessment of the ill or disabled individual until independence in aftercare is achieved by the individual and his/her informal system. Changes in health care needs can result in the need for more or fewer resources. A second assumption is that patients and/or their caregivers are able to participate in identifying health care needs and, further, that their

perceptions of health care needs are accurate in relation to actual needs (Arenth & Mamon, 1985; Caradoc-Davies et al., 1987; Kromminga & Ostwald, 1987; Waters, 1987). A third assumption is that a nursing practice framework of functional, behavioral, knowledge, and skilled care needs is adequate to assess and diagnose continuing health care needs (Rinke, 1988; Wilson & Rinke, 1988).

Research Questions

The following research questions were identified based on the conceptual framework of Person-Environment Fit and the literature review that supported the need for more research on the rural/urban differences in the health care needs of people age 65 and over.

1. What are the health care needs of rural and urban elderly at three days and three weeks after discharge from an acute care facility?

    a) What are the skilled care, behavioral, functional, and knowledge needs?

    b) What is the magnitude of the functional needs?

2. Is there a difference in the health care needs between rural and urban elderly at three days and three weeks after discharge from an acute care facility?

    a) Is there a difference in the skilled care, behavioral, functional, and knowledge needs over time and/or place?

    b) Is there a difference in the magnitude of the functional needs over time and/or place?

3. Who provides assistance for the health care needs of rural and urban elderly at three days and three weeks after discharge?

4. What are the unmet health care needs of rural and urban elderly at three days and three weeks after discharge from an acute care facility?

5. Is there a difference in the unmet health care needs between rural and urban elderly at three days and three weeks after discharge from an acute care facility?

CHAPTER 3

Methodology

A comparative, longitudinal design, also known as a panel design, was used to explore and compare the differences in health care needs of rural and urban elderly at three days and three weeks after discharge from an acute care facility. A panel design is a comparative survey extended to include two or more measurement occurrences. This chapter describes the selection of the sample, human subjects approval, the development and performance of instruments used in the study, data collection procedures, and the analysis plan.

Sample

A stratified, non-random sample was used, with the sampling design proceeding in two steps. The first step involved the selection of two rural counties with similar health care services, geography, population density, and demographics, and, for comparison, an urban county with contrasting geography, population density, and health care services. The second step in the sampling design was the selection of the study subjects based on the sample protocol.

Selection of Settings

Since differences in health care needs and services between rural and urban elderly were the major variables of interest, systematic stratification by geographic location was completed prior to subject selection. Based on extreme differences in selected variables as shown in Table 1, Baker and Wallowa counties were selected as the rural settings and Multnomah county was selected as the urban setting.

Table 1

Population Density and Health Services Resources in Selected Counties

COUNTY	HOSPITAL (BEDSIZE)	DENSITY	MDs/ 1000	NURSES/ 1000	LTC FACILITY	HHC
Multnomah	390	1,208.6	4.0 (2,269)	10.5 (5,782)	46	16
Baker	49	5.1	1.0 (15)	3.0 (47)	2	1
Wallowa	33	2.3	0.8 (6)	3.0 (24)	1	1

While there are several definitions used to identify rurality, population density was the primary variable used to designate rurality in this study. Fewer than 500 people per square mile is the criterion frequently used to label rural areas (Rosenblatt & Moscovice, 1982). In the state of Oregon, however, only Multnomah county has a population density greater than 500 people. A more recent population density definition used to differentiate sparsely populated rural counties from other rural counties is the term "frontier". Population density for frontier counties is fewer than 6 people per square mile (Elison, 1986). In Oregon, eleven counties, all in Eastern Oregon, have population densities of fewer than 6 persons per square mile (Oregon County Public Health Profiles, 1986). Baker and Wallowa counties have population densities of 5.1 and 2.3, respectively, as compared to 1208.6 for Multnomah county.

In Oregon, Senate Bill 428, 1987 Regular Session, following the recommendations of a state-wide task force, categorized rural hospitals

into three types. Type A hospitals are small, "essential", remote facilities with fewer than 50 beds, further than 30 miles from another acute inpatient care facility. Baker and Wallowa counties each have one Type A hospital in comparison to Multnomah county with 13 hospitals, all with more than 50 beds and in relatively close geographic proximity. Baker county has two nursing homes and one home health care agency while Wallowa county has one nursing home and one home health care agency. This compares to Multnomah county with 46 nursing homes and 16 home health agencies. Further, the number of physicians and nurses per person in the two rural counties are similar but very different from the availability of physicians and nurses in Multnomah county (see Table 1).

Economically, the two rural counties rank 24th and 26th in the state while Multnomah county ranks first. With a population of 14.5 percent elderly, Multnomah county has more elderly than the national average of 12 percent, but less than the 16.8 percent and 18.6 percent elderly in Wallowa and Baker counties, respectively (Oregon County Public Health Profiles, 1988).

Selection of Subjects

The small general hospitals in each of the rural counties, a mini-referral hospital in Union County, and a centrally located general hospital in Multnomah county were the sites for contacting potential subjects. The small hospital in Union county, although similar in size to the Baker and Wallowa hospitals, has a much larger medical staff, including many specialists, and serves as a mini-referral site for persons in Wallowa and Baker counties. All patients who met the study criteria were contacted for inclusion in the study. Thus, the study

sample consisted of elderly persons discharged from the selected hospitals to their own homes or the homes of friends or relatives in Baker, Wallowa, or Multnomah counties.

Subject criteria for inclusion in the study included: acute care patients aged 65 years and older, hospital stays of at least 48 hours, discharge to own home or the home of a friend or relative, and the ability to speak English. Elderly persons discharged to nursing homes, other institutions, adult foster care homes or residential care facilities and elderly with hospital stays of less than 48 hours were deliberately excluded from the study. Stays of less than 48 hours usually represent admission for diagnostic testing or day surgery.

Power calculations were performed to determine sample size. Since very little is known about the variance in health care needs, a conservative effect size ranging from .25 to .35 was estimated. Further, no formula for calculating sample size with repeated measures analysis of variance was found. Since the power of the repeated measures analysis of variance (ANOVA) is greater than the power of one-way ANOVA, a slightly smaller sample than suggested for one-way ANOVA should give the same or greater power with repeated measures ANOVA (personal communication, Dr. B. Stewart, August 22, 1989). Thus, it was determined, using Table 8.4.4 in Cohen (1988, pg. 383), that a sample size of 80 would be selected from the urban (n=40) and rural hospitals (n=40). This sample size provided statistical power of approximately .80 with an effect size of .30, and a probability of .05.

Human Subjects Approval

Permission to conduct the study was obtained from the Human Subjects Review Committee at the Oregon Health Sciences University (see Appendix A). Following consent from the university, approval to conduct the study was also granted from each hospital (see Appendix A).

Sample Recruitment

Sample recruitment in the rural counties took six weeks. During these six weeks, every hospital admission who met the study criteria was asked to be a subject in the study. Access to the patients' names and room numbers was obtained from the Medical Records admission department, discharge planners, and staff nurses. At one rural facility, individual physician permission to contact patients was required. When a potential subject was identified, the principal investigator or the Director of Nursing contacted the physician. No physician refused to cooperate with the study.

Sample recruitment in the urban area covered four weeks. In the urban hospital, a complete hospital census was obtained from the pastoral care department at the beginning of the recruitment period and at three other times during the first two weeks of recruitment. The census sheets were reviewed for persons 65 years and older who lived in Multnomah county. As required by the hospital, a request for physician permission to contact a potential participant was placed on the front of the patient's chart for 48 hours (see Appendix B). After physician permission was obtained, patients meeting the study protocol were contacted by the principal investigator. Only one physician refused permission to contact a patient.

In each setting, the purpose of the study was explained to each potential participant by the principal investigator or discharge planner (see Appendix C). The patients were told that their participation would involve a 30 minute home interview, at two to four days after discharge, and a 20 minute telephone interview at three weeks after discharge. Verbal consent for study participation was validated by asking the patients to give home telephone numbers and directions to their homes or places of residence. In the rural setting, 43 of 48 hospital patients, who were contacted, verbally consented to be in the study. Forty-four of 49 urban patients verbally consented. All consenting patients were told that they would be contacted by telephone one to two days after discharge to arrange for a home interview. Two rural and four urban patients refused the home interview at the time of the telephone contact. Thus, 41 rural and 40 urban subjects were recruited into the study.

A written explanation of the research project (see Appendix D) and a copy of the written consent form were given to each consenting subject (see Appendix E). It was decided to have subjects sign the consent form in the home because: (a) some elderly need further verbal explanation of the purpose of nursing research; (b) stress levels during hospitalization often preclude understanding of explanations and instructions; and (c) vision and reading problems often require that subjects reread forms several times slowly.

Instruments

A Comprehensive Health Care Needs Assessment (CHCNA) Questionnaire (see Appendix F) was developed to assess the health care needs

identified in the literature review as important in managing continuity of care in the community. Subscales were developed for the functional, behavioral, knowledge, and skilled care need domains. Within each domain in the CHCNA, the subjects were asked if they had any needs, how the needs were being met, and which needs were left unmet. Likert scaling was developed to determine the degree to which the identified needs were met. The Behavior and Mood Disturbance Scale (see Appendix G) developed and tested by Greene, Smith, Gardnier, & Timbury (1982) was used to assess behavioral needs and evaluate construct validity of the CHCNA subscale for behavioral needs. Theoretical and operational definitions are found in Appendix H.

Comprehensive Health Care Needs Assessment Questionnaire

Development

The Comprehensive Health Care Needs Assessment (CHCNA) Questionnaire was constructed to assess functional, behavioral, skilled care, and knowledge needs of elderly after discharge from an acute care facility (see Appendix F). Preliminary items were drafted for each subscale based on: (a) consultation with home care nurses and discharge planners, (b) interviews with patients and caregivers in their homes, (c) a literature review, (d) the uniform needs assessment tool proposed by the Health Care Financing Administration (HCFA), (e) the needs assessment questions used in the OMPRO study, and (f) personal experience of the investigator as a home care nurse.

Skilled Care Domain.

Skilled care needs were defined as care needs that require direct provision, supervision, or teaching by a skilled health care

professional. Based on the literature, the proposed HCFA assessment tool, and the advice of the nurse consultants, twenty-four skilled procedures or assessments and one "other" category were compiled in a checklist. Following an explanation that many people who are discharged from hospitals require a variety of treatments, subjects were asked if they needed any of the treatments on the checklist. The individual score for skilled care needs was determined by the number of positive responses on the checklist, with a maximum score of 25.

Knowledge Domain.

Based on the literature review and input from the nurse reviewers, knowledge needs were defined as the need for more information and/or instruction in: (a) recognizing changes in health status, (b) obtaining emergency transportation, (c) performing skilled procedures, (d) meeting functional needs, (e) meeting behavioral needs, and/or (f) contacting alternative resources. The determination of need for more knowledge was based on the perception of the subject. No attempt was made to determine the correctness or depth of knowledge in a given area. Knowledge need scores were determined in the skilled care, behavioral, and functional domains. Total scores for knowledge needs in each domain were determined by summing the number of positive responses, with a possible maximum score of 25 skilled care knowledge needs, 16 functional knowledge needs, and 6 behavioral knowledge needs. In addition, a maximum score of one was given for each knowledge need regarding health status changes, accessing emergency transportation, and contacting alternative community resources.

Behavioral Domain.

Behavioral needs were defined as the need for: (a) frequent supervision, safety, and/or protective care resulting from cognitive impairment or mood disturbances and/or (b) help in dealing with withdrawal or depressive behaviors. These behaviors have been identified as difficult to manage by informal caregivers. Based on the categories assessed by the BMD scale, three dichotomous items in the CHCNA questionnaire asked the subjects if they felt that they needed help in dealing with apathetic-withdrawn behaviors, active-disturbed behaviors, and/or mood disturbances. The possible range of individual scores for the behavioral subscale was 0 to 3.

Functional Domain.

Functional needs were divided into eight ADL categories based on the Barthel Index (Mahoney & Barthel, 1965) and eight IADL categories based on the work of Sager (1982). While the primary method for measuring ADL and IADL needs has been the use of dichotomous scores, the literature review supported the notion that some ADL and IADL are more difficult to manage at home. Thus, the CHCNA was constructed using dichotomous and weighted items, embedding a new weighted subscale within each ADL and IADL category (see Appendix F).

Dichotomous items for the ADL and IADL subscales asked the subjects if they needed any help to: ambulate, transfer, bathe, eat, dress and groom, toilet, manage bladder and/or bowel continence, travel, shop, use the telephone, prepare meals, do housework or yardwork, do laundry, manage medications, and/or handle financial matters.

Dichotomous subscale scores could range from 0-8 for ADL and 0-8 for IADL.

The weighted items in the functional subscale of the CHCNA were patterned after the weighted scale used in the Barthel Index ((Mahoney & Barthel, 1965; Fortinsky et al., 1981; Granger et al., 1979; Granger et al., 1989). Each query asked the subjects to determine the amount of help or assistance needed to meet the identified functional deficit. The amount of assistance needed was translated into numerical scores. For example, if the subject answered that he/she needed help to get around inside the home, the subject was then asked:

How much help do you need? (ADL2)

2-person (25) Assist	Unable (20) to Move	1-person (15) Assist	Stand-by (5) Assist

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One major difference in the Barthel Index and the CHCNA is the reverse order of the weighted numbers with higher scores in the CHCNA indicating greater functional dependency. This reversal was made based on the conceptual notion that higher total scores, rather than lower scores as used in the Barthel Index, reflect greater need for assistance in functioning. Based on the literature review and the experience of the nurse reviewers, higher scores were given to dependency in mobility, transferring, continence, transportation, and managing medications. The progression of the weighting within an item was also based on the experience of the consultants and the investigator. As shown by the previous example, a score of 25 was given to the subject who needed assistance from two people to ambulate while a score of 20 was given to

the subject who was unable to get out of bed at any time. The consensus of the consultants was that it requires more care and assistance to get a severely dependent person out of bed than it does to provide bedbound care.

Based on the recommendations of the five reviewers, 25 ADL and 17 IADL items, assessing the eight categories of ADL and the eight categories of IADL, were modified and retained. The range for each individual need score in the weighted ADL subscale could vary from 0 to 50 for mobility status to 0 to 15 for dressing and grooming, eating and feeding, and toileting (see Table 2). The range of individual need scores for the IADL categories could vary from 0-40 for transportation and managing medications to 0-20 for the other categories (see Table 2). The total weighted need scores could range from 0-200 for ADL and 0-200 for IADL, with a total Functional score of 0-400.

Utilization of Resources.

Environmental or health care resources included the support or assistance provided by the formal and informal systems. The informal support system was defined as the care of services provided by a spouse, friend, or relative without a contractual agreement. The formal support system was defined as the care or services provided by a profit/non-profit or voluntary agency based on a contractual agreement. In the CHCNA, each time a skilled care, behavioral, or functional need was identified, the subject was asked: "When you need help, who provides this help?", or in the knowledge domain: "who taught you?" Resource responses were relative, friend, paid help, nurse, doctor, or other. If

Table 2

Range of Scores on the Weighted Functional Scale (CHCNA)

Assessment Area	Range of Scores
Functional Status	
Activities of Daily Living	
Mobility	0-50
Transferring	0-30
Bathing	0-25
Dressing/Grooming	0-15
Toileting	0-15
Bladder Incontinence	0-25
Bowel Incontinence	0-25
Eating/Feeding	0-15
Instrumental Activities of Daily Living	
Using the Telephone	0-20
Transportation	0-40
Shopping	0-20
Meal Preparation	0-20
Housework/yardwork	0-20
Taking Medications	0-40
Doing Laundry	0-20
Handling Finances	0-20

no one was responding to the identified need, the response was left blank and indicated an unmet need.

Unmet needs.

Unmet needs were defined as health care needs that were not being met by a complement of self care, the informal support systems, and the formal support system. Using the CHCNA questionnaire, unmet health care needs were assessed in each domain of need: skilled care, functional, behavioral, and knowledge.

To assess unmet needs in the skilled, functional, and behavioral domains, the subjects were asked:

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5) Some of the time (.75) None of the time (1.0)

(ADLUM1)

To assess unmet needs in the knowledge domain, the subjects were asked:

How much instruction/information have you or your caregiver had on how to carry out the care that you need in the areas that I have just asked about?
Enough (0) Some but not enough (.5) None (1.0)

(ADLKUM1)

Likert scaling was developed to ascertain responses in the Unmet Needs subscale. In the opinion of the nurse consultants, it was determined that elderly subjects would be able to adequately respond to five levels of resource availability for functional, behavioral, and skilled care deficits and three levels of response for knowledge deficits. Numerical values for the availability of resources ranged

from zero when help was available all the time to 1.0 when help was never available to meet the needs. Again, higher scores represented greater unmet needs.

Total Unmet Needs scores were obtainable in each domain, i.e. skilled care, behavioral, functional, and knowledge. Potentially, total Unmet Needs scores could range from 0-16 in the functional domain, 0-47 in the knowledge domain, 0-25 in the skilled care domain, and 0-3 in the behavioral domain. Unmet Needs scores for the skilled care, behavioral, functional, and knowledge domains were not additive. For example, if, for one subject, needs were reported as being met "some of the time" (.75) for strengthening exercises and "most of the time" (.25) for dressing changes, the subject had an Unmet Needs score of 1.00, with Unmet Needs in two categories of skilled care. Similarly, if a subject identified that he/she needed help with transferring but only had help available half of the time, an Unmet Need score of .5 was determined. Within the knowledge domain, Unmet Needs scores were categorized for skilled care, behavioral, functional, and each of the other three categories.

Weighted Unmet Needs scores were computed for the functional domain. For example, if the weighted mobility subscore was 30 and help was only available half the time (.5), then the Unmet Needs score for mobility was computed by multiplying 30 times 0.5 for an Unmet Needs score of 15. Weighted Unmet Needs scores were computed for each category of ADL and IADL, with a total potential range of 0-400.

Comprehensive Health Care Needs Assessment Questionnaire Evaluation

Validity.

Face validity of the CHCNA, a component of content validity (Nunnally, 1978), was addressed through review by five home care nurses and discharge planners who work primarily with elderly populations. Two of the reviewers evaluated the instrument on multiple occasions. One of the nurse reviewers had been the primary data collector in the OMPRO study and provided valuable input for wording and ordering of items. Suggestions for changes in overall structure, clarity of the tool, deletion and addition of specific items, and weighting of the functional scale were incorporated.

Prior to this study, the instrument was pilot tested on four patients who had been discharged from acute care within the previous six weeks. The purpose of this testing was to determine the appropriateness of the format and ordering of items in the tool and to provide actual numbers for calculating the total health care needs and unmet needs scores. From this small pilot study and the developmental process, it was concluded the tool had face validity and utility.

Further content validity was conducted during the study. The first ten interviews were taped with the permission of the subjects. The tapes were analyzed for new categories and items related to the needs of the elderly after discharge. No new categories or items were identified.

Convergent validity, a component of construct validity, was appraised between the Functional dichotomous and weighted subscales of the CHCNA and the dichotomous Behavioral scale of the CHCNA and the BMD

subscales. Pearson correlation coefficients were obtained between the dichotomous ADL, IADL, and total Functional scores and the weighted ADL, IADL, and total Functional scales at the two measurement times. As expected, the functional subscales were highly correlated at both times, with correlation coefficients ranging from .95 to .98 (see Table 3). Construct validity of the weighted functional subscales was supported by the high correlations between the standard dichotomous subscales and the weighted subscales.

Table 3

Correlations Between the Dichotomous and the Weighted Functional Scales

	Time 1 [N=81]	Time 2 [N=80]
Total Functional Scales	.97	.98
ADL Subscale	.96	.95
IADL Subscale	.97	.96

Note: p = .000 for each correlation

To assess construct validity of the Behavioral scale of the CHCNA, Pearson correlation coefficients were obtained between the dichotomous Behavioral scale in the CHCNA and the subscales in the BMD at each measurement time. In the CHCNA, each behavioral category was assessed with a single question. As shown in Table 4, the Mood Disturbance subscale of the BMD was found to correlate significantly with all three dichotomous questions at both measurement times. This finding suggests

Table 4

Correlation Coefficients between Dichotomous Behavioral Scale (CHCNA) and BMD Across the Two Time Periods

	BMD Scale		
CHCNA	A/W Subscale	A/D Subscale	M/D Subscale
Time 1			
Apathetic-Withdrawn	.031	-.003	.416*
Active-Disturbed	.121	.007	.322***
Mood Disturbance	.070	.114	.409**

Note: *p = .0001; **p = .0002;***p = .003;

	BMD Scale		
CHCNA	A/W Subscale	A/D Subscale	M/D Subscale
Time 2			
Apathetic-Withdrawn	.376**	.211	.528*
Active-Disturbed	.195	.324	.334***
Mood Disturbance	.192	.196	.556*

Note: *p = .0000; **p = .0006; ***p = .0025

that the Mood Disturbance subscale of the BMD may be capturing a variety of behaviors rather than just mood disturbance behaviors. Further, the findings, regarding the construct validity of the CHCNA scale, suggest that different aspects of behavioral needs are assessed with the single dichotomous questions in the CHCNA and the multiple questions in the BMD scale.

Reliability.

Internal consistency, based on Cronbach's alpha reliability coefficients, was acceptable for the dichotomous and the weighted Functional scales of the CHCNA. As shown in Table 5, the weighted ADL subscale performed slightly better than the dichotomous ADL subscale, with very little difference in performance in the IADL subscales or the total functional scales.

Table 5

Internal Consistency Reliability Estimates (Cronbach's Alpha) for Functional Scales of the CHCNA by Time

	TIME ONE	TIME TWO
Dichotomous ADL Subscale	.73	.71
Weighted ADL Subscale	.87	.86
Dichotomous IADL Subscale	.80	.81
Weighted IADL Subscale	.82	.83
Total Dichotomous Functional Scale	.86	.86
Total Weighted Functional Scale	.88	.84

Average interitem correlations were within an acceptable range for all the scales. Average interitem correlations ranged from .24 to .29 in the total scales, from .24 to .39 in the ADL subscales, and from .34 to .39 in the IADL subscales, indicating that each item was contributing to the total scale and duplication of items was low.

Item to scale correlations for the questions in the functional subscales were evaluated. Questions regarding bladder and bowel incontinence and eating needs had item to scale correlations below the .30 recommended by Kerlinger (1986) in both subscales, at both points in time. These low correlations may be attributed to restriction of range since only a small number of subjects needed assistance with these functions. In the weighted IADL subscale, the item relating to the number of prescribed medications correlated poorly with the total scale. Since this item did have responses from almost all the subjects, this item should be deleted in future use of the CHCNA. There were no items in the dichotomous IADL subscale with item to scale correlations of less than .38. In the total weighted scale, however, in addition to the items regarding incontinence and eating needs, the items asking about assistance in using the tub or shower and managing finances also had item to scale correlations below .30. Since the subjects in this study had few functional impairments in these areas, the items should be retained in the questionnaire for further evaluation in future studies. Future studies may provide a greater range of needs and a more adequate evaluation of the weighted scale.

Several subjects identified knowledge needs. The total numbers, however, in any one category were small. Therefore, reliability

measurements were not evaluated for the knowledge subscale. Likewise, in the Unmet Needs subscale, while there was a large number of individuals reporting unmet needs, the unmet needs were scattered throughout the data, with little to no variation in individual items. Thus, reliability measurements were not performed on the Unmet Needs subscale of the CHCNA.

Behavior and Mood Disturbance Scale

The Behavior and Mood Disturbance Scale (BMD) is a 40 item scale developed to assess behavioral disturbances shown by demented patients at home (Greene et al., 1982). Using Likert-type scaling, each item in the BMD Scale is rated from 0 to 4 according to the severity of the behavior. Subscale scores for the BMD scale range from 0 to 36 for apathetic-withdrawn behaviors, 0-60 for active-disturbed behaviors, and 0 to 36 for mood disturbances. Higher scores reflect greater occurrences of the behaviors. These scores are not additive nor weighted. Therefore, each subscale is evaluated separately.

Based on their clinical work, the literature, and other instruments that had been developed to assess mood disturbances and socially irritating behavior, Greene and his colleagues (1982) used factor analyses to construct three subscales. Thirty-four of the forty items loaded on three factors that accounted for 41 percent of the total variance. The factors are labeled Apathetic-Withdrawn (AW), Active-Disturbed (AD), and Mood Disturbance (MD). Intercorrelations between the subscales were computed and indicated that the factors are independent with none of the factors showing greater than a 0.1 correlation.

Construct validity was evaluated by comparison ratings with the Physical Self Maintenance and Activities of Daily Living Scales developed by Lawton and Brody. Additionally, the Clifton Assessment Schedule was used as an objective measure of the patients' cognitive functioning (Greene et al., 1982).

The original psychometric evaluation of the BMD was computed on data collected from 38 relatives who cared for elderly with diagnoses of senile dementia. Three weeks after the first assessment, eighteen relatives were visited by a psychologist for the purpose of calculating test-retest reliability. As shown in Table 6, alpha reliability coefficients in the original evaluation testing, ranged from .73 for the Mood Disturbance subscale to .90 for the Apathetic-Withdrawn subscale (Greene et al., 1982). In this study, as shown in Table 6, alpha reliability coefficients were also acceptable for the three subscales at each measurement time.

The original BMD was developed to be used only with caregivers of demented elderly. Since, in this study, the questions were to be answered by subjects as a self-reporting scale, each question was modified to begin with "Do you" rather than "Does he or she" (see Appendix G). The questions were answered by the informal caregivers only when the subjects had become tired and/or were too frail to complete the questioning. For these reasons, the BMD Scale was completed by the one rural (n=41) and two urban caregivers (n=40) at time one and by four caregivers (Rural n=41; Urban n=39) in each setting at time two. When it was necessary that caregivers answer the questionnaire, they would generally confer with the subjects.

Table 6

Alpha Reliability Coefficients for the BMD Scale

Subscales	Green et al. (1982) [N=38]	Time 1 [N=81]	Time 2 [N=79]
Apathetic-Withdrawn	.90	.72	.75
Active Disturbed	.87	.70	.61
Mood Disturbance	.73	.78	.72

Data collected from the BMD were analyzed in two ways, allowing descriptive and inferential comparison with behavioral data collected using the CHCNA questionnaire. First, descriptive data were compiled for each of the three subscales. The subjects were determined to have behavioral needs if they reported more than one-third of behaviors queried in the BMD at least "some of the time". Subjects were determined to have apathetic-withdrawn behavioral needs if they reported the occurrence of behaviors queried in questions 7, 9, 10, 11, or 13 "never" or "rarely" or if they reported exhibiting the behaviors "some of the time", "rarely" or "never" on any 4 of the 9 items in the AW subscale (see Appendix G). Responses to the behaviors queried in questions 2, 3, 4, and 6 of the AW subscale were determined to be dependent on past social patterns and/or the recent hospital discharge; therefore, the responses to these questions were only used collectively rather than singularly to determine apathetic-withdrawn behavioral

needs. Since none of the subjects had diagnosed dementia, data were compiled for the AD and MD subscales, using all nine items in the AD subscale and all fifteen items in the MD subscale. Behavioral needs in these two categories were determined if the subject reported exhibiting more than one-third of the Active Disturbed behaviors or Mood Disturbance behaviors at least "some of the time".

Second, following reverse coding for several of the questions, total scores were computed for each subscale. Measures of central tendency were used to analyze the behavioral responses using inferential statistics.

In summary, the CHCNA and the BMD exhibited acceptable psychometric properties in this study. Data in the behavioral domain will be reported using information gathered from the BMD and the three direct questions in the CHCNA since analysis of the data suggested that the questions in the two instruments may be measuring different behavioral needs.

Data Collection

All data were collected at two points in time by the principal investigator. Following discharge from the acute care hospital, subjects were telephoned to schedule a home interview which took place from two to four days after discharge. Subjects were interviewed using the CHCNA Questionnaire and the BMD Scale. If patients were able to see and read without difficulty, they completed the BMD Scale on their own. When visual impairment or illiteracy did not allow this, the investigator asked the subjects the questions and recorded their answers. During the home interviews, three subjects became too tired to

complete the BMD Scale and, therefore, this scale was completed by a caregiver. All the subjects were able to complete the CHCNA questionnaire. The home interview took approximately 20-25 minutes.

At the conclusion of the home interview, subjects were reminded that a similar interview, taking about 20 minutes, would be conducted by telephone approximately three weeks after their discharge date. Tentative dates and times were established for the telephone interview. Approximately one week before the follow-up phone call, all subjects were sent a postcard reminding them of the second interview.

Telephone interviews were conducted by the principal investigator at 19 to 23 days post-discharge. The CHCNA Questionnaire and the BMD Scale were used to obtain the follow-up data. On the follow-up interview, one rural subject refused to answer all the questions but did complete more than half of the interview. One additional rural subject was in a nursing home at the time of the follow-up interview. He was able to answer those items that were not affected by his living arrangement. One urban subject was hospitalized for surgery at the time of follow-up and was not interviewed. All other subjects completed the second interview in total, although four urban and four rural caregivers served as proxies for portions of the phone interviews. Seven caregivers served as proxies due to frailty of the subjects and one subject experienced hearing difficulties on the telephone. Subjects were told that they would receive a letter explaining the primary findings at the conclusion of the study.

Data Analyses Plan

The purpose of this study was to explore and examine rural/urban differences in health care needs of people age 65 and older after discharge from acute care to home. Descriptive statistics were used to report and characterize the sample, the health care needs, the utilization of resources, and the unmet health care needs. Descriptive statistics were also used to report the magnitude of the ADL and IADL Needs and Unmet Needs.

Repeated measures analyses of variance (ANOVA) were computed to determine the statistical differences in health care needs and unmet health care needs between urban and rural elderly at three days and three weeks after discharge. Repeated measures ANOVA were also computed to statistically evaluate the differences in the weighted ADL and IADL need scores between rural and urban elderly at the two contact times following discharge.

CHAPTER 4

Results

The purpose of this study was to investigate rural/urban differences in the health care needs of people age 65 and older, from their perspective, after discharge from acute hospital care to home. The specific aims were to: (a) describe the skilled care, functional, behavioral, and knowledge needs of elderly in rural and urban settings during the first three weeks after hospital discharge; (b) compare the differences in needs by geographic location and time after discharge; (c) describe the environmental resources for meeting the identified needs during this transition period; and (d) describe the skilled care, functional, behavioral, and knowledge needs left unmet by the complement of informal and formal services. This chapter presents the demographic characteristics of the rural and urban samples and the data generated by interviews using the Comprehensive Health Care Needs Assessment questionnaire (CHCNA) and the Behavioral and Mood Disturbance Scale (BMD).

Demographic Variables

In the rural setting, a total of 48 patients were contacted as potential participants. Three women and two men refused to participate in the study at the time of hospital contact. Two others, a man and a woman, refused the interview once they were home. Thus, complete data are available for 41 rural subjects at three days after discharge, with 26 (63%) residing in Baker County and 15 (37%) residing in Wallowa County. One Baker county subject, in a nursing home at three weeks after hospital discharge, was able to complete only part of the second

interview. One Wallowa county subject, after completing most of the second interview, became tired and did not finish the interview. Therefore, data are complete for 39 rural subjects at three weeks after discharge, with partial data available for all 41 subjects.

Forty-nine patients, all Multnomah county residents, were contacted in the urban setting. Five persons, four men and one woman, refused to participate in the study at the time of hospital contact, while four others, all men, refused the interview once they were home. Thus, complete data are available for 40 urban subjects at three days after discharge. At three weeks after discharge, one urban subject was hospitalized following surgery and did not complete the second interview. Therefore, data are complete for 39 urban subjects at three weeks after discharge.

Chi square analyses, summarized in Table 7, showed no significant differences between age, gender, marital status, living arrangements, and the geographic location of 41 rural and 40 urban subjects. Rural subjects ranged in age from 65 to 95 with a mean age of 75.3 while urban subjects ranged in age from 65 to 87 with a mean age of 75.4. There was no significant difference in the mean age of the two samples, $\underline{t}(79) = .09$, $\underline{p} = .93$.

Almost 54 percent of the rural sample were men as compared to 37.5 percent of the urban sample. Three-fifths of each sample were married while approximately one-third of each sample was widowed. Only one person in the urban sample was divorced as compared to three rural residents. The one divorcee in the urban sample had moved to Multnomah County from Wallowa County within the last year. In each geographic

Table 7

Demographic Characteristics of the Subjects at the Time of the First Interview [N=81]

Characteristic	Rural [N=41]		Urban [N=40]			
	Number	Percentage	Number	Percentage	X^2	p
Age					.34	0.84
65-74	23	56.1	20	50.0		
75-84	13	31.7	15	37.5		
85 and over	5	12.2	5	12.5		
Gender					1.53	0.22
Men	22	53.7	15	37.5		
Women	19	46.3	25	62.5		
Ethnicity						
White	41	100.0	39	97.5		
Black	0	0.0	1	2.5		
Marital Status					1.16	0.76
Married	25	61.0	24	60.0		
Never Married	1	2.4	1	2.5		
Widowed	12	29.3	14	35.0		
Divorced	3	7.3	1	2.5		
Living Arrangements					3.47	0.48
Alone	7	17.1	10	25.0		
Spouse	22	53.7	23	57.5		
Child	7	17.1	4	10.0		
Grandchild	2	4.9	0	0		
Brother/ Sister	0	0	3	7.5		
Other relative	1	2.4	1	2.5		
Friend	3	7.3	0	0		
Other	3	7.3	2	5.0		

setting, there was one married couple, both of whom participated in the study. There were no significant differences in marital status or gender between the two sample groups (see Table 7).

Seven of the rural subjects lived alone as compared to ten urban residents (see Table 7). Five of the seven rural subjects living alone were women as were eight of the ten urbanites. Seven rural residents lived with children as compared to only four of the urban sample. Twenty-nine (71%) of the rural elderly sample and 26 (65%) of the urban elderly lived with their identified caregivers. Three rural residents had paid live-in caregivers as compared to two urban residents. Approximately 25 percent of the sample in each geographic location was childless. Again, there was no significant difference in living arrangements between the two groups.

Although there was no statistical difference in reported annual income between the two settings, income was generally lower in the rural setting (see Table 8). Subjects were asked to include social security and other retirement payments, interest from investments and savings, and any other financial resources in their reported annual or monthly income. Twelve percent of the rural subjects reported annual income below $5,000 with almost 42 percent reporting income below $10,000 annually. In comparison, none of the urban sample reported income below $5,000 and only 26 percent reported income below $10,000. The median monthly income range for the rural sample was $834 to $1249 as compared to a median monthly income of $1250 to $1666 for the urban sample. In each setting, two subjects described difficulty in affording their

Table 8

Reported Annual Income by Location

	Rural [N=41]		Urban [N=39]			
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE	x^2	p
					7.59	.27
4,999 or less	5	12	0	0		
5,000 - 6,999	5	12	3	8		
7,000 - 9,999	7	17	7	18		
10,000 - 14,999	9	22	9	23		
15,000 - 19,999	7	17	8	21		
20,000 - 29,999	4	10	9	23		
30,000 - 39,999	4	10	1	3		
40,000 or more	0	0	2	5		

medications. Only one subject, an urban woman, refused to provide income information.

All of the participants had Medicare coverage. Eighty-five percent of the subjects in each setting had supplemental Medigap insurance, in addition to their Medicare coverage. Many subjects talked about recent increases in their supplemental insurance premiums with no additional benefits. One rural subject had recently dropped his supplemental insurance because he felt that he had enough assets to cover any catastrophic medical expenses. Four subjects in each setting were covered by Medicaid. In the urban setting, however, three subjects had Medicare, Medicaid, and supplemental insurance. When asked why they retained their supplemental coverage, they all responded that they were afraid some of their medical expenses would not covered by Medicaid and

they would not be able to afford the additional expenses.

No significant difference was found in the reason for hospitalization and the geographic location of the two sample groups, $X^2(1) = .32$, $p = .57$. Seventy-five percent of the rural subjects (n=31) as compared to 68 percent of the urban subjects (n=27) were hospitalized for medical conditions, including diagnostic testing, that involved stays of 2 days or longer. Mean lengths of hospital stay, 5.1 days for rural subjects and 7.5 days for urban subjects, were significantly different in the two settings, $t(79) = 3.27$, $p = .002$. Lengths of stay ranged from two to eleven days in the rural setting and from three to 26 days in the urban setting. Even with the elimination of a single outlier of 26 days, leaving a mean of 7.03 days in the urban setting, the difference in the mean length of stay between the two groups remained significant, $t(78) = 3.38$, $p = .001$.

Research Question One:

Health Care Needs at 3 Days and 3 Weeks

The first question in the study asked for a description of the health care needs at three days and three weeks after discharge from acute care to home as perceived by the elder subject. The health care needs were assessed using the CHCNA questionnaire and the BMD (Greene et al., 1982). A weighted functional subscale within the CHCNA was used to assess the magnitude of the functional needs, with higher scores indicating greater needs. Demographic variables are reported where significant relationships with health care needs were found.

Almost every subject perceived a need in at least one of the health care need domains with IADL needs representing the greatest

domain of need across time (see Table 9). Similarly, knowledge needs were perceived by a large percentage of all subjects across time. While only a small number of behavioral needs were perceived by subjects acrosstime, these needs have been identified as the most difficult category of care for caregivers.

Table 9

Hierarchial Summary of Health Care Needs of Rural and Urban Elderly at 3 Days and 3 Weeks After Discharge Using the Comprehensive Health Care Needs Assessment Questionnaire

3 Days After Discharge				3 Weeks After Discharge			
Rural [N=41]		Urban [N=40]		Rural [N=41]		Urban [N=39]	
DOMAIN	%	DOMAIN	%	DOMAIN	%	DOMAIN	%
IADL	85	IADL	98	IADL	76	IADL	90
Knowledge	76	Knowledge	75	Knowledge	75	Knowledge	59
Skilled Care	63	ADL	60	Skilled Care	52	ADL	54
ADL	61	Skilled Care	40	ADL	46	Skilled Care	36
Behavioral	15	Behavioral	8	Behavioral	7	Behavioral	10

Skilled Care Needs

More rural subjects reported needs (63%) than did their urban counterparts (40%) at three days post-hospitalization. While both rural and urban subjects reported a decrease in skilled care needs by three weeks after discharge, 53 percent of the rural subjects and 36 percent of the urban subjects still reported skilled care needs (see Table 10). Urban subjects reported fewer individual needs than did their rural cohorts at each point in time.

Table 10

Number of Elderly with Skilled Care Needs After Discharge

	3 Days after Discharge				3 Weeks after Discharge			
	Rural [N=41]		Urban [N=40]		Rural [N=41]		Urban [N=39]	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
NO NEEDS	15	37	24	60	19	47.5	25	64
1 NEED	11	27	9	23	10	25	11	28
2 NEEDS	6	15	2	5	6	15	1	2.6
3 NEEDS	4	10	3	7.5	2	5	1	2.6
4 NEEDS	1	2	1	2.5	0	--	1	2.6
5 NEEDS	3	7	1	2.5	3	7.5	0	--
6 NEEDS	1	2	0	--	0	--	0	--

A variety of skilled care needs were perceived by both groups. None of the highly technical skills, however, were perceived as needed by either group. Rural subjects identified 12 different skilled needs at three days after discharge while urban subjects identified 13 different skilled needs from a checklist of 25 needs (see Table 11). Rural subjects identified considerably more need in cardiovascular monitoring and assessment than did their urban cohorts, with 27 percent of the rural subjects identifying blood pressure monitoring as a need. Similar needs between the two groups were reported in the physical therapy/muscle strengthening category.

The major skilled care needs for rural subjects remained similar with cardiovascular assessments, oxygen therapy, blood testing, and diet monitoring reported most often at three weeks after discharge. Oxygen therapy remained the need reported most often by the urban subjects (see Table 11).

There was no significant correlation between age and reported skilled care needs in the urban sample. In the rural sample, however, increasing age correlated significantly with increasing skilled care needs at both assessment times, Time 1, r (41) = .46, p = .002; Time 2, r(40) = .42, p = .006. Using Pearson correlation, no significant correlations between gender and skilled care needs were found in either group.

Behavioral Needs

Behavioral needs were assessed using the 40 item BMD Scale which categorizes behavioral characteristics into apathetic-withdrawn behaviors, active disturbed behaviors, and mood disturbance behaviors

Table 11

Skilled Care Needs of Elderly After Discharge

	3 Days After Discharge				3 Weeks After Discharge			
	Rural [N=41]		Urban [N=40]		Rural [N=40]		Urban [N=39]	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Skilled Care Needs								
Dressing Changes	4	10	0	--	1	3	0	--
Special Skin Care	0	--	3	8	0	--	0	--
O_2 Therapy	8	20	4	10	6	15	5	13
BP Monitoring	11	27	2	5	5	13	1	3
Heart/Lung Assess	8	20	3	8	4	10	2	5
PV Assessment	3	7	1	3	2	5	0	--
Blood Tests	7	17	1	3	6	15	2	5
Urinary Cath Care	2	5	0	--	2	5	0	--
Dialysis	0	--	2	5	0	--	2	5
Physical Therapy	3	7	3	8	3	8	0	--
Strengthening Exercises	3	7	4	10	3	8	1	3
ROM Exercises	4	10	3	8	4	10	1	3
Foot Care	0	--	2	5	0	--	2	5
Special Diet Monitoring	4	10	2	5	6	15	2	5
Other	2	5	1	3	0	--	2	5
TOTAL	59		31		42		20	

(see Appendix G). The subjects were also asked if they perceived a need in any of these same three areas, using the CHCNA, which has one question for each area (see Appendix F). Since the findings from the two scales suggest that different behavioral needs are being assessed; both sets of data in each category of behavioral needs are reported.

At three days after discharge, using the three direct questions in the CHCNA, six of the 41 rural subjects and three of the 40 urban subjects reported behavioral needs. By three weeks after discharge, the number of individuals reporting behavioral needs had increased to seven in the rural setting and four in the urban setting (see Table 12).

Descriptively analyzing the BMD data as described in Chapter 3, twice as many subjects had depressive behavioral needs at three days after discharge as had been reported by the single direct question in the CHCNA (see Table 12). At three weeks after discharge, the number of subjects calculated to have depressive needs, using the Apathetic-Withdrawn subscale, had decreased for the rural sample. For the urban sample, however, twice as many subjects were found to have depressive needs, using the BMD scale, as were found by the single item relating to depressive needs in the CHCNA. Similar discrepancies were also found between the responses on the Active Disturbed and Mood Disturbance subscales and the perception of these behavioral needs based on the single questions in the CHCNA (see Table 12).

Some of the subjects, in both settings, discussed their behavioral needs in more depth throughout the interviews. For two rural subjects, who freely described behavioral needs during the home interviews, comparison between the responses on the BMD and discussion notes

Table 12

Behavioral Needs of Discharged Elderly Using the BMD and CHCNA Scales

	3 Days After Discharge				3 Weeks After Discharge			
	Rural [N=41]		Urban [N=40]		Rural [N=41]		Urban [N=39]	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
SCALES								
CHCNA								
Apathetic-Withdrawn	6	15	3	8	7	17	4	10
Active-Disturbed	1	2	1	3	1	2	1	3
Mood Disturbance	2	5	1	3	3	7	2	5
TOTAL N	6	15	3	8	7	7	4	10
BMD								
Apathetic-Withdrawn	12	29	7	18	7	17	7	18
Active-Disturbed	5	12	3	8	3	7	4	10
Mood Disturbance	10	24	8	20	3	7	3	8
TOTAL N	19	46	12	30	12	29	10	26

indicated little likeness. At three weeks after discharge, there was some likeness between the described needs of four rural and two urban subjects and their responses on the BMD.

Functional Needs

Functional needs were assessed using the dichotomous functional scale and the weighted functional scale in the CHCNA. The weighted functional scale assessed the magnitude of the functional needs which is the second part of research question one. Data from the weighted scale are reported following data from the dichotomous scale.

Dichotomous Functional Subscale.

At three days after discharge, 25 of the 41 rural subjects (61%) and 24 of the 40 urban subjects (60%) reported ADL needs. At the time of the second interview, although 14 rural and 12 urban subjects reported decreased ADL needs, four rural and five urban subjects reported increased ADL needs. These changing needs resulted in 19 rural subjects (46%) and 21 urban subjects (54%) still reporting ADL needs at three weeks after discharge.

Mobility, bathing, and urinary incontinence composed the greater number of ADL needs for rural and urban subjects at both times. At shown in Table 13, more urban than rural subjects perceived a need for assistance with mobility, particularly in ambulating outside the home. This difference was more notable at three weeks after discharge.

The greatest care needs for rural and urban subjects were reported in IADL. At three days after discharge, 35 rural elderly (85%) and 39 urban elderly (98%) reported IADL needs. Eleven rural subjects perceived care needs in seven or eight categories while only five urban

Table 13

ADL Needs of Rural and Urban Elderly After Discharge

	3 Days After Discharge		3 Weeks After Discharge	
	Rural [N=41]	Urban [N=41]	Rural [N=40]	Urban [N=39]
Mobility	16	18	9	16
Outside	12	17	7	13
Inside	6	6	5	3
Stairs	11	13	8	10
Transferring	5	1	3	1
Bed	4	1	2	1
Chair	5	0	2	0
Bathing	15	15	14	12
Sponge	9	7	7	5
Tub/Shower	15	15	14	12
Dressing	6	5	5	1
Dressing	6	5	5	1
Grooming	5	1	3	1
Toileting	5	1	2	1
Bladder Control	13	9	10	8
Bowel Control	1	2	1	1
Eating	2	1	1	0
TOTAL	63	52	45	40

Table 13 (continued)

IADL Needs of Elderly After Discharge

	3 Days After Discharge		3 Weeks After Discharge	
	Rural [N=41]	Urban [N=40]	Rural [N=41]	Urban [N=39]
Telephone Use	11	1	5	0
Transportation	26	36	25	30
Shopping	27	37	24	29
Meal Preparation	26	13	16	5
Housework/Yardwork	34	34	26	29
Managing Medications	12	12	7	9
Laundry	23	26	18	16
Managing Finances	18	14	16	12
TOTAL	177	173	137	130

subjects perceived needs in seven categories. By three weeks after discharge, while a majority of subjects reported a decrease in the need for help with IADL, 31 rural subjects (76%) and 35 urban subjects (90%) still perceived a need for some help. Two rural and three urban subjects reported an increased need for help with IADL. Transportation, shopping, and performing housework or yardwork and laundry were perceived as major needs for both groups, with meal preparation viewed as a greater need by rural than by urban subjects. The ability to use the telephone by oneself was also a far greater problem for rural subjects than for urban subjects.

Hierarchial orders by the type of functional needs at three days and three weeks after discharge were generated by combining ADL and IADL needs as perceived by the sample (see Tables 14 and 15). The number of functional care needs decreased during the three week transition period into caregiving; however, the hierarchial order of these care needs changed very little. As shown in Table 15, the need for help with shopping and transportation and performing housework or yardwork still represented the areas of greatest perceived need. The need for help with ambulation and bathing, while identified less frequently than the IADL needs, were still reported as needy areas.

Weighted Functional Scales.

The second part of question one addressed the magnitude of the functional needs. At three weeks after discharge, using the weighted functional subscales, 4 rural and 4 urban subjects had an increase in ADL needs while 5 rural and 4 urban subjects had an increase in IADL needs. With each subscale, however, not all subjects who showed greater

Table 14

Hierarchical Display of Functional Needs of Elderly at Three Days After Discharge

	Rural [N=41]			Urban [N=40]	
	NUMBER	PERCENT		NUMBER	PERCENT
Housework/ Yardwork	34	83	Shopping	37	93
Shopping	27	66	Transportation	36	90
Transportation	26	63	Housework/ Yardwork	34	85
Meal Preparation	26	63	Laundry	26	65
Laundry	23	56	Mobility	18	45
Managing Finances	18	44	Bathing	15	37.5
Mobility	16	39	Managing Finances	14	35
Bathing	15	37	Meal Preparation	13	32.5
Bladder Control/ Management	13	32	Managing Medications	12	30
Managing Medications	12	29	Bladder Control/ Management	9	23
Telephone Use	11	27	Dressing	5	12
Dressing	6	15	Bowel Control	2	5
Toileting	5	12	Transferring	1	2.5
Transferring	5	12	Toileting	1	2.5
Eating	2	5	Eating	1	2.5
Bowel Control	1	2	Telephone Use	1	2.5

Table 15

Hierarchical Display of Functional Needs of Elderly at Three Weeks After Discharge

	Rural [N=41]			Urban [N=39]	
	NUMBER	PERCENT		NUMBER	PERCENT
Housework/ Yardwork	26	63	Transportation	30	77
Transportation	25	61	Shopping	29	74
Shopping	24	59	Housework/ Yardwork	29	74
Laundry	18	44	Mobility	16	41
Managing Finances	16	39	Laundry	16	41
Meal Preparation	16	39	Managing Finances	12	31
Bathing	14	34	Bathing	12	31
Bladder Management	10	24	Managing Medications	9	23
Mobility	9	22	Bladder Management	8	21
Managing Medications	7	17	Meal Preparation	5	13
Telephone Use	5	12	Transferring	1	2.5
Dressing	5	12	Dressing	1	2.5
Transferring	3	7	Toileting	1	2.5
Toileting	2	5	Bowel Control	1	2.5
Bowel Management	1	2	Feeding	0	--
Feeding	1	2	Telephone Use	0	--

ADL needs at three weeks after discharge were the same subjects who showed greater IADL needs. Thirteen different subjects had greater functional needs using the weighted scale as compared to only 11 different subjects showing greater functional needs using the dichotomous scale.

In comparing the hierarchial results from the weighted data with the hierarchial results from the dichotomous data, the order of functional needs changed very little as shown in Table 16. The only major change was in "managing medications" which is ranked higher using the weighted scores.

Utilizing the weighted data for only those subjects who reported needs in ADL and IADL, hierarchial orders of functional needs were ascertained (see Appendix I). With these data, the order of weighted needs were quite different from those reported for the dichotomous data. Transportation remained the greatest need for the entire sample. Across time, the need for assistance with mobility and with managing medications was greater for rural residents while the need for assistance with managing finances was a greater need for urban residents.

There were no significant correlations between gender and functional needs with either the dichotomous or the weighted scales. As shown in Table 17, using the dichotomous scale, the age of rural subjects was significantly correlated with ADL and total Functional needs at both measurement times and with IADL needs at time two. The age of rural subjects was significantly correlated with the weighted

Table 16

Hierarchial Order of Mean Scores Using the Weighted Functional Need Scores (CHCNA) at 3 Days After Discharge

	3 Days After Discharge				
	Rural [N=41]		Urban [N=40]		
	MEAN	SD	MEAN	SD	
Transportation	21.22	(16.91)	20.49	(17.17)	(1)
Shopping	12.68	(9.36)	10.98	(9.50)	(2)
Housework/Yardwork	12.56	(7.76)	9.63	(8.54)	(3)
Meal Preparation	11.22	(9.27)	6.83	(9.07)	(6)
Managing Medications	10.49	(12.44)	7.07	(11.46)	(5)
Laundry	10.12	(9.65)	7.56	(9.16)	(4)
Mobility	7.56	(12.85)	4.88	(10.28)	(9)
Bathing	6.34	(8.66)	5.49	(5.49)	(8)
Managing Finances	6.34	(8.37)	6.22	(8.64)	(7)
Telephone Use	4.15	(7.66)	2.20	(6.13)	(11)
Bladder Incontinence	4.02	(6.91)	3.42	(6.93)	(10)
Transferring	2.32	(6.53)	.73	(2.64)	(13)
Dressing	1.49	(3.76)	.98	(2.73)	(12)
Toileting	1.46	(4.07)	.49	(2.18)	(14)
Eating	.24	(1.09)	.12	(.78)	(15)
Bowel Incontinence	0		.12	(.78)	(15)

Table 16 (continued)

Hierarchial Order of Mean Scores Using the Weighted Functional Need Scores (CHCNA)

	3 Weeks After Discharge				
	Rural [N=40]		Urban [N=39]		
	MEAN	SD	MEAN	SD	
Transportation	29.75	(10.98)	24.87	(14.49)	(1)
Shopping	18.00	(5.75)	13.33	(8.91)	(2)
Housework/Yardwork	15.63	(9.61)	11.54	(8.04)	(3)
Laundry	12.00	(9.39)	7.69	(9.59)	(5)
Managing Medications	10.25	(10.74)	8.97	(12.10)	(4)
Mobility	7.75	(11.32)	5.77	(9.43)	(6)
Managing Finances	6.50	(9.28)	5.64	(8.90)	(7)
Bathing	5.88	(8.08)	4.74	(7.70)	(8)
Meal Preparation	5.75	(8.74)	2.05	(5.70)	(9)
Bladder Incontinence	3.13	(6.76)	2.05	(5.22)	(9)
Dressing	.90	(2.58)	.26	(1.60)	(10)
Toileting	.38	(2.38)	.26	(1.60)	(10)
Bowel Incontinence	.38	(1.75)	.13	(.80)	(11)
Transferring	.25	(1.58)	.26	(1.60)	(10)
Telephone Use	.25	(1.58)	0		
Eating	.13	(.79)	0		

ADL, IADL, and total Functional scores at both times. Using both scales, the age of urban subjects was only significantly correlated with ADL scores at time two.

Table 17

Correlations Between Dichotomous and Weighted Functional Scales and Age (CHCNA)

	Three Days After Discharge		Three Weeks After Discharge	
	Rural [N=41]	Urban [N=40]	Rural [N=40]	Urban [N=39]
Dichotomous ADL Subscale	.45**	.40***	.55*	NS
Weighted ADL Subscale	.47**	NS	.55*	.39***
Dichotomous IADL Subscale	NS	NS	.42***	NS
Weighted IADL Subscale	.33***	NS	.47**	NS
Total Dichotomous Functional Scale	.37***	NS	.51**	NS
Total Weighted Functional Scale	.41***	NS	.53*	NS

Note: *$p \leq .0005$; **$p \leq .005$; ***$p \leq .05$

Knowledge Needs

Knowledge needs, in providing skilled or functional care, meeting behavioral needs, recognizing changes in medical condition, and contacting emergency transport or alternative community services, were assessed using the CHCNA questionnaire. At three days after discharge,

rural subjects, generally, reported greater deficits in knowledge. The largest deficits identified at both measurement times were lack of knowledge regarding reportable changes in condition and accessing emergency transport and alternative community services (see Table 18). Knowledge needs were also identified in skilled care, behavioral, and functional domains by all subjects across time. Knowledge deficits regarding skilled care procedures were perceived as the domain of greatest need (see Table 18). Knowledge deficits were also reported for IADL needs, primarily related to medication use. The number of subjects perceiving behavioral knowledge needs increased over time.

Both groups were examined for correlations among gender, knowledge deficits, age, site of residence, and time. At three days after discharge, three significant correlations were found between age and knowledge needs. In the rural sample, age correlated positively with functional knowledge needs $\underline{r}(41) = .60$, $\underline{p} = .000$, and with skilled care knowledge needs, $\underline{r}(41) = .33$, $\underline{p} = .036$. A positive correlation of $\underline{r}(40) = .41$, $\underline{p} = .009$, was found between the age of the urban sample and a knowledge deficit in accessing emergency services. At three weeks after discharge, a correlation of $\underline{r}(39) = .32$, $\underline{p} = .048$, was found between gender and knowledge deficits in the urban elderly. No other significant correlations were found.

Table 18

Knowledge Needs at Three Days and Three Weeks After Discharge

	3 Days After Discharge						3 Weeks After Discharge					
	Rural [N=41]			Urban [N=40]			Rural [N=40]			Urban [N=39]		
	# Subjects	%	# Needs	# Subjects	%	# Needs	# Subjects	%	# Needs	# Subjects	%	# Needs
Skilled Care	11	27	17	4	10	5	7	18	9	6	15	6
Behavioral	3	7	5	1	3	3	3	8	6	3	8	6
ADL	1	2	2	0	--	0	1	3	1	0	--	0
IADL	10	25	12	8	20	8	5	13	6	4	10	4
Changes in Condition	17	41	17	14	35	14	14	35	14	11	28	11
Emergency Number	21	51	21	4	10	4	10	25	10	2	5	2
Alternative Community Service	21	51	21	24	60	24	18	45	18	17	44	17

Research Question Two:

Differences in Needs at 3 Days and 3 Weeks

The second question in the study was to determine if health care needs after hospital discharge differed depending on geographic location of the subject and/or the number of days after transition into caregiving at home. Two by two repeated measures analyses of variance (ANOVA) were performed for each domain of health care need to determine any significant differences in rural versus urban location and/or the time after discharge.

At three days after discharge, rural subjects identified almost twice as many total skilled care needs (N=59) as did their urban cohorts (N=31). By three weeks after discharge, the total number of skilled needs reported by the rural subjects had dropped to 42, still approximately twice as many identified skilled needs as their urban counterparts (N=20). A significance difference was found between the geographic location of the subjects and the number of identified skilled care needs, F (1, 78) = 4.62, p = .035, with rural elderly identifying significantly more skilled care needs than their urban counterparts (see Table 19). After three weeks at home, while ten rural and seven urban subjects reported a decrease in skilled care needs, two rural and three urban subjects reported an increase in skilled care needs. No significant differences were found between the rural/urban settings and behavioral or knowledge needs.

Significant differences, however, were found between points in time for skilled care needs and knowledge needs. There were no significant differences in behavioral needs over time, using the three

direct questions in the CHCNA. There were no significant interaction effects between time and location in any of the domains. Table 19 summarizes the results of the analyses for skilled care, behavioral, and knowledge needs over time across locations.

When the differences in behavioral needs were examined using the BMD scale, significant differences over time were revealed for each subscale (see Table 20). In addition, mean scores on the 15 item Active Disturbed subscale were significantly different between locations with higher mean scores for urban subjects (7.61) than for rural subjects (5.12). Significant differences in mean scores were not found between rural and urban subjects in the Apathetic-Withdrawal or the Mood Disturbance subscales. There were no interaction effects between time and location for any of the subscales in the BMD.

At three days after discharge, the total number of ADL needs for rural subjects was 63 as compared to 52 total ADL needs identified by urban subjects. At three weeks after discharge, total ADL needs reported by rural subjects had decreased to 45 as compared to 40 total ADL needs for urban subjects.

A much larger number of IADL needs, than ADL needs, were reported across time by all subjects. At three days after discharge, rural subjects identified 177 IADL needs while urban subjects reported 173 IADL needs. By three weeks after discharge, the number of reported IADL needs had dropped comparatively for the two groups, with rural subjects identifying 137 IADL needs and urban subjects reporting 130 IADL needs.

There were no significant differences, as shown in Table 21, between the geographic locations of the subjects and the ADL, IADL, or

Table 19

ANOVA Results for Skilled Care, Behavioral and Knowledge Needs (CHCNA)

	df	SS	MS	F	*p*
Skilled Care					
Between Subjects	78	258.60			
Location	1	14.65	14.65	4.62	0.035
Error/Sub w Grp	77	243.95	3.17		
Within Subjects	79	39.00			
Time	1	3.65	3.65	7.96	0.006
Time x Location	1	0.09	0.09	0.19	NS
Error/TimexGrps	77	35.27	0.46		
Behavioral					
Between Subjects	79	43.60			
Location	1	0.32	0.32	0.58	NS
Error/Sub w Grp	78	43.28	0.55		
Within Subjects	80	14.00			
Time	1	0.10	0.10	0.56	NS
Time x Location	1	0.00	0.00	0.00	NS
Error/TimexGrps	78	13.90	0.18		
Knowledge					
Between Subjects	79	272.90			
Location	1	12.16	12.16	3.64	0.060
Error/Sub w Grp	78	260.74	3.34		
Within Subjects	80	71.00			
Time	1	8.10	8.10	10.22	0.002
Time x Location	1	1.07	1.07	1.35	NS
Error/TimexGrps	78	61.83	0.79		

Table 20

ANOVA Results of the BMD Subscales

	df	SS	MS	F	*p*
Apathetic-Withdrawn					
Between Subjects	79	3401.77			
Location	1	14.02	14.02	0.32	NS
Error/Sub w Grp	78	3387.75	43.43		
Within Subjects	80	666.00			
Time	1	42.03	42.03	5.39	0.023
Time x Location	1	15.67	15.67	2.01	NS
Error/TimexGrps	78	608.31	7.80		
Active-Disturbed					
Between Subjects	79	2810.77			
Location	1	248.53	248.53	7.57	0.007
Error/Sub w Grp	78	2562.24	32.85		
Within Subjects	80	845.00			
Time	1	319.23	319.23	47.50	0.000
Time x Location	1	2.41	2.41	0.36	NS
Error/TimexGrps	78	523.36	6.71		
Mood Disturbance					
Between Subjects	79	3241.98			
Location	1	96.24	96.24	2.39	NS
Error/Sub w Grp	78	3145.74	40.33		
Within Subjects	80	1079.00			
Time	1	297.03	297.03	29.89	0.000
Time x Location	1	7.86	7.86	0.79	NS
Error/TimexGrps	78	775.12	9.94		

Table 21

ANOVA Results for Dichotomous Functional Scale (CHCNA)

SCALE/SUBSCALE	df	SS	MS	F	*p*
ADL Subscale					
Between Subjects	79	350.99			
Location	1	0.63	0.63	0.14	NS
Error/Sub w Grp	78	350.37	4.49		
Within Subjects	80	36.50			
Time	1	5.26	5.26	13.17	0.001
Time x Location	1	0.11	0.11	0.29	NS
Error/TimexGrps	78	31.13	0.40		
IADL Subscale					
Between Subjects	79	783.10			
Location	1	0.00	0.00	0.00	NS
Error/Sub w Grp	78	783.10	10.04		
Within Subjects	80	113.99			
Time	1	40.00	40.00	42.18	0.000
Time x Location	1	0.03	0.03	0.03	NS
Error/TimexGrps	78	73.98	0.95		
Total Functional Scale					
Between Subjects	79	1835.74			
Location	1	0.72	0.72	0.03	NS
Error/Sub w Grp	78	1835.02	23.53		
Within Subjects	80	204.50			
Time	1	74.26	74.26	44.49	0.000
Time x Location	1	0.03	0.03	0.02	NS
Error/TimexGrps	78	130.21	1.67		

total functional need mean scores, based on the dichotomous items in the CHCNA. There were highly significant differences, however, in ADL, IADL, and total functional mean scores over time, with fewer ADL and IADL needs reported at three weeks after discharge. There were no interaction effects.

The second part of question two asked if there was a significant difference in the magnitude of functional needs between the geographic location of the subjects and/or over time. Repeated measures ANOVA found no statistically significant differences between the discharge setting of the subjects and the weighted ADL, IADL, or total Functional mean scores. As shown in Table 22, there were highly significant mean differences over time, however, in both weighted subscales and the total scale. There were no interaction effects. These results are very similar to those found in the analysis of the dichotomous functional data (see Table 21).

Research Question Three:

Meeting the Health Care Needs

The third question of the study asked who was meeting the health care needs as identified by the subjects. Generally, the formal support system met the knowledge and skilled care needs while the informal system met the behavioral and functional needs. Urban family members were found to be more involved in functional care at the end of the three week transitional period than were rural family members.

During the first interview, subjects were asked to identify their primary caregivers. Subjects who only needed assistance with one activity such as transportation often did not identify a primary

Table 22

ANOVA Results for Weighted Functional Scale (CHCNA)

SCALE/SUBSCALE	df	SS	MS	F	*p*
ADL Subscale					
Between Subjects	79	108801.99			
Location	1	481.42	481.42	0.35	NS
Error/Sub w Grp	78	108320.58	1388.73		
Within Subjects	80	9914.98			
Time	1	1703.03	1703.03	16.22	0.000
Time x Location	1	20.28	20.28	0.19	NS
Error/TimexGrps	78	8191.69	105.02		
IADL Subscale					
Between Subjects	79	425227.34			
Location	1	1606.77	1606.77	0.30	NS
Error/Sub w Grp	78	423620.56	5431.03		
Within Subjects	80	48737.50			
Time	1	17535.16	17535.16	44.42	0.000
Time x Location	1	412.66	412.66	1.05	NS
Error/TimexGrps	78	30789.69	394.74		
Total Functional Scale					
Between Subjects	79	821163.62			
Location	1	329.19	329.19	0.03	NS
Error/Sub w Grp	78	820834.44	10523.52		
Within Subjects	80	77547.56			
Time	1	30167.56	30167.56	49.93	0.000
Time x Location	1	249.97	249.97	0.41	NS
Error/TimexGrps	78	47129.98	604.23		

caregiver. At three days after hospital discharge, 33 rural and 32 urban subjects identified primary caregivers. Twenty-nine rural and 26 urban subjects related that they lived with their primary caregivers.

No significant difference was found in the mean age of rural (63.7) and urban caregivers (63.5). The age range of rural caregivers was 29 to 81 years, with 10 caregivers between ages 40 and 60. The age range of urban caregivers was 35 to 82 years with three caregivers under the age of 40 and eight caregivers between the ages of 40 and 60.

Employment status of the caregivers was similar in the two groups. Nine rural caregivers were employed, working an average of 35.6 hours a week. Five were employed full time. Eight urban caregivers were employed, working an average of 38.3 hours a week. Four were employed full time. More than five times as many women as men were identified as caregivers in the rural setting. This finding is compared to slightly more than twice as many women as men providing care in the urban setting (see Table 23).

At three days after discharge, 12 rural (29%) and 13 (32.5%) of the urban subjects were receiving community in-home services. These numbers dropped to nine in the rural setting and eight in the urban setting by the end of three weeks. As noted in Table 24, there is greater use of equipment services, paid caregivers, and physical therapists in the rural setting and the greater use of in-home meals in the urban setting.

Table 23

Demographic Characteristics of the Informal Caregivers

Characteristic	Rural [N=33]		Urban [N=32]	
	Number	Percentage	Number	Percentage
Age				
Under 65	12	36	15	47
65-74	15	45	9	28
75-84	6	18	8	25
Gender				
Men	5	15	10	31
Women	28	85	22	69
Employment Status				
Employed	9	27	8	25
Unemployed	2	6	1	3
Retired	20	61	23	72
Missing data	2	6		
Ethnicity				
White	33	100	30	94
Black			2	6

Table 24

Use of Community Services

	3 Days After Discharge		3 Weeks After Discharge	
	Rural [N=12]	Urban [N=13]	Rural [N= 9]	Urban [N= 8]
Home Health Nurse	8	7	3	2
Home Health Aide	2	2	2	2
Paid Caregiver	4	2	4	3
In-home Meals	2	5	2	5
Equipment Services	5	1	5	1
Homemaker Services	1	1	1	2
Physical Therapist	2	2	2	0

Only one clinically significant association was found between the demographic variables and the receipt of community services. At three weeks after discharge, using Kendall's tau, income and receipt of community services were negatively correlated (tau=-.40, p=.004) in the rural setting, indicating that individuals with lower reported income were receiving more community services. No significant relationships were found between the demographic variables and receipt of community services in the urban setting.

At three days after discharge, nurses were meeting the majority of skilled care needs (36%) in the rural setting. At the same time in the urban setting, nurses were meeting 29 percent of the skilled care needs. Rural subjects reported that physicians were meeting their skilled care needs 17 percent of the time while urban subjects reported only 3 percent of the skilled care needs met by physicians in the urban

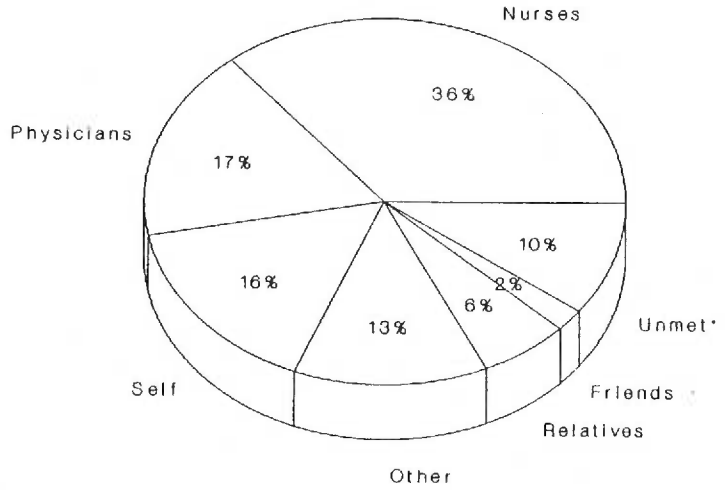
setting. More urban subjects (35%), than rural subjects (15%), reported that they were performing their own skilled care procedures (see Figure 2).

At three days after discharge, urbanites responded that nurses met 39 percent of their skilled care knowledge needs. Rural residents reported nurses met 40 percent of their skilled care knowledge needs. In comparison, rural subjects said that physicians had answered their knowledge questions 25 percent of time as compared to 6 percent in the urban setting.

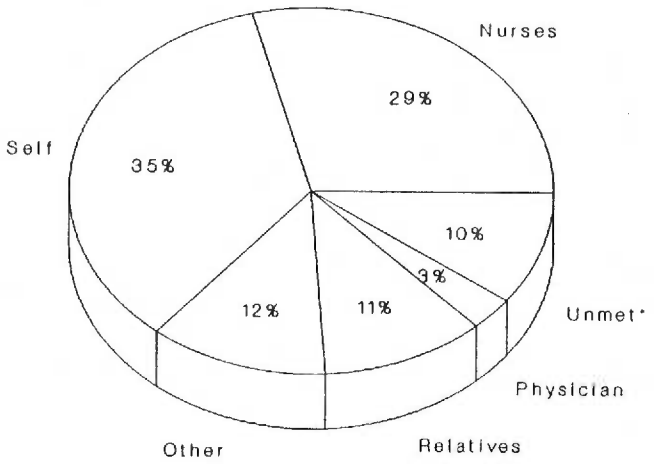
At three weeks into caregiving, both rural and urban subjects were meeting their own skilled care needs 35 percent of the time. With fewer total needs reported by both groups, nurses were now meeting skilled care needs 19 percent of the time in rural settings as compared to 40 percent in the urban setting. By three weeks, physicians were associated with meeting more needs in both settings. The majority of skilled care knowledge needs were met by nurses in both settings (see Figure 3).

Physicians were recognized as the major sources of knowledge regarding important changes in condition and medication usage. At three days after discharge, nurses reportedly provided only 12 and 13 percent of the teaching regarding changes in conditions by rural and urban subjects, respectively. Further, nurses were recognized by rural and urban subjects as providing only seven and five percent, respectively, of medication knowledge. Even though nurses completed the discharge instructions, patients perceived these instructions as coming totally from their physicians.

Environmental Resources
for Skilled Care Needs



Rural N = 59
3 Days

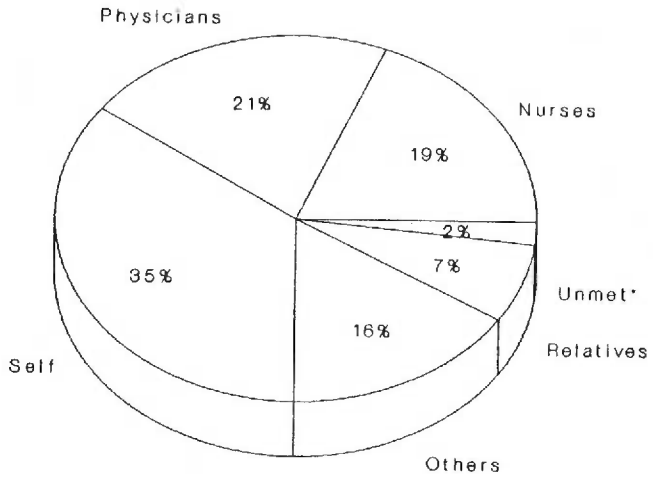


Urban N = 31
3 Days

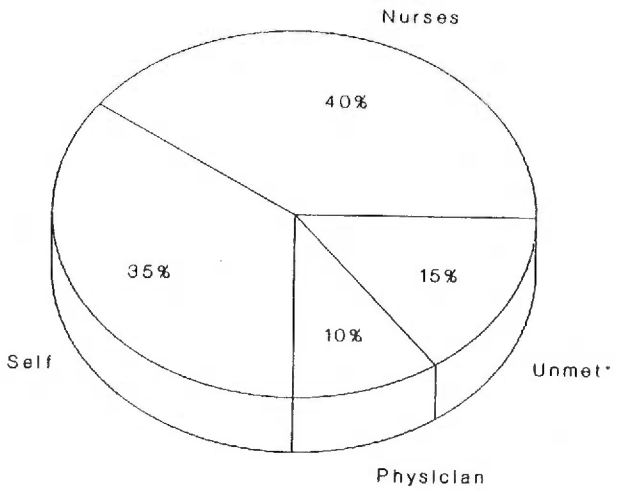
*Totally Unmet Needs

Figure 2.

Environmental Resources
for Skilled Care Needs



Rural N = 43
3 Weeks



Urban N = 20
3 Weeks

*Totally Unmet Needs

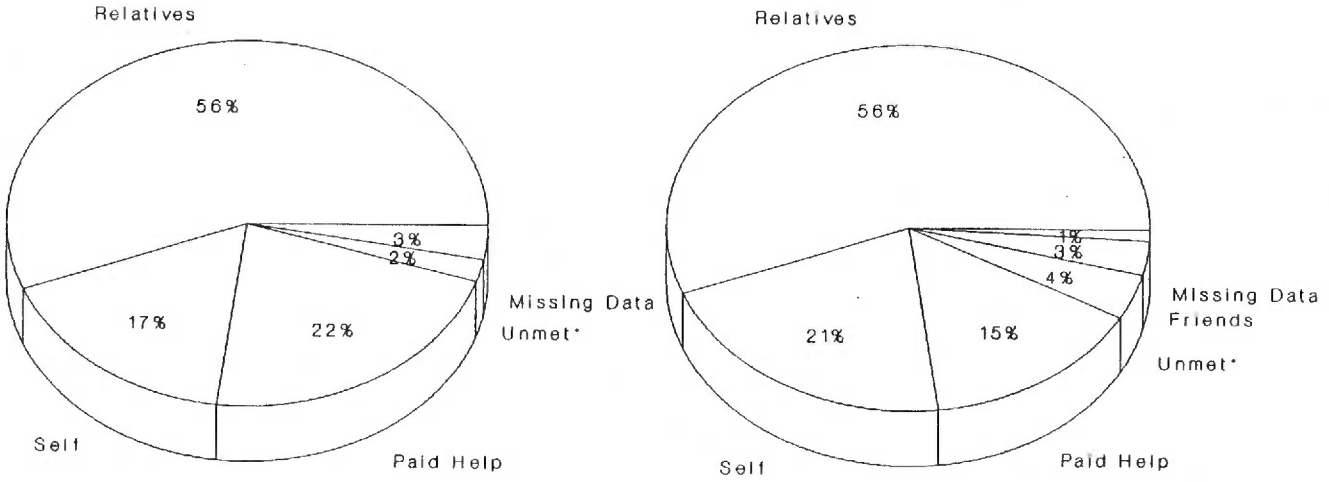
Figure 3.

A major difference in care provided by the rural and urban informal systems was reported for ADL and IADL needs. At three days after discharge, rural relatives were providing 56 percent of the assistance needed for ADL needs and 72 percent of the assistance necessary for IADL needs. These findings are similar to those reported in the urban setting with 56 percent and 79 percent of the services, being provided by relatives for ADL and IADL needs, respectively (see Figures 4 & 5). By three weeks, however, relatives provided only 42 percent of the assistance needed for ADL needs in the rural setting as compared to 55 percent of the assistance for ADL needs provided by relatives in the urban setting. Similarly, only 65 percent of the IADL needs were met by relatives in the rural setting as compared to 81 percent in the urban setting (see Figures 6 & 7). As shown in the figures, friends provided a higher percentage of functional care in the rural settings than in the urban settings.

Friends and relatives met the majority of behavioral needs in each setting. During both interviews, however, rural and urban subjects reported that 50 percent of their behavioral needs were met only some of the time or not at all. None of the respondents used formal services to meet their behavioral needs.

Figure 4.

Environmental Resources
for ADL Needs



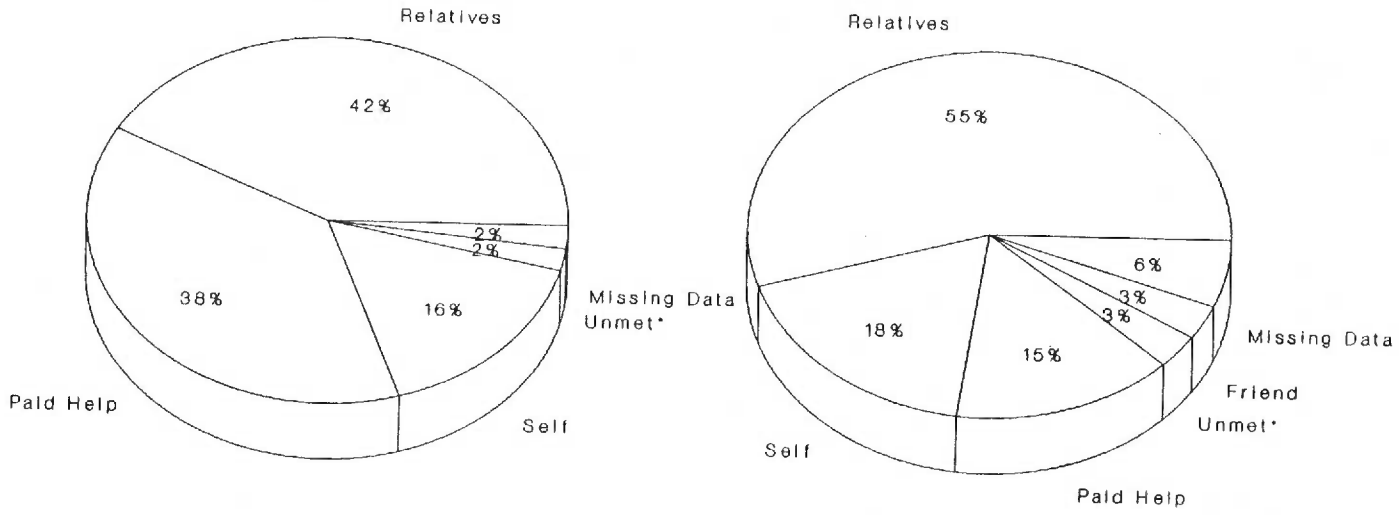
Rural N = 63
3 Days

Urban N = 52
3 Days

*Totally Unmet Needs

Figure 5.

Environmental Resources for ADL Needs



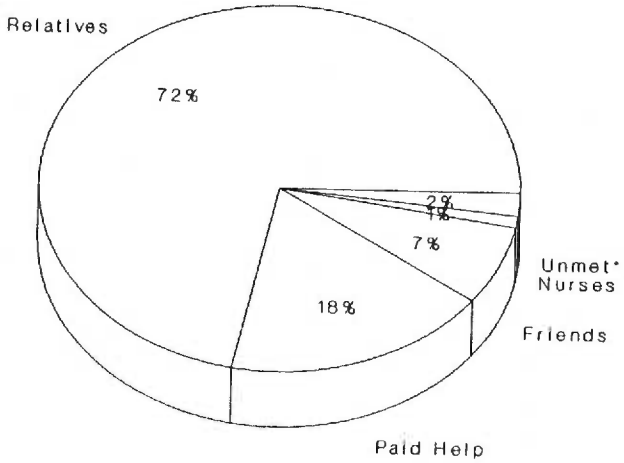
Rural N = 45
3 Weeks

Urban N = 40
3 Weeks

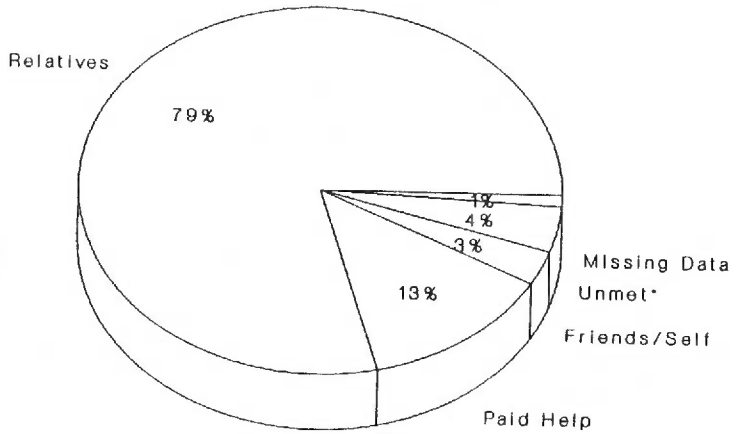
*Totally Unmet Needs

Figure 6.

Environmental Resources
for IADL Needs



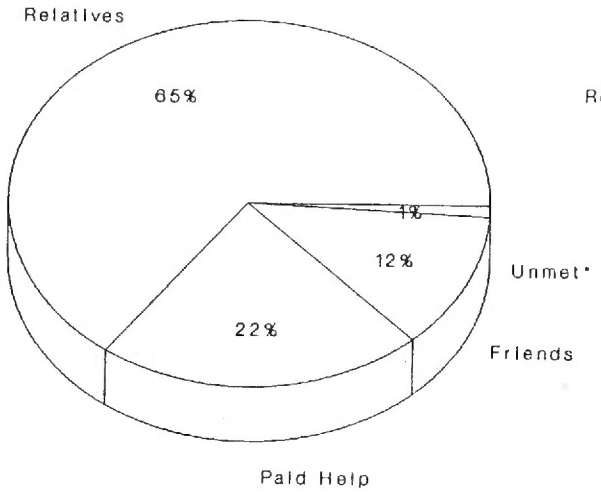
Rural N = 177
3 Days



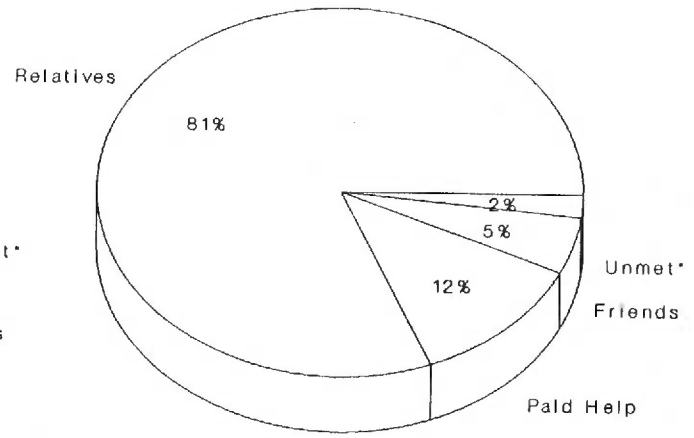
Urban N = 173
3 Days

*Totally Unmet Needs

Environmental Resources
for IADL Needs



Rural N = 137
3 Weeks



Urban N = 130
3 Weeks

*Totally Unmet Needs

Figure 7.

Research Question Four:

Unmet Needs at 3 Days and 3 Weeks

Question four queried the needs that respondents said were left unmet after the formal and informal systems coordinated their efforts to meet the identified needs of the care receivers. The number and score of unmet needs were totaled in each domain. Only three rural and six urban subjects did not identify any unmet skilled care, behavioral, functional, or knowledge needs, with the greatest number of unmet needs identified in the knowledge domain.

As shown in Table 25, the greatest number of unmet needs, excluding unmet knowledge needs, were identified in the functional domain, with urban subjects identifying more unmet functional needs than their rural cohorts. More IADL than ADL needs were identified as unmet, with unmet transportation needs representing the greatest unmet needs across time. In addition, except for the unmet skilled care needs at three days after discharge, the majority of unmet needs were at least partially met by a complement of environmental resources. The number of needs in each domain reported as totally unmet are shown in parentheses in Table 25. At three days after discharge, one urban woman described seven functional needs as completely unmet by the system. For a more specific tabular presentation of unmet needs in the skilled care, behavioral, and functional domains, see Appendix J.

The greatest number of unmet needs, reported by all subjects, was in the knowledge domain. At three days after discharge, 34 rural and 31 urban subjects expressed unmet knowledge needs. By three weeks after discharge, 33 rural subjects and 26 urban subjects still reported unmet

Table 25

Unmet Health Care Needs

	3 Days After Discharge		3 Weeks After Discharge	
	RURAL	URBAN	RURAL	URBAN
Unmet Needs				
Skilled Care	[N= 7]	[N= 2]	[N= 4]	[N= 4]
	10 (6)	3 (3)	6 (1)	4 (3)
Behavioral	[N= 4]	[N= 3]	[N= 6]	[N= 4]
	6 (2)	5 (4)	10 (3)	7 (1)
Functional	[N= 9]	[N=14]	[N= 7]	[N=12]
	10 (2)	24 (7)	8 (1)	23 (4)

Note: Parentheses indicate totally unmet needs.

knowledge needs (see Table 26). Again, most of the unmet knowledge needs were at least partially met by a complement of environmental resources as shown by the numbers in parentheses.

In each setting, while unmet needs were scattered throughout the sample,the majority of needs were met, at least partially, by a complement of formal and informal services. A few subjects, however, portrayed a variety of needs in all domains. These subjects are described in more detail to provide a picture of the findings for unmet needs.

Table 26

Unmet Knowledge Needs

	3 Days After Discharge		3 Weeks After Discharge	
	RURAL	URBAN	RURAL	URBAN
Unmet Knowledge Needs	[N=34]	[N=31]	[N=33]	[N=26]
Skilled Care	20 (9)	7 (2)	11 (3)	7 (1)
Behavioral	5 (4)	3 (3)	6 (3)	6 (5)
ADL	1 (1)	0	1 (0)	0
IADL	12 (4)	8 (2)	6 (2)	4 (1)
Change in Condition	17 (9)	14 (5)	14 (5)	11 (4)
Emergency Number	21 (8)	4 (3)	10 (4)	2 (1)
Alternative Community Services	21 (11)	24 (16)	18 (5)	17 (8)

Note: Parentheses indicate totally unmet needs.

At three days after discharge, one 88 year old rural woman felt that she would like a health care provider to come to her home to perform a general assessment of her needs, particularly cardiopulmonary assessment. She was receiving five cardiac medications, for which she recognized a knowledge deficit regarding their use. She continued to report this need throughout the transitional period although she had visited her physician during the three weeks. She also reported foot care as a need at the three week interview. Her major complaint at both interviews was her inability to see the same doctor for her follow-up visits. Although this subject had high weighted functional need scores

at both interviews, these needs were being met by her paid caregiver. She was not receiving any professional or community in-home services.

Three days after a mastectomy, another rural woman, age 69, was discharged to the home of a friend 60 miles from the hospital and her physician. She had not been referred to any community services nor did she have home health nursing service. She still had an indwelling drain and had received no instructions on any post-mastectomy exercises. Neither did she have any knowledge regarding changes in her condition or problems that should be reported to her physician. While she recognized that she should have information in these areas, she also believed that her doctor would inform her if she needed to know more than she did. She did not know the phone number for the ambulance service, nor did she know where to get in-home services if she needed them. She was taking only a pain pill and Lanoxin and did not identify any knowledge needs in managing her medications. This particular subject had a third grade education and was essentially illiterate. While she had scored 145 on the weighted IADL subscale at three days after discharge, by three weeks after discharge, she was providing self-care, with needs only in shopping and transportation. By three weeks after discharge, her drain had been removed by the physician but she still had been shown only one post-mastectomy exercise. She continued to believe that her physician would provide her with any health care information and services that she should need.

One 86 year old urban woman, who lived alone and had no family, continued to experience unmet ADL and IADL needs throughout the transitional period. This lady was relatively confused, in that she did

not know when she had been in the hospital or for what, how she gotten to the hospital or home, and had not filled her prescription at three days or at three weeks after discharge. She used a wheelchair to maneuver in her small apartment and a neighbor would buy her groceries at her request. She did receive meals-on-wheels five days a week, homemaker services one day a week, and a bath by a paid caregiver one day a week. She did not perceive a need for skilled services except for someone to "check in on her". She did not perceive any behavioral needs and commented "that she was surely glad that her mind was still good". Since she had related the same stories to the hospital discharge planner as she had to the study investigator, it was difficult to place her in the high risk category for managing self-care until a home visit had been made.

Another 83 year old urban woman, with respiratory problems, cited a need for oxygen and pulmonary assessment at three days after discharge. She called her physician who ordered a blood test to determine oxygen saturation. She had no knowledge of what changes in her condition she should report to her physician and said she would call a taxi if she needed to go to the hospital. She did not know the emergency ambulance telephone number. At three days after discharge, her ADL and IADL needs were met by a paid caregiver and/or her invalid spouse. However, by three weeks after discharge, she was having difficulty with the paid caregiver, leaving unmet needs in transportation and shopping. The caregiver was meeting most of the subject's needs for meal preparation and help, if needed, with ADL. This subject also recognized a need for help with depressive behaviors.

While her son and her husband partially helped her with this behavioral need, she reported a continuing need for assistance and knowledge in dealing with her depression that had escalated at the three week interview.

Although only a small number of elderly reported behavioral needs, these needs were indicated as unmet more of the time than the other needs. In the rural setting, at three days after discharge, one 73 man was experiencing severe groin and lower abdominal pain, uncontrolled by his medications. In addition, he stated that his doctor and some of his friends thought the pain to be psychologically induced. He was distraught over the pain and talked about suicide, particularly at night, when the pain was worse. He indicated needs in all three behavioral areas, without support. By three weeks after discharge, he was no longer experiencing the pain and denied any behavioral needs.

Another rural man, age 75, reported depressive and withdrawal behaviors at three days after discharge. He was too frail to complete the telephone interview at three weeks. His spousal caregiver, who cried during much of the interview, relayed that the subject was experiencing increasing mood disturbances and changes, although his behaviors were not threatening nor directed at anyone other than himself. Although she conveyed that their children tried to help their father with his depression, their help was inadequate to meet her husband's behavioral needs. She did not know nor did she want to seek outside resources.

In the urban setting, while only four individuals cited behavioral needs at three weeks after discharge, for three of these people, their

needs were unmet. One man, along with his spousal caregiver, cited behavioral needs in all three categories, i. e. apathetic-depressive, active disturbed, and mood disturbance. Both of them cried throughout the home interview, particularly when questions were asked related to the spouse being able to provide continuing care for the subject at home. This man had been in a nursing home for a short time six months ago when his wife was unable to manage his home care. He said that he would commit suicide if he ever had to return to a nursing home. The family had responded to his comments by removing all the guns from the home. While both the subject and his wife discussed their need for respite care, they reported that their income was too high for Medicaid support and too low to afford community care. A daughter lived next door. At the time of the telephone interview, the spouse stated that the subject's mood was a "little better" and he had discontinued talking about suicide. He died four days after the home interview.

Another urban man, age 81, while indicating no behavioral needs at three days after discharge, talked at length about his depression and mood changes during the three week telephone interview. He requested information about community services that might help him with his depression.

While many of the sample recognized a knowledge deficit regarding changes in their medical conditions (see Table 18), few were concerned about this deficit. Three urban couples, though, were quite concerned and asked many questions related to their conditions and possible emergencies. Two of these subjects had experienced seizures, for which

they were being medicated, but no one had explained what the caregivers should do if a seizure should occur.

Many subjects, particularly rural residents, knew the emergency ambulance number at three weeks as compared to three days, indicating that they had sought out this knowledge after the first interview. Yet, most of the subjects had not sought information regarding community in-home services that they did not presently need.

Research Question Five:

Differences in Unmet Health Care Needs

The fifth research question asked if there was a significant difference between the location of subjects and/or time and unmet health care needs. Only three rural and six urban subjects reported that they had no unmet needs. The total number of individual unmet knowledge needs indicated by the sample were small, yet at three days and three weeks after discharge, 76 percent and 75 percent of the rural subjects and 75 percent and 59 percent of the urban subjects expressed knowledge deficits. Using a 2 X 2 repeated-measures ANOVA (time and location), there was a significant difference over time between the mean number of unmet knowledge needs, F (1, 80) = 15.09, p = .000, with a mean of 1.44 at time one and .99 at time two. A difference in the mean number of unmet knowledge needs between rural and urban subjects approached significance with F (1, 79) = 3.22, p = .08.

Unmet functional needs and behavioral needs were not statistically different between rural and urban settings. A difference in mean scores for unmet IADL needs between rural and urban subjects, measured with the

weighted IADL subscale, approached statistical significance with F (1, 65) = 3.41, p = .07.

In contrast to the statistical differences found in mean scores over time for the reported numbers of functional and skilled care needs, no differences were found over time for the unmet needs in these categories. No statistical difference was found in the unmet behavioral needs over time.

CHAPTER 5

Discussion

This study was based on the theoretical perspective of person-environmental fit. Using this framework, rural/urban differences in health care needs of elderly discharged to home from an acute care facility were explored. Second, the study examined the extent to which the formal and informal systems were meeting the identified care needs. Since no instrument was found that comprehensively measured the health care needs of the elderly from their perspective, the study also evaluated the psychometric properties of the Comprehensive Health Care Needs Assessment questionnaire (CHCNA) developed for this study.

There were no statistical differences in age, gender, marital status, living arrangements, or financial resources between subjects in the two settings. The only significant difference found in the reported health care needs between the rural and urban settings was in the number of skilled care needs, with rural subjects identifying more needs than urban subjects. These findings clearly support the caveat purported by Coward (Coward & Lee, 1985) that if rural theory is to be advanced, rural residents need to be compared with their urban cohorts. For example, without comparative data, it would have been easy to conclude that, indeed, transportation problems are unique to rural elders, with 61 percent of the rural elderly in this study still reporting a need for assistance with travel at three weeks after discharge. Yet, when the same question was asked of the elderly urban subjects at three weeks after discharge, 77 percent described a need for assistance with transportation. It is possible, however, that the required length of

time for contacting physicians in the urban setting, which created an urban sample with longer hospital stays, may have masked the greater needs in the rural subjects. Clinically and statistically significant results of the study are discussed in this chapter.

Differences over Time

Statistically significant differences were found over time for all the needs, with total needs in all domains decreasing during the transition period. One would expect an overall decrease in needs as the elders regain their pre-hospitalization health. Of import in interpreting these findings, though, is the number of individuals reporting an increase in needs over time. Follow-up with these thirteen subjects would provide data to define continuing needs and resources. Perhaps, these are the subjects with more chronic problems. It could also be that their perceived needs did not actually escalate but that, with time, the subjects were able to identify their needs more accurately.

Demographic Variables

The demographic characteristics of the rural and urban samples were similar. While the rural sample reported a slightly lower income, the results were not statistically different. These findings differ from earlier reported demographic findings (Coward et al., 1988) where rural elderly were portrayed as poorer and unable to afford Medigap insurance. One explanation for these findings may be that only about 11 percent of Oregon's elderly fall below the poverty level, in comparison to approximately 20 percent nationally (Office of Health Policy, 1988).

As expected, there were more men than women in the rural sample and more men then women were married in both groups. More women lived alone, with a slightly higher percentage living alone in the urban sample. Very few subjects lived with children and/or grandchildren. An interesting finding in the study revealed that approximately one quarter of the subjects in each group were childless. In light of the health care system's reliance on family support for community care, this finding suggests the need for further exploration of childless elderly, their support systems, and their management of care needs when ill or disabled.

Lengths of hospital stay between the rural and urban sample were statistically different. One limitation in this study was placed on the investigator by the large number of physicians in the urban hospital. The investigator was required to obtain physician permission to contact patients by placing notices on patients' charts for 48 hours prior to contact. This limitation resulted in 30 patients with two and three days stays being discharged before contact was made; therefore, these patients were lost as participants to the study. In contrast, in the rural hospitals where there were fewer physicians and more personal contact, physician permission to contact acute care patients, when required by the hospital, was easily obtained and patients with two day stays were not lost to the study. The average rural hospital stay of 5.1 days was one day longer than previously reported. In contrast, the urban sample in this study had an average length of stay of 7.5 days as compared to 4.9 days reported earlier for urban patients. It is not known what effect the hospital longer stays for urban subjects had on

the results of the study. While no data were available on length of stay for the elderly, it is probably that the elderly have longer hospital stays.

Individual Health Care Needs

Skilled Care Needs

The need for highly technical home care as described by Bergthold (1987) and Harper (1988) was not reported by rural or urban subjects in this study. From the perspective of the investigator, subjects did not need or receive highly technical care by home care nurses. Several hypotheses for the lack of intensive skilled care needs may be generated. Since the advent of a prospective reimbursement system, hospital care may have changed with more intense care for shorter periods, resulting in less need for intensive post-discharge care. Second, transitional care units had recently opened in the urban hospital and in the mini-referral rural hospital. Several potential participants, who, as recently as six months before this study, would have been discharged with greater skilled needs were now rehabilitated in the transitional care unit for one to three weeks following acute care. Third, the use of swing beds in the two rural hospitals had reportedly increased in the last two years although the use of these beds involved only one potential participant. These hypotheses support the need to include patients discharged from transitional care units and swing beds to the community in future studies since these individuals may be the elderly that are requiring greater skilled care. Further, these findings may represent the profile of an elderly patient discharged in the 90's as compared to an elderly patient discharged just

two to four years ago. This study suggests that while more sophisticated procedures and diagnostics are performed in the urban hospitals, the highly technical skilled care demands of patients discharged in the two settings do not differ.

The difference in the number of skilled care needs was statistically significant between geographic settings. Again, more rural residents identified skilled care needs, particularly the need for cardiovascular assessments, than did their urban cohorts. This identification may be due to their reticence to use formal systems, their lack of knowledge in using a variety of health care providers, or the lack of formal assessments, by either nurses or physicians. More in-depth assessment is needed to determine exactly what skilled care services or care rural residents perceive as needed to match their skilled care deficits.

Rural subjects perceived 59 skilled care needs at three days after hospital discharge, with 17 percent of these needs reported as unmet at least half of the time. Only diet monitoring, however, was reported as unmet by more than one person. Of the 31 skilled care needs perceived by urban subjects at three days after discharge, only three were reported as unmet. At three weeks after discharge, the perceived number of skilled care needs had decreased by 50 percent, but the diversity of needs remained. The diversity of perceived and unmet skilled care needs reported by this sample does not provide any clear direction for changing the discharge planning process nor for increasing community based skilled care services in either setting.

Behavioral Needs

Only 15 percent of the rural subjects and 8 percent of the urban subjects, when asked directly, reported behavioral needs at three days after discharge, with the largest percentage identifying depressive behaviors. The percentages for depressive behaviors increased to 17 percent and 10 percent by three weeks after discharge. These percentages, particularly for the rural sample, are only slightly lower than the projected 20 percent of the elderly population with depressive problems (Harper, 1988). According to family reports, only three subjects exhibited any cognitive impairments and these impairments were reported as transient and minimal. None of the subjects had diagnosed dementia.

Wide discrepancies in behavioral needs were identified, however, when the responses to the three direct questions were compared with responses to questions within the subscales of the BMD. These findings support three possible explanations.

First, self-reporting of mental/emotional problems in this cohort is not common. Thus, there is the need to further evaluate the use of direct questions regarding behavioral needs. It is interesting to note, however, that with direct questioning, comparatively more rural subjects than urban subjects reported behavioral problems. This finding disagrees with Scheidt's (1985) findings that rural residents are more reticent to report mental problems. Second, the BMD scale may be assessing behavioral characteristics that are different than the labels in the scale. Only one of the subjects who openly discussed suicidal thoughts had a high score on the Apathetic-Withdrawal subscale. If the

results found when examining the responses on the BMD are more correct than the direct questioning results, then the percentage of elderly with behavioral problems in this sample is higher than the 18-25 percent previously reported. Third, the BMD was originally developed to be completed by caregivers of impaired elderly and may not be appropriate for cognitively intact elders. Further validity evaluation of the BMD is needed.

The results of the findings in the behavioral domain suggest that a more valid instrument is needed to assess behavioral problems in the cognitively intact elderly. A comprehensive behavioral instrument, that assesses the actions that: (a) require frequent supervision and protective care, (b) are socially unacceptable, and (c) characterize anxious or depressive states would contribute greatly to understanding this domain and determining service needs. Wording the assessment questions so that they could be answered by either the subject or the caregiver would add to the utility of the instrument.

Functional Needs

There were no statistically significant differences in reported functional needs between the rural and urban elderly. The rural elderly did, however, report a larger number of deficits per individual and have higher weighted functional needs scores than the urban sample. Further, in the rural sample, the significant correlation between increasing age and increasing functional needs supports the conclusion by Coward and Lee (1985) that rural men and women suffer from more chronic illness and, as they increase in age, report more restricted days of activity. It is also possible that if the rural sample had not included a large

number of subjects with only two day stays, the rural elderly would have been, statistically, more functionally dependent than their urban elderly counterparts.

Decreased mobility and the need for assistance with bathing and bladder incontinence have been reported as major ADL indicators of increasing dependency (Rabin & Stockton, 1987; Waters,1987; Wolock et al., 1987). In this study, these same three ADL were identified as the major activities needing assistance. Independence in mobility, or the ability to move about on one's own, was queried in several ways. Subjects were asked if they had problems ambulating inside the house, outside the house, maneuvering stairs, or getting out of the bed or chair. In other studies, only one of these questions is usually used to assess independence in mobility. Thus, it may not be accurate to compare the subjects in this study who reported mobility needs with subjects in other studies identifying mobility needs. It is important, however, in planning for resources for discharged elderly to know exactly which mobility needs require additional assistance. For example, at three weeks after discharge, almost all the subjects reported that they could ambulate inside their homes but 9 rural and 16 urban subjects reported that they could not ambulate outside their homes without assistance. This finding supports the precise assessment of needed assistance and the duration of that need. Since both groups of subjects reported similar needs in maneuvering stairs and moving about inside the home, the independent nature of the rural population as reported in earlier studies (Coward & Lee, 1985; Weinert & Long, 1987)

may be the reason that fewer rural subjects reported mobility needs for moving about outside.

While there was a significant reduction in the overall number of ADL needs between three days and three weeks following discharge, the number of urban subjects reporting mobility needs and the number of subjects in both settings reporting bathing and bladder incontinence needs changed very little over time. In fact, 10 subjects, 4 rural and 6 urban, reported increasing ADL needs over the three weeks. One explanation for the continuing need for assistance with bathing may be the older homes of most of the subjects. Generally older homes have non-walk-in showers and tubs with high walls, making self care in bathing more difficult. Almost all the subjects lived in older homes. Since formal home environmental assessments were not completed in this study, it is not known if structural barriers were the primary cause of dependence in bathing.

The majority of subjects experiencing bladder incontinence reported they were able to manage with self care. The potential problems for these elderly as they age are self-evident. The use of bladder and bowel management programs, a prerogative of nursing practice, needs to be increased, as only those few subjects on dialysis or self-catheterization reported any knowledge of bladder programs.

IADL needs for both rural and urban subjects, far exceeded the ADL needs. The major IADL needs reported by Waters (1987) were shopping, doing heavy housework, and doing heavy laundry. These findings were also reported by the majority of subjects in this study. In addition, the need for assistance with meal preparation was reported by twice as

many rural subjects as urban subjects. It is possible that more urban elderly have access to fast foods or are used to eating smaller, frozen meals, and, therefore, do not consider meal preparation a problem. A second alternative explanation may be the larger number of men in the rural sample as compared to the urban sample. Generally, men of this cohort have never been responsible for preparing meals.

Transportation, reported as a major problem for rural dwellers, has been infrequently addressed in the research regarding functional needs (Talbot, 1985). During both interviews, one unexpected finding was that more urban elderly than rural elderly reported a need for help with transportation and shopping. An equal number from each sample group owned cars so the problem was with driving capability, not access. Bus and taxi services were only available in the urban setting. Senior citizen buses, however, were available in both settings. Several possible interpretations are suggested. Since rural streets and highways are less crowded and parking directly in front of a grocery store is possible, rural elderly may continue to drive longer and with more incapacities than their urban cohorts. Given the reported limitations of the urban elderly in ambulating outside the home, bus transportation may be as inaccessible for the recently discharged urban elderly as it is for the rural elderly. In addition, urban elderly with accessible bus services may be afraid to ride the bus due to recent altercations between gangs and police on city buses. Taxi service may not be affordable. Finally, both groups of subjects were aware of the Senior Bus services but generally described the pre-arranged scheduling as inconvenient. This is one example of having services available but

not utilized because the need may not match the type of services provided.

The ability to use the telephone was another major difference in reported needs between the rural and urban elderly. Eleven rural subjects reported problems with using the telephone at three days after discharge as compared to only one urban resident. The number needing help decreased to five rural subjects at three weeks. One possible explanation for this difference in perceived need is that most of the rural homes had only one telephone, usually in the kitchen. In the urban homes, several subjects had portable phones and/or multiple telephone jacks so telephones could be placed within easy reach of the incapacitated elder.

Knowledge Needs

Although not statistically different, a variety of knowledge needs were reported by both samples. At three days after discharge, in corroboration with the findings of Starrett (1986), approximately 50 percent of the rural subjects and 60 percent of the urban subjects reported inadequate knowledge in how to access alternative community services. Fifty percent of the rural subjects did not have enough information on accessing emergency services. This lack of knowledge can be at least partially explained by the fact that, in the rural areas, the 911 system had been installed in the last six months. Yet, at three weeks after discharge, 25 percent still did not know the emergency call number. In contrast, most of the urban subjects were aware of the emergency phone number.

Over one-third of the subjects in both settings acknowledged that they did not know what problems or changes in condition to expect following discharge. This finding is similar to findings reported in earlier studies (Kromminga & Ostwald, 1987; Michels, 1988). Even though most of the subjects in this study had had follow-up visits to their physicians, the number of subjects continuing to express a lack of knowledge in identifying changes in condition at three weeks after discharge changed very little.

The biggest difference in perceived knowledge needs between rural and urban subjects was reported in knowing how to perform identified skilled care needs, with 41 percent (N=17) of the rural subjects as compared to 12.5 percent (N=5) of the urban subjects reporting deficits. Rural subjects, however, at three weeks following discharge reported a decrease of almost 50 percent in skilled care knowledge deficits. This decrease compares to a slight increase in the number of urban subjects reporting knowledge needs in skilled care. Further investigation into the knowledge deficits in performing or understanding skilled care procedures is warranted since in-home professional nursing care was provided equally in the two settings.

Few knowledge deficits were perceived in the functional domain. The majority of knowledge needs in this category were related to medication use. Recognizing that polypharmacy is a major problem for community based elderly (Eskeli, 1989; Harper, 1988), more in-depth analysis of this knowledge deficit is warranted.

Knowledge deficits in meeting behavioral needs, while small in number, represented almost all reported behavioral needs. The need to

expand mental health services is supported by both the treatment needs for the behavioral problems and the lack of understanding in coping with these problems.

The knowledge deficits reported by all subjects strengthens the need for in-home follow-up teaching of discharge information by professional nurses. Since this study only identified that the subjects perceived a need for additional instructions in follow-up care at home, in-depth exploration of the knowledge deficits is needed to determine appropriate timing and methodology for teaching.

Environmental Resources

Informal Support System

It has been reported that friends and relatives are meeting 80 to 90 percent of the in-home needs of the elderly (Cantor, 1983; Newhouse & McAuley, 1987; Rabin & Stockton, 1987). Unexpected findings in this study indicated that not only were friends and relatives providing considerably less informal support than previously reported for ADL needs but, also, the percentage of assistance with ADL being provided by family and friends to the urban elderly was greater than for rural elderly. This difference in informal assistance was more pronounced by three weeks after discharge when rural relatives were reported as providing assistance for only 43 percent of the ADL needs as compared to 58 percent of needed help provided by urban relatives. In addition, the percentage of ADL assistance being provided by paid help had increased from 23 percent to 39 percent in the rural setting during the transitional three week period. Several alternative explanations for the finding of more urban family involvement in providing ADL assistance

can be offered. Although not statistically different, the rural elderly had higher weighted functional scores and reported a greater number of functional needs at both points in time, than did the urban elderly. These findings suggest that rural subjects were more debilitated physically, with profiles of greater need, during the transition period after hospital discharge. The rural elderly in this study appeared more incapacitated and, potentially, present with more difficult care for the family to provide. Earlier research also supports this conclusion (Coward & Lee, 1985). A second interpretation of less family involvement may be that paid caregivers were more available and less expensive in the rural setting. Also, in rural settings, family and friends may personally know the paid caregivers, thus, lessening the fear of an unknown person coming into the home, a fear presented in the urban setting. Systematic data were not collected on prior familiarity with the paid caregivers in either setting. In the rural setting, friends were reported as helping out more often with functional needs than were friends in the urban setting. Further, information on the density of the family support system was not collected, therefore, it is possible that, based on recent trends in migration, fewer family members were available or accessible to provide in-home care in the rural setting.

Rural and urban caregivers were statistically similar in age, gender, and employment status. The percentage of caregivers over the age of 75 in both setting, however, was greater than reported earlier in a national survey (Stone et al., 1987). Thus, caregivers in this study may be more debilitated than in other studies. This finding, along with

the positive correlation between the age of the rural subjects and increased functional and skilled care needs, may explain the need and use of more paid help in rural areas.

Formal Support System

Utilization of community services was not different between the two settings. Only three services of the many that are typically offered by Home Health Agencies: registered nurses, home health aides, and physical therapists, were used in each setting. This finding suggests that the necessary community based services were available in the rural setting. Further investigation into the difference in skilled care needs and the distance to medical services may explain some of the differences in increased perception of skilled care needs by the rural subjects. Since rural families were not meeting as many of the functional needs, particularly ADL needs, more in-home community services may be warranted. With the long distances from services, visits by health professionals are usually less frequent in rural areas. If less family support continues, increasing the number of visits by the established in-home agencies may meet future needs. Rural subjects reported access to in-home meals, but usually only three days a week, as compared to five to seven days per week in the urban setting. It is important to note that this rural sample lived in two remote, frontier rural counties. The discharge needs and the availability and accessibility of services may be different in less remote rural areas.

Skilled care needs were met primarily by the formal support system in both settings. One interesting difference in formal support reported by the two samples is in the use of physicians to meet their skilled

care needs. At three days after discharge, rural subjects reported physicians meeting 17 percent of their skilled care needs as compared to urban subjects reporting physicians meeting only 3 percent of their skilled care needs. Although the total number of skilled care needs at three weeks after discharge was smaller than at three days, both groups perceived physicians were meeting more of their needs. These findings suggest that rural residents are more apt to identify physicians as the only providers of skilled care. Urban residents, on the other hand, may be more familiar with an array of health care professionals and not as reliant on physicians for skilled care. Further, rural physicians may have residents return to them for skilled care that could be done in the community by other professionals. Or, due to the long distances that rural residents must travel for medical services, physicians may schedule more regular appointments. Although it was never mentioned as a problem, nine rural subjects had to call long distance to reach their physicians and the hospital.

The need for affordable and accessible respite services, a need recognized nationally, was expressed by both rural and urban subjects (Kane & Kane, 1987). In the rural area, this service was not formally available. In the urban setting, two subjects discussed needing, but were unable to afford, respite services. In addition, two urban subjects refused the home care services that were offered to them, stating that they didn't think they needed to be spending government money on services they didn't need.

Unmet Needs

A wide array of unmet needs were identified by the subjects in both sample groups. Unmet needs were scattered throughout the complete assessment, except for behavioral needs, which were perceived as unmet most of the time. For example, at three weeks after discharge, the percentage of unmet skilled care needs in the urban setting (15%) was much larger than in the rural setting (2%). With the small number of perceived needs, however, the 15 percent represents only three totally unmet needs. By comparison, in the rural setting, only one skilled care need was totally unmet, with four additional needs reportedly met most of the time. This diversity does not provide clear recommendations for future program planning or propose that formal community services are not meeting skilled care needs.

An interesting finding, particularly as it applies to nursing, is the lack of knowledge regarding the emergency transport number in rural settings, and in both settings, knowledge regarding access to alternative community services. Additionally, a third of the subjects in both settings were not satisfied with the amount of knowledge that they had received regarding which changes in condition should be reported. These unmet knowledge needs are all areas for patient teaching, a hallmark of nursing. The discharge instructions were usually very brief and did not provide the patients with much information in these areas. The instructions only told patients what they could and should do, such as increasing exercise. Many subjects discussed the usefulness of a community access flyer or card describing

availability and accessibility of community services. None of the hospitals were providing this information to their discharged patients.

With the discrepancy between findings using the direct questions in the CHCNA and the responses on the BMD, there may be more behavioral needs than were reported with the direct questioning. It was disconcerting to find that the majority of the behavioral needs were reported as unmet by either the formal or informal systems, particularly when three male subjects reported suicidal tendencies. The urban subjects did not use nor were they any more aware of mental health services than their rural cohorts. These findings support the demand for increased mental health services for the elderly as advocated in the 1990 Governor's Conference on Aging.

Another unexpected finding in relation to IADL was the reported need for more help with transportation and shopping among urban subjects. It is possible that the independent nature of the rural cohort may result in them driving earlier after hospital discharge; therefore, they would not report needing help with transportation if it were just for a trip to the doctor or to the store. Further, no systematic data were collected on whether or not friends were bringing in meals or groceries without an actual request for help in either setting.

Finally, while urban relatives were meeting a greater number of functional needs than were rural relatives, more urban elderly reported their functional needs as only partially met, particularly transportation needs. No definitive interpretation of these findings is evident; however, greater transportation needs may again be related to

rural elderly driving with greater incapacities than their urban counterparts.

Evaluation of the CHCNA

The CHCNA exhibited acceptable psychometric performance. In addition, the questionnaire revealed clinical usefulness for assessing health care needs and environmental resources. The instrument was useful in identifying not only who was meeting the identified need, but also, how much and how many needs were left partially or totally unmet by the formal and informal systems.

The skilled care checklist provided a wide range of responses. In this study, however, there was no one who required highly technical skills. Thus, to further evaluate content validity, use of this checklist with a home care population requiring more technical care is suggested.

The knowledge scale identified a wide variety of needs, the most striking are the need for information on changes in medical condition and alternative community services. Given these findings, clearer discharge instructions with follow-up, particularly for the management of medications and changes in condition, are necessary. Other knowledge needs that are easily met by nursing services were also identified. However, the knowledge subscale did not assess the degree of knowledge needs in the identified areas. Further detail or development of branching questions is necessary to obtain these data.

A second aim of the study was to determine, not only if there was a difference in the functional needs of the rural and urban elderly, but also if a weighted functional scale, would be more sensitive than the

more commonly used dichotomous scale in determining functional needs. In the analyses of location differences, while the F scores for the weighted scales were slightly larger than the F scores computed for the dichotomous scales, the scores did not approach statistical significance. Further, both versions of the functional scales showed highly significant differences over time. Neither versions showed any interaction effects between location of the subjects and time. Only one item, IADL 16, querying the number of medications that an individual was consuming, performed poorly throughout the study. Thus, the initial evaluation supports retaining all items, except IADL 16, in future studies. Since the weighted subscales are longer, and therefore, take more time to administer, further research is necessary to determine the clinical usefulness of additional data for providing services for discharge needs.

Evaluation of the behavioral subscale suggests additional development in this domain. Psychometric evaluation should continue to be addressed as the instrument is used in other populations across time. Since construct validity of the BMD had been acceptable in its original testing with cognitively impaired elders, further evaluation and development of the behavioral items in the CHCNA and use of the BMD in a cognitively aware population are suggested.

Significance for Nursing

Continuity of care beyond the walls of the acute hospital setting has always been a major emphasis in nursing. The need for appropriate and adequate discharge planning, however, has expanded with the rapidly growing elderly population, escalating costs of health care, shorter

hospitals stays, and the increasing complexity of health care needs (Kromminga & Ostwald, 1987; Shine, 1983; Simmons, 1986). Effective discharge planning, beginning with hospital admission, involves a collaborative effort among patients, families, and health care professionals wherein "patient needs are identified and evaluated, and assistance is given that prepares them to move from one level of care to another" (Kromminga & Ostwald, 1987, p. 225-226). Recent findings, however, proposed that patients and their families and the health care professionals may not agree on the most important indicators of patients' abilities to remain in the community after discharge from the hospital (Arenth & Mamon, 1985; Caradoc-Davies et al., 1989; Drew et al., 1988). Nurses play an important role in discharge planning. To provide and plan for on-going care needs, it is important that nurses are aware of the care needs from the perspective of the patients and their families during the transition period after discharge. The use of an assessment instrument, like the CHCNA, can provide self-reported data for collaborative discharge planning.

Second, the primary community services needed by the elderly are not the medically oriented services that meet the eligibility criteria for Medicare reimbursement. With the present reimbursement system, Reif (1988) would argue that the demand for and delivery of home-based care is identified by the funding for services rather than the need for services. Lack of attention to the functional, behavioral and knowledge needs of the patients and families, as reported in this study, may create increased costs from unnecessary rehospitalizations, premature institutionalization, more physician visits, and greater morbidity.

Furthermore, lack of attention to needs that can be met with nursing services may foster decreased quality of life through extended or iatrogenic morbidity from taking the wrong medicine, failure to report important changes in health status, and/or lack of knowledge in carrying out personal care procedures. The findings in this study support the need for community based nursing services, currently non-reimbursable through Medicare, that provide direct care and teaching.

One recent study suggested that when public health nurses assisted patients and families with discharge planning, more of their health care were met (Kromminga & Ostwald (1987). Utilization of a nursing framework for assessing health care needs can provide data that can be used to: (a) identify the health care needs of the elderly at discharge from hospitals, (b) contribute to the development of a standardized needs assessment instrument that will facilitate discharge planning, and (c) identify gaps in our present system of care, based on geographic location. Further refinement of the CHCNA, which is based on services that nurses can provide, is warranted.

One limitation in this study of particular importance to nurses researchers was the requirement for physician permission to contact potential study participants. This requirement exemplifies the restraints placed on nursing research within hospital settings. Nurses must become more involved in hospital research boards and strive to remove the present institutional and professional barriers limiting nursing research.

Furthermore, exactly what help is received by patients and families during the transition period following discharge and the

efficacy of that help was an important question in this study. The study supported the measurement times of three days and three weeks after discharge. The increase in identified needs for several of the subjects supports the need for a larger study. Follow-up and/or replication of the findings regarding family involvement, particularly in the rural area, where family members were providing less care, will be extremely important in planning rural health care delivery. If families are less available in rural settings, more formal services may need to be developed. Urban subjects, while receiving more informal care, also reported more of their needs as only partially met. More in-depth assessment and evaluation of partially met needs is supported. And finally, the data from this study will add to the on-going development of rural nursing theory by comparing the differences and similarities found in health care needs between an urban sample and a rural sample.

Future Research

Additional research is necessary if the nursing profession is to affect the continuity and quality of care delivered to our rapidly growing elderly population (Anderson, 1985; Lauver, 1985; Mundinger, 1984; O'Connor, 1984; Phillips & Cloonan, 1987; Reinhard, 1986). In planning community services, it is important to know if rural elderly are more disabled and receive less family support. Based on the findings of this study, further research in the following areas is recommended:

1. Replicate the study with larger samples in different settings, including other rural and frontier settings.

2. Extend the assessment period to at least six weeks after discharge to further explore the changing individual needs and environmental resources and barriers.

3. Include a more in-depth assessment of the social support system of the subjects, its density and network, and residential history.

4. Include and compare subjects who have been discharged from transitional care units to home.

5. Develop and refine the CHCNA questionnaire, particularly in the behavioral domain.

6. Include branching assessments when needs are identified, e. g. exactly what information or help is perceived as lacking and what kind of interventions, and by whom, are necessary to accommodate individual differences and provide clinical relevance.

Conclusions and Limitations

The purpose of this longitudinal study was to assess the individual health care needs of rural and urban elderly and the match of environmental resources to meet those needs during the transition period following discharge from an acute care hospital to home. Since no instrument could be found that identified a broad spectrum of health care needs from the perspective of the patient, the Comprehensive Health Care Needs Assessment questionnaire (CHCNA) was developed. The Behavioral and Mood Disturbance Scale was used to assess behavioral needs (Greene et al., 1982).

This study was limited to subjects discharged from one large urban hospital to an urban county and from three small hospitals to two remote

rural counties, all within one state. Thus, the findings cannot be readily generalized to other populations. In addition, the study was restricted to patients who were discharged directly from acute care to home. The use of transitional care units in both geographic locations has, perhaps, changed the profile of the patient being discharged directly into the community. The study does, however, support the need to compare rural and urban populations when exploring health care needs.

Eighty-one subjects, 41 in the rural setting and 40 in the urban setting, were interviewed at home three days after discharge and by telephone at three weeks after discharge. There were no statistically significant differences between behavioral, functional, and knowledge needs, assessed using the CHCNA, and the geographic location of the subjects. Hospital stays were short but longer than had been reported in 1988. A significant difference was found between the location and the number of reported skilled care needs, with rural subjects identifying more skilled care needs. Using the BMD, a significant difference was found between the location and the mean scores on the Active-Disturbed subscale, with urban subjects having a higher average score.

For both groups, the skilled care and knowledge needs were met primarily by the formal support system. Functional and behavioral needs were met primarily by the informal support system. Contrary to what would be expected, at three weeks after discharge, considerably more functional needs were being met by family in the urban area than in the rural area. This finding may represent a change in demographics, with fewer family members available to provide care in the rural setting.

Almost all subjects reported unmet needs in at least one domain. Most of the unmet needs were diverse, with few needs perceived as being totally unmet. In this sample, there were adequate formal services in the rural and urban settings to meet the needs of elderly after hospital discharge. There were, however, a small percentage of the sample who did not have adequate discharge planning or whose needs changed after discharge. Further, while skilled care or highly technical procedures were not perceived as necessary for this sample, almost all of the sample identified a need for more health teaching. These findings suggest that discharge needs should be assessed from the patient's perspective and that continued contact during the transition period after hospital discharge is necessary to monitor individual health care needs and the uneven response by the informal and formal systems to those needs.

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Appendix A

OREGON
HEALTH SCIENCES UNIVERSITY
3181 S.W. Sam Jackson Park Road, L106, Portland, Oregon 97201-3098 (503) 279-7784/7887
Research Services

DATE: September 29, 1989

TO: Alyce Schultz, RN, MSN L343
Joyce Colling, RN, PhD

FROM: Nancy White, Administrative Assistant
Committee on Human Research, L-106

SUBJECT: Project Title: Rural/Urban Differences in Health Care Needs of the Elderly After Hospital Discharge to Home.

The above-entitled study falls under category #3 and is considered to be exempt from review by the Committee on Human Research. Therefore, this study has been put into our exempt files, and you will receive no further communication from the Committee concerning this study. If possible, please notify the Committee when this project has been completed.

If the involvement of human subjects in this study changes, you should contact the Committee on Human Research to find out whether or not these changes should be reviewed.

If you have further questions regarding the status of this study, please call Nancy White at ext. 7887.

PROVIDENCE MEDICAL CENTER
4805 NORTHEAST GLISAN STREET
PORTLAND, OREGON 97213-2967
PHONE (503) 230-1111

SISTERS OF PROVIDENCE
SERVING IN THE WEST SINCE 1856

January 12, 1990

Alyce Schultz, MSN, RNC
Community Health Nursing
Oregon Health Sciences University
3181 S.W. Sam Jackson Park Road
Portland, Oregon 97201-3098

PROTOCOL: RURAL/URBAN DIFFERENCES IN HEALTH CARE NEEDS OF THE ELDERLY AFTER HOSPITAL DISCHARGE TO HOME (89-67)

Dear Ms. Schultz:

The protocol and consent form for the study listed above have been approved by expedited review on January 9th. The contingency placed by the Medical Staff regarding the recruitment of patients appears to be met.

This research is approved as a viable, continuing study through January 9, 1991. A progress report must be submitted to the Institutional Review Board by December 1990. A report form is attached for your convenience.

Federal and State regulations require that the Institutional Review Board be informed of any changes or untoward patient occurrences.

Thank you for allowing us to review this material.

Sincerely,

Craig S. Fausel

Craig S. Fausel, M.D.
Chairman
Institutional Review Board
enclosure

cc: Marie Driever, R.N., Ph.D.
Asst. Director of Nursing
Quality Assurance/Research
Providence Medical Center

8967aprv.ltr

WALLOWA MEMORIAL HOSPITAL

September 26, 1989

Ms. Alyce A. Schultz, RNC, MSN
Community Health Nursing
School of Nursing, OHSU
3181 SW Sam Jackson Park Rd.
Portland, Oregon 97201-3098

Dear Alyce:

I have talked with Ron Bender regarding the use of Wallowa Memorial Hospital as a site for data collection for your study. Ron is supportive of your project and has given his approval for you to use our facility as a contact point as long as certain conditions are met. The conditions of concern are that the initial contact with the patients does not disrupt hospital function and that confidentiality be maintained. Ron, also requested that you share your study results with us as the information will be of benefit for future health care planning.

I look forward to seeing you next month and of having the opportunity to assist you in your study.

Sincerely,

Darlene Gile

Darlene L. Gile, RN, BSN

cc: Ron Bender

P.O. Box 460 Enterprise, Oregon 97828 (503) 426-3111

HOSPITAL
P.O. Box 756
Baker, Oregon 97814
503-523-6481

HEALTH CARE

ST. ELIZABETH
HOSPITAL &
HEALTH CARE CENTER
BAKER, OREGON

"WITH A TENDER TOUCH"

HEALTH CARE CENTER
P.O. Box 1046
Baker, Oregon 97814
503-523-4452

September 27, 1989

Alyce Schultz, RNC, MSN
School of Nursing
Office of Research Development and Utilization
The Oregon Health Sciences University
3181 S.W. Sam Jackson Park Road, 1456
Portland, Oregon 97201

Dear Ms. Schultz:

I have received your letter regarding your doctoral study to assess the health care needs of persons discharged from the hospital. I have reviewed your proposal and am pleased to inform you that we would be happy to assist you in this process.

This letter, therefore, will indicate our approval for you to contact persons over age 65 while they are inpatients at St. Elizabeth Hospital to request their participation in your study. As part of this approval, I would ask that you work through Yvonne Johnson when contacting these patients to avoid potential interference with the care being provided at the hospital. I would also request that you send us a copy of the approval of your study granted by the OHSU Human Subjects Review Committee.

Finally, I would be interested in receiving a copy of the study's results upon completion.

We look forward to working with you. If you have further questions, please contact Ms. Johnson directly for assistance.

Sincerely,

Rod Barton
Administrator

RB:ml

cc: Yvonne Johnson

GRANDE RONDE HOSPITAL
900 SUNSET DRIVE • P.O. BOX 3290 • LA GRANDE, OREGON 97850 • (503) 963-8421

November 6, 1989

Alyce Schultz, RN
Eastern Oregon State College
OHSU School of Nursing
8th and "K"
La Grande, OR 97850

Dear Alyce:

You have my permission for the next six months to assess Grande Ronde Hospital patients prior to their discharge home to Wallowa or Baker counties for potential home interviews. I understand this is part of your research for your doctoral degree in nursing and that you will obtain the necessary consents from the patient and agreements from their physician to include them in your study.

Good luck in your research.

Sincerely,

James Mattes, President

mg

Appendix B

DEAR DOCTOR_____

Patient Name_____ Date_____

My pre-doctoral research project is a rural-urban comparison of health care needs of people age 65 and older after discharge from an acute care setting. Following the initial contact in the hospital, I interview the subjects in their homes two to four days after discharge and by telephone three weeks after discharge. If you object to me contacting this patient as a potential subject, please respond by _____ in the box below.

☐ I object to you contacting this patient as a potential subject in your study.

_____
(Signature)

Thank You.

Alyce Schultz, MSN, RNC
Doctoral Student, OHSU
697-3144 (Home Phone)

Appendix C

Date_____ ID #_____

Hello, I am a nurse who used to work in home care and right now I am studying for my doctoral degree in nursing. In my research, I plan to study the health care needs of people, like yourself, after they are discharged from the hospital. I would like to visit you in your home three days after you are discharged from the hospital to ask you some questions about what kind of help you need while you are getting better. The visit will take about 20 to 30 minutes. After you have been home for three weeks, I would like to call you on the telephone to ask you some of the same questions to determine how you are doing then. I will be contacting about 75 families. Your answers will be kept confidential but will help nurses and doctors determine the best way to provide care and assistance to people after hospitalization. Would you be interested in helping me with my study?

[If the patient agrees, the following questions will be asked in the hospital. The consent form will be signed in the home.]

First I would like to confirm the information that I have about you.

What is your full name?_____

What is your full address? _____

What is your present age? _____ date of birth?_____

What is your phone number?_____

How far is it from the hospital to your house?_____
Could you please give me directions to your home?

Appendix D

The purpose of this study is to identify the health care needs of persons like yourself during the three weeks after discharge from a hospital to home in rural and urban settings. I will also be asking questions about who is meeting your needs--whether your needs are being met by friends and family or by paid help or visiting nurses.

I am leaving a copy of the consent form with you so that you have time to read it over and are ready to ask any questions about the study. I will answer your questions when I come to your home.

I will be calling you to set a definite time for the home interview. Thank you so much for agreeing to be in the study.

Alyce Schultz, RN

Appendix E

OREGON HEALTH SCIENCES UNIVERSITY
Consent Form

Title. Rural/Urban Differences in Health Care Needs of the Elderly After Hospital Discharge to Home

PRINCIPAL INVESTIGATOR: Alyce Schultz, RNC, MSN;
Telephone Number: 503-279-7893

PURPOSE: The purpose of this study is to identify the health care needs of persons age 65 and over, who reside in either urban or rurl settings, during the three weeks after discharge from a hospital to home. In addition, the study will determine which needs are being met by family and friends and which needs are being met by people from formal agencies.

PROCEDURES: Your participation in this study involves a personal interview in your home three days after you have been discharged from the hospital and a telephone interview three weeks after your discharge. The home interview will take about 30 minutes and the telephone interview will take about 20 minutes. During the interview you will be asked questions regarding:

Your physical, mental, and social functioning
Who else lives in your home
Information about any health teaching or skilled care needs you may have
Who helps you with the health care needs that you have

RISKS AND DISCOMFORTS: Your participation will not involve any known risks or discomforts.

BENEFITS: Your participation may not benefit you directly, but may benefit others as the information gathered in this study will be used to develop an assessment questionnaire to be used when patients are discharged from hospitals. In addition, the information will be shared with other health professionals and legislators to improve our present health care delivery system.

ALTERNATIVE PROCEDURES: None

CONFIDENTIALITY: Information obtained in this study will be handled in a manner to insure confidentiality. Neither your name nor your identify will be used for publication or publicity purposes.

CONFIDENTIALITY: Information obtained in this study will be handled in a manner to insure confidentiality. Neither your name nor your identify will be used for publication or publicity purposes.

COSTS: There are no costs to you for participating in this study.

LIABILITY: It is not the policy of the U. S. Department of Health and Human Services or any agency funding the research project in which you are participating to compensate or provide medical treatment for human subjects in the event the research results in physical injury. The Oregon Health Sciences University, as an agency of the State, is covered by the State Liability Fund. If you suffer any injury from the research project, compensation would be available to you only if you establish that the injury occurrred through the fault of the University, its officers or employees. If you have further questions, please call Dr. Michael Baird at (503) 279-8014.

If you have any questions or comments about participating in this study, please call the principal investigator, Alyce Schultz, at 503-279-7893. Please know that you may terminate your participation in this study at any time and that your termination will not affect any further medical treatment that you may need be receiving from any physician, any hospital, or any other health professional or health agency.

You will receive a copy of this consent form. Your signature below indicates that you have read the foregoing and agree to participate in this study.

_____	_____
PARTICIPANT	WITNESS (Relationship to Participant)
_____	_____
DATE	DATE

OREGON HEALTH SCIENCES UNIVERSITY
Consent Form

Title. Rural/Urban Differences in Health Care Needs of the Elderly After Hospital Discharge to Home

PRINCIPAL INVESTIGATOR: Alyce Schultz, RNC, MSN;
Telephone Number: 503-279-7893

PURPOSE: The purpose of this study is to identify the health care needs of persons age 65 and over, who reside in either urban or rurl settings, during the three weeks after discharge from a hospital to home. In addition, the study will determine which needs are being met by family and friends and which needs are being met by people from formal agencies.

PROCEDURES: Your participation in this research involves a personal interview in your home three days after you have been discharged from the hospital and a telephone interview three weeks after your discharge. The home interview will take about 30 minutes and the telephone interview will take about 20 minutes. During the interview you will be asked questions regarding:

Your physical, mental, and social functioning
Who else lives in your home
Information about any health teaching or skilled care needs you may have
Who helps you with the health care needs that you have

RISKS AND DISCOMFORTS: Your participation will not involve any known risks or discomforts.

BENEFITS: Your participation may not benefit you directly, but may benefit others as the information gathered in this study will be used to develop an assessment questionnaire to be used when patients are discharged from hospitals. In addition, the information will be shared with other health professionals and legislators to improve our present health care delivery system.

ALTERNATIVE PROCEDURES: None

CONFIDENTIALITY: Information obtained in this study will be handled in a manner to insure confidentiality. Neither your name nor your identify will be used for publication or publicity purposes. The coded data will be kept in a separate file from the names and addresses of the subjects.
COSTS: There are no costs to you for participating in this study.

LIABILITY: Oregon Health Sciences University.
It is not the policy of the U. S. Department of Health and Human

Services or any agency funding the research project in which you are participating to compensate or provide medical treatment for human subjects in the event the research results in physical injury. The Oregon Health Sciences University, as an agency of the State, is covered by the State Liability Fund. If you suffer any injury from the research project, compensation would be available to you only if you establish that the injury occurrred through the fault of the University, its officers or employees. If you have further questions, please call Dr. Michael Baird at (503) 279-8014.

LIABILITY: Providence Medical Center.
Should you suffer any unanticipated injury as a result of participation in this research activity, all of the necessary medical facilities are available for treatment, insofar as is reasonably possible. Providence Medical Center is not the sponsoring agency of this research project and will not assume financial responsibility for such treatment, nor provide financial compensation for such injury.

If you have any questions or comments about participating in this study, please call the principal investigator, Alyce Schultz, at 503-279-7893. Please know that you may terminate your participation in this study at any time and that your termination will not affect any further medical treatment that you may need be receiving from any physician, any hospital, or any other health professional or health agency.

You will receive a copy of this consent form. Your signature below indicates that you have read the foregoing and agree to participate in this study.

_____	_____
PARTICIPANT	WITNESS (Relationship to Participant)
_____	_____
DATE	DATE

Appendix F

COMPREHENSIVE HEALTH CARE NEEDS ASSESSMENT

(CHCNA)

DischargeDate:_____ ID Number: _____

Date of Home Interview: _____ Date of Phone Interview : _____

Number of Days since Discharge: _____ Number of Days since Discharge: _____

COMPREHENSIVE HEALTH CARE NEEDS ASSESSMENT

Thank you so much for agreeing to be in the study. Could you please tell me why you were in the hospital?

How many days were you in the hospital? _____

How many times have you been in the hospital in the past 12 months? _____

KNOWLEDGE/SKILLED CARE NEEDS

When a person is discharged from the hospital, he/she often needs many kinds of treatment that one is not used to doing. Do you need any of the following treatments now that you are home?

Check all treatments that apply; if yes, ASK:
WHEN YOU NEED THIS HELP, HOW MUCH OF THE TIME IS HELP AVAILABLE? All of the time (0); Most of the time (.25) Half of the time (.5) Some of the time (.75) None of the time (1.0);
then ASK: WHO PROVIDES THIS HELP? Relative (1); Friend or neighbor (2); Paid help(3); Self (4). If a relative, friend or self provides help, *then ASK:* HAVE YOU HAD INSTRUCTIONS ON PERFORMING THIS TASK? Enough (0); Some, but not enough (.5); None (1.0) *then ASK:* WHO GAVE THESE INSTRUCTIONS?

	NEEDS HELP Yes = 1 No = 0	HOW MUCH IS AVAILABLE? All the time = 0 Most of the time = .25 Half of the time = .5 Some of the time = .75 None of the time = 1.0	WHO HELPS Relative = 1 Friend = 2 Paid Help = 3 Self = 4 Nurse = 5 Doctor = 6 Other = 7	KNOWLEDGE NEEDS Enough = 0 Some = .5 None = 1.0	Who Taught You?
Dressing Changes	SC1	SCUM1	WH1	SCKUM1	SCKWH1
Wound Packing/Irrigation	SC2	SCUM2	WH2	SCKUM2	SCKWH2
Decubitus Care	SC3	SCUM3	WH3	SCKUM3	SCKWH3
Special Skin Care/ W/D Dressings	SC4	SCUM4	WH4	SCKUM4	SCKWH4
Special Meds/ Chemo/ Antibiotics	SC5	SCUM5	WH5	SCKUM5	SCKWH5
Medication Administration	SC6	SCUM6	WH6	SCKUM6	SCKWH6
Hickman/ Broviac Catheter Care	SC7	SCUM7	WH7	SCKUM7	SCKWH7
Oxygen Therapy	SC8	SCUM8	WH8	SCKUM8	SCKWH8
Suctioning Trach Care	SC9	SCUM9	WH9	SCKUM9	SCKWH9
Ventilator Care	SC10	SCUM10	WH10	SCKUM10	SCKWH10
BP Monitoring	SC11	SCUM11	WH11	SCKUM11	SCKWH11
Listening to Heart and Lungs	SC12	SCUM12	WH12	SCKUM12	SCKWH12
Check swelling	SC13	SCUM13	WH13	SCKUM13	SCKWH13
Blood tests	SC14	SCUM14	WH14	SCKUM14	SCKWH14
Special Diet Monitoring	SC15	SCUM15	WH15	SCKUM15	SCKWH15
Tube Feedings	SC16	SCUM16	WH16	SCKUM16	SCKWH16
Urinary Catheter Care/ Changes	SC17	SCUM17	WH17	SCKUM17	SCKWH17
Ostomy Care	SC18	SCUM18	WH18	SCKUM18	SCKWH18
Physical Therapy	SC19	SCUM19	WH19	SCKUM19	SCKWH19
Range of Motion Exercises	SC20	SCUM20	WH20	SCKUM20	SCKWH20
Strengthening Exercises	SC21	SCUM21	WH21	SCKUM21	SCKWH21
Foot Care	SC22	SCUM22	WH22	SCKUM22	SCKWH22
Dialysis	SC23	SCUM23	WH23	SCKUM23	SCKWH23
Speech Therapy	SC24	SCUM24	WH24	SCKUM24	SCKWH24
Other	SC25	SCUM25	WH25	SCKUM25	SCKWH25

Are there changes in your condition that you should report to your nurse or doctor? Yes No

IF YES, what are those changes?

_____

(Code Knowledge Adequate Knowledge = 0 Inadequate Knowledge = 1) (CHK1)

Who taught you about these changes? _____ (CHKWH1)

Have you had enough information regarding what changes to look for? (CHKUM1)
Enough (0) Some, but not enough (.5) No (1.0)

If you needed emergency treatment that you didn't think was life-threatening and you needed someone to take you:
Who would you call first? _____
(Relationship)

How long would it take for that person to come if needed?
1) 0-15 minutes
2) 16-30 minutes
3) 31-60 minutes
4) > 1 hour

Who would you call next? _____
(Relationship)

How long would it take for that person to come if needed?
1) 0-15 minutes
2) 16-30 minutes
3) 31-60 minutes
4) > 1 hour

Where would you go for emergency treatment? _____

How far from your house is this? _____

If you couldn't reach friends or relatives, what would you do? _____

_____

(Code Knowledge Adequate Knowledge = 0 Inadequate Knowledge = 1) (EMK2)

Could you dial for help in an emergency? YES (1) NO (0)

What number would you dial? _____ 0 Appropriate 1 Inappropriate
(Code Knowledge Need as 1 or 0) (EMK2)

Have you had enough information on what to do in case of an emergency ?
Enough (0) Some, but not enough (.5) No (1.0) (EMKUM 2)

Now I'd like to ask you some questions about how things have been going since you've come home. Some things I ask will be personal. Your name will not be used with this information and it may be very helpful to other people in similar situations. Some questions may have nothing to do with your situation. Just let me know if the questions don't relate to your situation.

SENSORY DEFICITS

Do you use a hearing aid?	YES (1)	NO (0)			
Would you rate your hearing as:	POOR (2)	FAIR (1)	GOOD (0)		
Do you wear glasses or contacts?	YES (1)	NO (0)			
Would you rate your eyesight as:	BLIND (3)	POOR (2)	FAIR (1)	GOOD (0)	
Would you rate your sense of smell as:	POOR (2)	FAIR (1)	GOOD (0)		
Would you rate your sense of taste as:	POOR (2)	FAIR (1)	GOOD (0)		

ACTIVITIES OF DAILY LIVING

MOBILITY: (50)

Do you need someone to help you get around inside your home?
Yes (1) No (0) (ADL1)

IF YES
How much help? 2-person Assist (25) Unable (20) 1-person Assist (15) Stand-by Assist (5) (ADL2)

Do you need someone to help you get around outside your home?
Yes (1) No (0) (ADL3)

IF YES
How much help? 2-person Assist (25) Unable (20) 1-person Assist (15) Stand-by Assist (5) (ADL4)

Do you use a cane, walker, wheelchair or anything else to get around?
Wheelchair (1) Walker (2) Cane/Crutches (3)
Wheelchair/walker (4) Walker/cane/crutches (5) All (6) (ADL5)

Do you need help climbing stairs? Yes (5) No (0) (ADL 6)

IF YES

Are there any stairs inside or leading into your home?
Yes (5) No (0) (ADL7)

How many stairs are there? _____

IF YES TO ANY MOBILITY QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM1)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH1)

TRANSFERRING: (30)

Do you need help from another person to get in and out of bed?

Yes (1) No (0) (ADL8)

IF YES

How much help? 2-person Assist (15) Unable (10) 1-person Assist (10) Stand-by Assist (5) (ADL9)

Do you need help from another person to get in and out of a chair?

Yes (1) No (0) (ADL10)

IF YES

How much help? 2-person Assist (15) Unable (10) 1-person Assist (10) Stand-by Assist (5) (ADL11)

Do you use any equipment to transfer?
Hoyer lift (1) Wheelchair (2) Cane/Crutches (3) (ADL12)
Wheelchair/Cane/Crutches (4) Lift Chair (5)

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM2)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH2)

BATHING: (25)

Do you need help from another person to take a sponge bath?
Yes (5) No (0) (ADL13)

Do you need help from another person to get in and out of the tub/shower?
Yes (5) No (0) (ADL14)

IF YES

How much help? 2-person Assist (15) Unable (10) 1-person Assist (10) Stand-by Assist (5) (ADL15)

Do you use any equipment to take a bath?
Hoyer lift (1) Bathstool (2) Grab bars (3) Grab bars/Bathstool (4) (ADL16)

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM3)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH3)

DRESSING/GROOMING: (15)

Do you need help from another person to get dressed?
Yes (1) No (0) (ADL17)

IF YES

How much help? 2-person Assist (15) 1-person Assist (7) Stand-by Assist (5) (ADL18)

Do you use any special equipment to get dressed?
Velcro Fasteners (1) Long handle Tongs (2) Button hook (3) (ADL19)

Do you need help cleaning your teeth or dentures or doing daily grooming, e.g. shaving, applying make-up, or combing hair?
Yes (1) No (0) (ADL20)

IF YES

How much help? Complete Assist (5) Preparation Assist (3) (ADL21)

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM4)

Who helps you get dressed or groomed?
Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH4)

TOILETING: (15)

Do you need help from another person when you use the toilet?
Yes (1) No (0) (ADL22)

IF YES

How much help? Total Assist (15) Minimal Assist (10) Stand-by Assist (5) (ADL23)

Do you use any special equipment to use the toilet ?
Urinal (1) Commode (2) Elevated seat (3) (ADL24)

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM5)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH5)

BLADDER FUNCTION: (25)

Do you ever experience loss of control of your bladder?
Yes (1) No (0) (ADL25)

IF YES

How often does this happen? (Or how do you manage?)
>1 time/day (25) Self-cath (20) Occasionally (15) Cath Care (15)
Nighttime only (10) Infrequent (5) (ADL26)

Do you use any special supplies to manage incontinence?
Catheter (1) Diaper/Pads (2) Bed pads (3) (ADL27)
Type:_____

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM6)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) Self (4) (ADLWH6)

BOWEL FUNCTION: (25)

Do you ever experience loss of control of your bowels?
Yes (1) No (0) (ADL28)

IF YES

How often does this happen?
Always (25) Sometimes (25) >Once a day (10)
(>2/day) (1-2/day) (ADL29)

Do you use any special supplies/medicine to manage the incontinence?
Diapers (1) Bed Pads (2) Suppositories (3)
Fleets enema (4) Other bowel stimulant (5) (ADL30)

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM7)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH7)

Have you ever been on a bladder or bowel program? Yes No
Explain:

EATING/FEEDING: (15)

Do you need help from another person in order to feed yourself?
Yes (1) No (0) (ADL31)

IF YES

How much help? Tube or total assist (15) Partial assist (10) Cutting up food (5) (ADL32)

Do you use any special equipment to eat?
Brace (1) Spork (2) Edged plates (3) (ADL33)

IF YES TO ANY OF THE ABOVE QUESTIONS, ASK...

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (ADLUM8)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (ADLWH8)

****

Check each area where the patient indicated that he/she needed help, then ask:

How much instruction have you or your caregiver had on how to carry out the care that you need in the areas that I have just asked you about?

Enough, some, but not enough, none

Who taught you?

Knowledge Needs ADL

	Enough = 0 some =.5 None = 1	Who taughtyou?
Walking about	ADLKUM1	ADLKWH1
Transferring	ADLKUM2	ADLKWH2
Bathing	ADLKUM3	ADLKWH3
Dressing/Grooming	ADLKUM4	ADLKWH4
Toileting	ADLKUM5	ADLKWH5
Bladder Incontinence	ADLKUM6	ADLKWH6
Bowel Incontinence	ADLKUM7	ADLKWH7
Eating/Feeding	ADLKUM8	ADLKWH8

INSTRUMENTAL ACTIVITIES OF DAILY LIVING

NOW I'M GOING TO ASK YOU ABOUT SOME DAY TO DAY ACTIVITIES:

TELEPHONE: (20)

Do you need help with using the phone?

Yes (1) No (0) (IADL1)

IF YES

How much help do you need?

Total Assist (20) Dialing Number (10) Looking up Number (5) (IADL2)

Do you use any special equipment when using the telephone?

Volume Enhancer (1) Large-numberedTelephone (2) Pre-programmed phone (3) (IADL3)

When you need help, how much of the time is help available?

All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM1)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH1)

TRANSPORTATION: (40)

Do you own a car now?
Yes (1) No (0) (IADL4)

Do you drive your car?
Yes (1) No (0) (IADL5)

Is there public transportation available to you?
Yes (1) No (0) (IADL6)

Do you use public transportation?
Yes (1) No (0) (IADL7)

Do you need help with transportation?
Yes (10) No (0) (IADL8)

IF YES
What kind of help?
Means to Travel (30) Driver (20) Companion (10) Tri-Met Lift (5) (IADL9)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM2)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH2)

SHOPPING : (20)

Do you need help shopping for clothes or food? Yes (1) No (0) (IADL10)

IF YES
What kind of help do you need?
Someone to do (20) Transportation (20) Companion (5) (IADL11)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM3)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH3)

MEAL PREPARATION: (20)

Do you need help with meal preparation?
Yes (1) No (0) (IADL12)

IF YES
What kind of help do you need?
Complete preparation (20) Minimal help (10) Planning (5) (IADL13)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM4)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH4)

HOUSEWORK/YARDWORK: (20)

Do you need help with your housework/yardwork Yes (1) No (0) (IADL14)

IF YES
What kind of help do you need?
Complete Assist (20) Heavy work (10) Minimal Assist (5) (IADL15)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM5)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH5)

MEDICATIONS: (40)

What medications are you taking?

	Name	Reason	When
>5 (10)			

(IADL16)

Code Knowledge separately for Name, Reason and When)
Adequate Knowledge = 0 Inadequate Knowledge = 1 (IADKL1)

How much information have you had regarding the medications that you are taking?
Enough (0) Some, but not enough (.5) None (1.0) (IADLKUM1)

Who taught you about your medications? _____ (IADLKWH6)

Do you need help taking your medicines? Yes (1) No (0) (IADL17)

IF YES
What kind of help do you need?
Administration (30) Preparation (20) Reminding (10) (IADL18)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM6)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH6)

LAUNDRY: (20)

Do you need help doing your laundry Yes (1) No (0) (IADL19)

IF YES
What kind of help do you need?
Complete Assist (20) Some Assist (10) Minimal Assist (10) (IADL20)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM7)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH7)

HANDLING FINANCES: 20 Maximum

Do you need helpwith managing your finances? Yes (1) No (0) (IADL21)

IF YES
What kind of help do you need?

(10)	(5)	(5)	(5)	
Writing Checks	Paying Bills	Insurance/ Medicare Billing	Legal Forms	(IADL22)

When you need help, how much of the time is help available?
All of the time (0) Most of the time (.25) Half of the time (.5)
Some of the time (.75) None of the time (1.0) (IADLUM8)

Who helps you? Relative (1) Neighbor/friend (2) Paid help (3) (IADLWH8)

Check each area where the patient indicated that he/she needed help, then ask:

How much instruction have you or your caregiver had on how to carry out the care that you need in the areas that I have just asked you about?
Enough, Some, but not enough, None

Who taught you?

Knowledge Needs IADL

	Enough = 0 some =. 5 None = 1	Who taught you?
TELEPHONE	IADLKUM1	IADLKWH1
TRANSPORTATION	IADLKUM2	IADLKWH2
SHOPPING	IADLKUM3	IADLKWH3
MEAL PREPARATION	IADLKUM4	IADLKWH4
HOUSEWORK/YARDWORK	IADLKUM5	IADLKWH5
MEDICATIONS	IADLKUM6	IADLKWH6
LAUNDRY	IADLKUM7	IADLKWH7
HANDLING FINANCES	IADLKUM8	IADLKWH8

BEHAVIORAL NEEDS

If the patient is oriented x 3, have the patient complete the scale found on the following pages. (IF THE PATIENT IS UNABLE TO ANSWER THE SCALE, ASK THE PRIMARY CAREGIVER TO COMPLETE THE SCALE).

(IF THE ANSWERS TO ANY OF THE CATEGORIES ARE PREDOMINANTLY 3 OR 4, THEN ASK:
IF THEY NEED HELP IN DEALING WITH: (Specific area)

Then ask:

WHEN YOU NEED HELP, HOW MUCH OF THE TIME IS HELP AVAILABLE?
All of the time (0); Most of the time (.25); Half of the time (.5); Some of the time (.75) None of the itme (1.0)

then ASK: WHO PROVIDES THIS HELP?
(1) Relative; (2) Friend or neighbor: (3) Paid Help

HAVE YOU HAD INFORMATION ABOUT DEALING WITH_____?
Enough (0); Some but not enough (.5); None (0)

then ASK: **WHO TAUGHT YOU?**

	Needs Help Yes= 1 No=0	How much 0;.25;.50;.75;1.0	Who Helps REL=1; FRI=2 PD=3	Knowledge Needs 0; .5; 1.0	Who Taught You
APATHETIC-WITHDRAWN BEHAVIOR	BDL1	BDLUM1	BDLWH1	BDLKUM1	BDLKWH1
ACTIVE-DISTURBED BEHAVIOR	BDL2	BDLUM2	BDLWH2	BDLKUM2	BDLKWH2
MOOD DISTURBANCES	BDL3	BDLUM3	BDLWH3	BDLKUM3	BDLKWH3

Are you receiving any community services? Yes (1) No (0)

IF YES

	Services	Frequency
HHC Nurse		
HHC Aide		
Personal Caregiver		
Physical Therapy		
Occupational Therapy		
Speech Therapy		
Respiratory Therapy		
Social Work		
Mental Health		
Meals on Wheels		
Equipment Service		
Homemaker Service		
Other		

IF NO:

Do you know where you can get other services if you need them?

Yes (0) No (1) (CSK1)

Have you had information on where you can get other services?

Enough (0); Some but not enough (.5); None (0) (CSKUM1)

THANK THE PATIENT AND THE CAREGIVER FOR THEIR TIME AND SHARING OF INFORMATION. THEN ASK THEM IF THEY WILL PLEASE COMPLETE THE LAST SHEET ON DEMOGRAPHIC INFORMATION.

WHEN YOU ARE COMPLETELY FINISHED WITH THE ASSESSMENT, DISCUSS THE 3 WEEK FOLLOW-UP PHONE CALL AND INQUIRE AS TO WHAT TIME OF DAY WILL BE THE BEST TO MAKE THE PHONE CALL.

PLEASE ANSWER THE FOLLOWING QUESTIONS

PATIENT

AGE_____

ARE YOU:

MARRIED
SEPARATED
NEVER MARRIED
WIDOWED
DIVORCED

SEX
MALE
FEMALE

WHO DO YOU LIVE WITH?

CAREGIVER
NO ONE
SPOUSE
CHILDREN
GRANDCHILDREN
PARENTS
BROTHERS OR SISTERS
OTHER RELATIVES
FRIENDS
OTHER (WHO)_____

ARE YOU CURRENTLY EMPLOYED?

Employed
Number of hours_____

Unemployed

Retired

Occupation when employed_____

WHAT IS THE HIGHEST GRADE THAT YOU COMPLETED IN SCHOOL?

RACE

White Oriental

Black Other

Hispanic

What kind of health care coverage do you have?

1 Medicare
2 Medicaid
3 Private Insurer
4 Veteran with service related disability
5 Medicare/Medicaid
6 Medicare/Supplemental Private

(PLEASE GIVE THE PATIENT/CAREGIVER THE INCOME CARD AND ASK THEM TO MARK THEIR HOUSEHOLD INCOME AMOUNT ON THE C ARD. FIRST, ASK THEM IF IT IS EASIER FOR THEM TO MARK AN ANNUAL INCOME OR MONTHLY INCOME AND GIVE THEM THE APPROPRIATE CARD)

	YEARLY	MONTHLY
1.	$0-$499	$0-$41
2.	$500-$999	$42-$83
3.	$1,000-$1,999	$84-$166
4.	$2,000-$2,999	$167-$249
5.	$3,000-$3,999	$250- $333
6.	$4,000-$4,999	$334-$416
7.	$5,000-$6,999	$417-$583
8.	$7,000-$9,999	$584-$833
9.	$10,000-$14,999	$834-$1249
10.	$15,000-$19,999	$1250-$1666
11.	$20,000-$29,999	$1667-$2499
12.	$30,000-$39,999	$2500-$3333
13.	$40,000- OR MORE	$3333 OR MORE

PLEASE ANSWER THE FOLLOWING QUESTIONS

CAREGIVER

AGE_____

ARE YOU:

MARRIED
SEPARATED
NEVER MARRIED
WIDOWED
DIVORCED

SEX
MALE
FEMALE

ARE YOU CURRENTLY EMPLOYED?

Employed
Number of hours_____

Unemployed

Retired

Occupation when employed_____

WHAT IS THE HIGHEST GRADE THAT YOU COMPLETED IN SCHOOL?

RACE

White Oriental

Black Other

Hispanic

How many months have you been providing care for this person?_____

Appendix G

BEHAVIORAL MOOD DISTURBANCE SCALE

(BMD)

PLEASE READ EACH ITEM AND THEN CHECK THE RESPONSE WHICH BEST SHOWS HOW YOU ARE FEELING OR ACTING NOW.

THE ANSWERS ARE: NEVER
RARELY, NOW AND AGAIN
SOMETIMES, IN BETWEEN
FREQUENTLY, MOST OF THE TIME, QUITE A BIT
ALWAYS, ALL THE TIME

DO YOU:	NEVER	RARELY	SOMETIMES	FREQUENTLY	ALWAYS
1. PLAY AND TALK WITH YOUR CHILDREN/GRANDCHILDREN?					
2. WATCH AND FOLLOW TELEVISION?					
3. READ NEWSPAPERS OR MAGAZINES?					
4. KEEP YOURSELF BUSY DOING USEFUL THINGS?					
5. HELP OUT WITH DOMESTIC CHORES?					
6. SIT AROUND AND DO NOTHING?					
7. TAKE PART IN FAMILY CONVERSATIONS?					
8. EVER TALK NONSENSE?					
9. UNDERSTAND WHAT IS SAID TO YOU?					
10. MAINTAIN SENSIBLE CONVERSATION?					
11. RESPOND APPROPRIATELY WHEN SPOKEN TO?					
12. EVER WANDER OFF THE SUBJECT?					
13. SHOW AN INTEREST IN NEWS ABOUT FRIENDS AND RELATIVES?					
14. EVER CRY FOR NO OBVIOUS REASON?					
15. EVER BECOME ANGRY AND THREATENING?					
16. EVER BECOME UNHAPPY AND DEPRESSED?					
17. EVER BECOME RESTLESS AND AGITATED?					
18. EVER BECOME FRIGHTENED AND ANXIOUS?					
19. EVER BECOME IRRITATED AND EASILY UPSET?					

	NEVER	RARELY	SOMETIMES	FREQUENTLY	ALWAYS
20. EVER CHANGE MOODS FOR NO APPARENT REASON?					
21. EVER BECOME LOST IN A WORLD OF YOUR OWN?					
22. EVER GET LOST IN YOUR HOUSE?					
23. EVER FAIL TO RECOGNIZE FAMILIAR PEOPLE?					
24. EVER GET THE DAY OR YEAR MIXED UP?					
25. EVER GET MIXED UP ABOUT WHERE YOU ARE?					
26. EVER MOAN AND COMPLAIN?					
27. EVER TALK OUT LOUD TO YOURSELF?					
28. EVER MUTTER TO YOURSELF?					
29. EVER GET UP UNUSUALLY EARLY IN THE MORNING?					
30. EVER GO ON AND ON ABOUT CERTAIN THINGS?					
31. WANDER OUTSIDE THE HOUSE AT NIGHT?					
32. WANDER OUTSIDE THE HOUSE AND GET LOST?					
33. HAVE TO PREVENTED FROM WANDERING OUTSIDE THE HOUSE?					
34. EVER ACCUSE PEOPLE OF THINGS?					
35. EVER HOARD USELESS THINGS?					
36. EVER ENDANGER YOURSELF BY LEAVING LIT CIGARETTES LAYING AROUND OR LEAVING THE STOVE ON?					
37. EVER PACE UP AND DOWN WRINGING YOUR HANDS?					
38. EVER TALK ALL THE TIME?					
39. EVER SHOUT UNNECESSARILY AT YOUR CHILDREN OR GRANDCHILDREN					
40. EVER ATTEMPT TO HELP WITH THE HOUSEWORK BUT PROVE TO BE MORE OF A HINDRANCE THAN A HELP?					

PLEASE READ EACH ITEM AND THEN CHECK THE RESPONSE WHICH BEST SHOWS HOW THE PERSON YOU ARE CARING FOR IS ACTING NOW.

THE ANSWERS ARE: NEVER
RARELY, NOW AND AGAIN
SOMETIMES, IN BETWEEN
FREQUENTLY, MOST OF THE TIME, QUITE A BIT
ALWAYS, ALL THE TIME

DOES HE OR SHE:	NEVER	RARELY	SOMETIMES	FREQUENTLY	ALWAYS
1. PLAY AND TALK WITH THE CHILDREN/GRANDCHILDREN?					
2. WATCH AND FOLLOW TELEVISION?					
3. READ NEWSPAPERS OR MAGAZINES?					
4. KEEP HIS/HERSELF BUSY DOING USEFUL THINGS?					
5. HELP OUT WITH DOMESTIC CHORES?					
6. SIT AROUND AND DO NOTHING?					
7. TAKE PART IN FAMILY CONVERSATIONS?					
8. EVER TALK NONSENSE?					
9. UNDERSTAND WHAT IS SAID TO HIM/HER?					
10. MAINTAIN SENSIBLE CONVERSATION?					
11. RESPOND APPROPRIATELY WHEN SPOKEN TO?					
12. EVER WANDER OFF THE SUBJECT?					
13. SHOW AN INTEREST IN NEWS ABOUT FRIENDS AND RELATIVES?					
14. EVER CRY FOR NO OBVIOUS REASON?					
15. EVER BECOME ANGRY AND THREATENING?					
16. EVER BECOME UNHAPPY AND DEPRESSED?					
17. EVER BECOME RESTLESS AND AGITATED?					
18. EVER BECOME FRIGHTENED AND ANXIOUS?					
19. EVER BECOME IRRITATED AND EASILY UPSET?					

	NEVER	RARELY	SOMETIMES	FREQUENTLY	ALWAYS
20. EVER CHANGE MOODS FOR NO APPARENT REASON?					
21. EVER BECOME LOST IN A WORLD OF YOUR OWN?					
22. EVER GET LOST IN YOUR HOUSE?					
23. EVER FAIL TO RECOGNIZE FAMILIAR PEOPLE?					
24. EVER GET THE DAY OR YEAR MIXED UP?					
25. EVER GET MIXED UP ABOUT WHERE YOU ARE?					
26. EVER MOAN AND COMPLAIN?					
27. EVER TALK OUT LOUD TO HIM/HERSELF?					
28. EVER MUTTER TO HIM/HERSELF?					
29. EVER GET UP UNUSUALLY EARLY IN THE MORNING?					
30. EVER GO ON AND ON ABOUT CERTAIN THINGS?					
31. WANDER OUTSIDE THE HOUSE AT NIGHT?					
32. WANDER OUTSIDE THE HOUSE AND GET LOST?					
33. HAVE TO PREVENTED FROM WANDERING OUTSIDE THE HOUSE?					
34. EVER ACCUSE PEOPLE OF THINGS?					
35. EVER HOARD USELESS THINGS?					
36. EVER ENDANGER HIM/HERSELF BY LEAVING LIT CIGARETTES LAYING AROUND OR LEAVING THE STOVE ON?					
37. EVER PACE UP AND DOWN WRINGING HIS OR HER HANDS?					
38. EVER TALK ALL THE TIME?					
39. EVER SHOUT UNNECESSARILY AT THE CHILDREN OR GRANDCHILDREN					
40. EVER ATTEMPT TO HELP WITH THE HOUSEWORK BUT PROVE TO BE MORE OF A HINDRANCE THAN A HELP?					

Appendix H

Theoretical and Operational Definitions

VARIABLE	DEFINITION	MEASUREMENT
HEALTH CARE NEEDS	Functional needs of ADL and IADL, behavioral needs knowledge needs, skilled care needs	CHCNA Questionnaire developed for this study; Behaviors will be assessed by the Behavior and Mood Disturbance Scale (Greene, Smith, Gardiner, & Timbury, 1982)
FUNCTIONAL NEEDS		
ADL NEEDS	Need for assistance with mobility inside and outside home, transferring from bed and from chair, bathing, dressing and grooming, toileting, bowel and bladder incontinence, eating or feeding	8 dichotomous questions developed for this study based on other functional scales; 25 weighted questions based on consultation, the Barthel Index, and the literature review; Weighted scores can range from 0-200
IADL NEEDS	Need for help in using the telephone, transportation, shopping for clothing or food, meal preparation, housework or yardwork, taking medications, laundry, handling finances	8 dichotomous questions developed for this study based on other functional scales; 17 weighted questions based on consultation and the literature review; Weighted scores can range from 0-200

BEHAVIORAL NEEDS	Need for frequent supervision, safety and/or protective care resulting from cognitive impairment and/or mood disturbances	40 Questions on the BMD Scale will be answered by the patient if cognitively aware or the primary caregiver if the patient is cognitvely impaired; Likert scaling from 0-4; 3 dichotomous questions in the CHCNA, based on the BMD subscales
APATHETIC-WITHDRAWN BEHAVIOR	Passive, withdrawn behaviors exhibited by cognitive impairment, and or lack of interest in surroundings or people	Nine questions from the BMD scale; Likert-type scaling from 0-4; Range, 0-36; 1 dichotomous question in the CHCNA
ACTIVE-DISTURBED BEHAVIOR	Active, disturbed behaviors that indicate that the subject could endanger his/her own life due to inappropriate behaviors or cognitive impairment	Fifteen questions from the BMD scale; Likert-type scaling from 0-4; Range, 0-60; 1 dichotomous question in the CHCNA
MOOD DISTURBANCE	Excesses of mood changes that are not consistent with individual's past behaviors; Represent some behaviors that could endanger others	Nine questions from the BMD scale; Likert-type scaling from 0-4; Range, 0-36; 1 dichotomous question in the CHCNA
KNOWLEDGE NEEDS	Need for more information and/or instruction in following medical regimens, recognizing changes in health status, emergency response, caregiving skills, and/or availability of alternative resources	47 Questions developed for this study based on community nursing experience and items to be included in the proposed Health Care Financing Administration Uniform Needs Assessment

SKILLED CARE NEEDS	Care needs that require direct provision or supervision by a skilled health care professional, e. g. high technology procedures, complex dressing changes, physical assessments, specific therapies	25 Questions developed for this study based on community nursing experience and items to be included in the proposed Health Care Financing Administration Uniform Needs Assessment
UNMET NEEDS	Health care deficits that are not being met by self/care, the informal and/or the formal support systems; the numerical value of unmet needs will be computed based on the total care needs in each subscale and the patient's determination of the amount of time that needed care in not being received	Questions in each item of each category of need, i. e. functional, behavioral, knowledge, and skilled care, about care needs that are not being met
TIMES OF ASSESSMENT	In the home at 2-4 days following discharge and at 19-23 days by telephone	Structured Interviewing with CHCNA Questionnaire; Standardized instrument, BMD for behavioral status
INFORMAL SUPPORT SYSTEM	Care or services provided by a spouse, friend, or relative without a contractual agreement	Assessed by asking who is providing help each time a need is identified

FORMAL SUPPORT SYSTEM	Care or services provided by a profit/non-profit or voluntary agency based on a contractual agreement	Assessed by asking who is providing help each time a need is identified

Appendix I

Hierarchical Order of Weighted Functional Needs Using Only the Subjects Who Identified Needs.

3 Days After Discharge		3 Weeks After Discharge	
Rural [N=41]	Urban [N=40]	Rural [N=40]	Urban [N=39]
Transportation	Transportation	Transportation	Transportation
Managing Medications	Shopping	Mobility	Laundry
Mobility	Managing Finances	Managing Medications	Managing Medications
Shopping	Laundry	Shopping	Managing Finances
Transferring	Housework/ Yardwork	Telephone Use	Shopping
Laundry	Meal Preparation	Meal Preparation	Meal Preparation
Meal Preparation	Mobility	Bathing	Bathing
Bathing	Managing Medications	Laundry	Housework/ Yardwork
Telephone Use	Bathing	Managing Finances	Mobility
Housework/ Yardwork	Toileting	Housework/ Yardwork	Transferring[1]
Managing Finances	Bladder Incontinence	Bladder Incontinence	Dressing[1]
Bladder Incontinence	Transferring	Transferring[2]	Toileting[1]
Toileting	Telephone Use	Toileting[2]	Bladder Incontinence[1]
Dressing	Bowel Incontinence	Dressing	Bowel Incontinence
Eating	Dressing	Eating[4]	Telephone Use[3]
Bowel Incontinence	Eating	Bowel Incontinence[4]	Eating[3]

Note: [1] All have equal weights [2] Equal weights
[3] Equal weights [4] Equal weights

Measures of Central Tendency for Weighted ADL Needs of the Elderly After Discharge*

After Discharge:	MEAN SCORES				MEDIAN SCORES				SD				RANGE
	3 Days		3 Weeks		3 Days		3 Weeks		3 Days		3 Weeks		
	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	
TOTAL ADL SUBSCALE	38.44 [N=25]	31.29 [N=24]	35.00 [N=19]	25.00 [N=21]	30	20	20	20	36.69	26.21	28.97	23.77	0-122 (0-200)
Mobility	19.38 [N=16]	17.22 [N=18]	22.22 [N= 9]	14.06 [N=16]	10	15	25	10	14.0	11.01	9.72	10.03	5-45 (0-50)
Transferring	19.00 [N= 5]	10.0 [N= 1]	10.0 [N= 3]	10.0 [N= 1]	20	10	10	10	5.48	0	0	0	10-25 (0-30)
Bathing	17.33 [N=15]	15.67 [N=15]	16.07 [N=14]	15.42 [N=12]	20	15	17.5	15	3.2	4.17	5.26	4.98	10-26 (0-25)
Dressing	10.17 [N=6]	7.2 [N=5]	8.0 [N=5]	10.0 [N=1]	11	7	8	10	2.7	2.86	2.12	0	5-12 (0-15)
Toileting	12.0 [N=5]	15.0 [N=1]	10.0 [N=2]	10.0 [N=1]	10	15	10	10	2.74	0	0	0	10-15 (0-15)
Bladder Incontinence	12.69 [N=13]	13.89 [N= 9]	14.0 [N=10]	10.0 [N= 8]	15	15	15	5	6.33	7.41	6.99	7.6	5-25 (0-25)
Bowel Incontinence	0	7.5 [N= 2]	5.0 [N= 1]	5.0 [N= 1]	0	7.5	5	5	0	3.54	0	0	5 (0-25)
Eating	5.0 [N= 2]	5.0 [N= 1]	5.0 [N= 1]	0	5	5	5	0	0	0	0	0	5 (0-15)

*Note: Measures of Central Tendency Reported Only for Subjects with Identified Needs.

Measures of Central Tendency for Weighted IADL Needs of the Elderly After Discharge*

After Discharge:	MEAN SCORES				MEDIAN SCORES				SD				RANGE
	3 Days		3 Weeks		3 Days		3 Weeks		3 Days		3 Weeks		
	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN	
TOTAL IADL SUBSCALE	101.11 [N=35]	98.13 [N=39]	90.94 [N=31]	78.11 [N=35]	100	100	80	85	57.09	40.96	56.36	41.49	5-200 (0-200)
Telephone	15.46 [N=11]	10.00 [N= 1]	18.00 [N= 5]	0	20	10	20	0	6.50	0	4.47	0	5-20 (0-20)
Transportation	33.46 [N=26]	33.06 [N=36]	33.60 [N=25]	10.0 [N=30]	30	30	30	30	5.62	4.67	5.69	5.04	20-40 (0-40)
Shopping	19.26 [N=27]	19.46 [N=37]	18.75 [N=24]	17.93 [N=29]	20	20	20	20	1.81	2.58	2.21	4.73	5-20 (0-20)
Meals	10.17 [N=26]	17.69 [N=13]	17.50 [N=16]	16.00 [N= 5]	20	20	20	20	4.30	4.39	4.47	5.48	10-20 (0-20)
Housework/ Yardwork	15.15 [N=34]	18.38 [N=34]	15.19 [N=26]	15.00 [N=30]	20	20	20	20	5.71	4.03	5.38	5.58	5-20 (0-20)
Medications	19.55 [N=22]	16.40 [N=25]	19.33 [N=15]	18.42 [N=19]	20	10	10	10	10.46	9.07	11.00	11.19	10-40 (0-40)
Laundry	18.04 [N=23]	18.46 [N=26]	17.22 [N=18]	18.75 [N=16]	20	20	20	20	4.46	3.68	4.61	3.42	5-20 (0-20)
Finances	14.44 [N=18]	18.57 [N=14]	15.94 [N=16]	18.33 [N=12]	15	20	20	20	6.39	4.13	5.84	4.44	5-20 (0-20)
TOTAL FUNCTIONAL SCORES	124.35 [N=37]	116.90 [N=40]	105.15 [N=34]	92.30 [N=37]	105	107.5	80	85	86.19	60.07	80.15	55.87	10-307 (0-400)

*Note: Measures of Central Tendency Reported Only for Subjects with Identified Needs.

Appendix J

Unmet Skilled Care Needs at 3 Days and 3 Weeks After Discharge

3 Days After Discharge									
RURAL [N= 7]	Time Help Is Available				URBAN [N= 2]	Time Help Is Available			
	MOST	HALF	SOME	NONE		MOST	HALF	SOME	NONE
Oxygen Therapy		1	1		Special Skin Care				1
BP Monitoring				1	Blood Tests				1
Cardiac Assessment				1	Cardiac Assessment				1
Peripheral Vascular Assessment				1					
Diet Monitoring		1	1						
Physical Therapy				1					
ROM Exercises				1					
Strengthening Exercises				1					

Unmet Skilled Care Needs at 3 Days and 3 Weeks After Discharge (continued)

3 Weeks After Discharge									
RURAL [N= 4]	Time Help Is Available				URBAN [N= 4]	Time Help Is Available			
	MOST	HALF	SOME	NONE		MOST	HALF	SOME	NONE
Oxygen Therapy			1		Cardiac Assessment				1
Cardiac Assessment			1		Diet Monitoring	1			
Peripheral Vascular Assessment			1						
Diet Monitoring			1		Foot Care				1
Physical Therapy				1	Other				1
Foot Care	1								

Unmet Behavioral Needs at 3 Days and 3 Weeks After Discharge

3 Days After Discharge									
RURAL [N= 4]	Time Help Is Available				URBAN [N= 3]	Time Help Is Available			
	MOST	HALF	SOME	NONE		MOST	HALF	SOME	NONE
Behavioral					Behavioral				
Apathetic-withdrawn	1		1	2	Apathetic-withdrawn	1			2
Active Disturbed			1		Active Disturbed				1
Mood Disturbance			1		Mood Disturbance				1

3 Weeks After Discharge									
RURAL [N= 6]	Time Help Is Available				URBAN [N= 4]	Time Help Is Available			
	MOST	HALF	SOME	NONE		MOST	HALF	SOME	NONE
Behavioral					Behavioral				
Apathetic-withdrawn	3		2	1	Apathetic-withdrawn		2	1	1
Active Disturbed				1	Active Disturbed		1		
Mood Disturbance	1		1	1	Mood Disturbance		2		

Unmet Functional Needs at 3 Days and 3 Weeks After Discharge

3 Days After Discharge									
RURAL [N= 9]	Time Help Is Available				URBAN [N=14]	Time Help Is Available			
	MOST	HALF	SOME	NONE		MOST	HALF	SOME	NONE
Functional					Functional				
Mobility				1	Mobility	1			1
Bathing			1		Bathing			1	1
Telephone Use	1				Transportation	7	1	2	1
Transportation	2				Shopping	2			1
Shopping	1				Laundry	1			1
Housework/Yardwork	1				Housework/Yardwork	1			2
Managing Finances		2		1	Managing Medications				2

3 Weeks After Discharge									
RURAL [N= 7]	Time Help Is Available				URBAN [N=12]	Time Help Is Available			
	MOST	HALF	SOME	NONE		MOST	HALF	SOME	NONE
Bathing				1	Mobility	1		1	1
Telephone Use	2				Bathing		1	2	
Transportation	3				Transportation	7		2	1
Housework/Yardwork	1				Shopping	2		2	
Managing Finances		1			Meal Preparation	1			
					Housework/Yardwork				1
					Laundry				1

Abstract

Title: Rural/Urban Differences in Health Care Needs of the Elderly After Hospital Discharge to Home

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Approved: _____

Joyce Colling, RN, PhD, FAAN, Advisor

The recent change in the Medicare reimbursement system has resulted in shorter hospital stays. In rural areas, where community resources may be limited, elderly may be particularly vulnerable to this change in the system. The purpose of this longitudinal study was to assess and evaluate the match of environmental resources with functional, behavioral, knowledge, and skilled care needs of rural and urban elderly during the transition period following hospital discharge to home.

Eighty-one elderly subjects, discharged from hospitals to one urban and two frontier rural counties, were selected. There were no significant differences in demographic variables between rural and urban subjects. The Comprehensive Health Care Needs Assessment (CHCNA) questionnaire, developed for this study, and the Behavioral and Mood Disturbance (BMD) Scale were used to assess needs at three days and three weeks after discharge. Using repeated measures analyses of variance, rural dwellers identified significantly more skilled care needs than did their urban counterparts. More behavioral needs were

identified using the BMD than from using the CHCNA. In each domain, there were significantly fewer needs identified at three weeks than at three days after discharge.

The skilled care and knowledge needs of both groups were met primarily by the formal support system. Unexpectedly, at three weeks after discharge, considerably more functional needs were met by families in the urban area than in the rural area. While almost all the subjects reported unmet needs in at least one domain, behavioral needs were reported as unmet most of the time. Although only a small number of subjects reported unmet needs in multiple domains, the complexity of the unmet needs were clinically significant.

The findings suggest that the profile of needs experienced by elderly patients after hospital discharge in the 1990s may be different than reported in earlier studies and that continued contact during the transition period after discharge is necessary to monitor individual health care needs and the uneven response by the informal and formal systems to those needs. These findings are of clinical importance to nursing because continuity of care is a major emphasis in our practice.