

THE EFFICACY OF A COMPREHENSIVE PSYCHIATRIC PROGRAM
ON NURSING HOME PATIENTS

A DISSERTATION
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DEDICATION

"Start a job well begun, do not stop until it's done."

This dissertation is dedicated to:

The memory of my grandfather, Dr. William Zuckerman, who taught me
strive to be the best I could be in all aspects of my life;

My grandmother, Mrs. Sarah Aranow Zuckerman, who at 103 is still
making the most of every day;

My great uncle and aunt, Mr. And Mrs. Jack and Jean Seligman, who
have always made me feel valued and loved;

My sons, William Zuckerman Margolis and Jacob Nathan Margolis, of
whom I'm so proud; and

My wonderful, loving husband, Dr. Larry Margolis, who has added
love, spice, and a whole new dimension to my life.

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This dissertation would not be in the correct format or turned in by set deadlines if it weren't for the expertise and dedication of Marion Smalley. She went beyond all expectations and was willing to drive, pick-up and deliver, and work long hours to edit, type, and work her magic to put my dissertation into the legible format you see today. Thank you, Marion.

ABSTRACT

THE EFFICACY OF A COMPREHENSIVE PSYCHIATRIC
PROGRAM ON NURSING HOME PATIENTS

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The purpose of this retrospective, descriptive study was two-fold: (a) the first was to evaluate the effect of a comprehensive psychiatric program in nursing homes on psychiatric hospitalization rates of those nursing home psychiatric patients who do and do not receive regular comprehensive psychiatric care, and (b) to examine the financial burden each group placed on the health care system. The study sample consisted of 236 subjects, 65 years or older, who had a psychiatric diagnosis. The program group consisted of 49 subjects located in one of three nursing homes. The program group received comprehensive psychiatric care in the nursing home. The non-program (control) group consisted of 187 subjects who were also located in one of the same three nursing homes. All 236 patients had psychiatric diagnoses, but only 49 were referred to the program.

Psychiatric hospitalization rates of the program and non-program groups were compared in each of the four quarters in 1998. A Theta coefficient for nominal-ordinal data was computed to test this hypothesis and found no statistical significance.

The program group had hospitalizations for only the first quarter of 1998, whereas the non-program group had hospitalizations for 50% (half) of the year. The actual number of subjects admitted for psychiatric hospitalizations was the same in each group. There was no

statistical significance between the two groups; however, there was clinical significance.

Treatment costs for patients receiving comprehensive psychiatric care in the nursing home was predicted to be less than the costs for non-program patients. The total number of hospitalizations and their associated costs for both groups were found to be equal.

Medical diagnoses and physical deficits (communication, hearing, mobility, and vision impairments) were examined by treatment groups. Heart disease was found in more of the program patients. The non-program patients had more physical impairments (communication, hearing, and vision), although the program group had a larger percentage of patients with mobility deficits.

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CHAPTER I

INTRODUCTION

Mental health services for the elderly in nursing homes have been given little attention by government policy makers despite implementation of Nursing Home Reform Amendments as part of the Omnibus Budget Reconciliation Act (OBRA) (Agronin, 1998). Psychiatric problems and needs include cognitive decline and suicide risk (Abdul-Hamid, Holloway, & Silverman, 1998). Approximately 80% to 90% of nursing home residents suffer from some form of mental illness or psychological disturbance (Agronin, 1998). The Congressional Budget Office, U. S. Congress (1991), predicted that between 1990 and 2010 the nursing home population will increase by 50%.

Over the last 5 years, public awareness of the health care needs of the U. S. elderly has increased. Part of the reason for this increased need in health care is the steady climb in the number of elderly. With more than 2 million people celebrating their 65th birthday each year, it is predicted that by the year 2040, there will be more people 65 and older than people below 20 years of age. The fastest growing age groups are those 85 and older. There are approximately 3.5 million people who are currently 85 years of age or older. In 1990, there were 35,808 people who were 100 years old in the United States (United States Bureau of the Census, 1995). Many of these elderly, after a long life of hard work and sacrifice, find themselves requiring more care than they or their families are able or willing to give. To be admitted to a nursing home means giving up independence, and often home, furniture, social and family life, and many other important things.

These losses can be devastating to anyone, especially when there is no hope for return to one's former situation.

Does comprehensive psychiatric care in the nursing home decrease psychiatric hospitalizations? The answer to this important question may shape the future of psychiatric care to the institutionalized elderly. One way to answer this question would be to examine a comprehensive psychiatric program in nursing homes. The results would, hopefully, drive further research and evaluate the use of a comprehensive psychiatric program as a model for wider use.

Adjustment to nursing home life is difficult at best. For those who have a poor history of coping, this situation is often more than they can bear. This can lead to many behavioral and management problems for nursing home staff that ultimately result in psychiatric hospitalizations (Rovner, Steele, German, & Clark, 1992). Two studies (Grossberg et al., 1990; Rovner et al., 1990) document the increase in confusion and disorientation as well as a longer and more difficult adjustment back to the nursing home after any hospitalization. Repeated hospitalizations add to the increase in confusion and disorientation as well as to the decrease in overall cognitive functioning. Because many patients and/or their families can not afford "bed-holds" (i.e., paying daily nursing home rates of approximately \$100/day to ensure the patient may return to the same room and bed after hospital discharge) many patients have additional adjustment challenges after discharge including placement and settling in with new room-mates, settings, and staff.

The cost of hospitalizations account for 80% of all Medicare/Medicaid allocations (Welch, 1998). The cost to each taxpaying American can be seen on paychecks as Medicare fund deductions. There is a documented lack of mental health care to the elderly in general, and even more so for those who are institutionalized (Colenda et al., 1999;

Etterner & Hermann, 1998). Because of the poor Medicare/Medicaid reimbursement for psychiatric care for the elderly in nursing homes, there are few programs, other than hospitalization, to treat them.

In addition to common problems of discomfort and functional impairment, there also are financial concerns. Medicare and Medicaid, established in 1965 to provide medical coverage for the poor and the elderly, bear the brunt of hospitalization costs with other third party payees (private insurance, VA, private pay) picking up most of the rest (Uyeda, DeLeon, Perloff, & Kraut, 1986). The cost to these programs (despite implementation of DRGs) comes to 80% of all Medicare/Medicaid allocations (Eichmann, Griffin, Lyons, Larson, & Finkel, 1992).

Problem of Study

The majority of nursing home patients are identified as having mental illnesses (Binstock & Spector, 1997; Burns, Larson, Goldstrom, Johnson, & Taube, 1988; Reichman et al., 1998; Rovner et al., 1990). These studies (Kane et al., 1991; Sakauye & Camp, 1992) indicate the need for psychiatric care in the nursing homes and problems with implementing such programs. What is the effect of psychiatric hospitalization rates in those patients who receive and do not receive comprehensive psychiatric care in nursing homes? If knowledge of the effect was found to exist, important plans regarding the future of psychiatric care for nursing home patients would have a foundation for implementation.

Purpose

The purpose of this study was to evaluate the effect of a comprehensive psychiatric program in nursing homes. The psychiatric hospitalization rates and costs were compared in nursing home

psychiatric patients who did and did not receive regular comprehensive psychiatric care.

Rationale for the Study

The need of the elderly for psychiatric services, particularly in nursing homes, is under-researched (Abdul-Hamid, Holloway, & Silverman, 1998). In a study of characteristics of the elderly across nursing home and chronic hospital settings, results indicated that nursing home patients displayed the most severe adaptive deficits (Harvey et al., 1998). Harvey et al. indicated that cognitive deficits are the main indicator of severe adaptive deficits. Another deficit, which has received attention, is the capacity to maintain sleep/wakefulness cycles which, when impaired, can result in complete fragmentation of sleep/wakefulness during the night and day (Pat-Horenczyk, Klauber, Shochat, & Ancoli-Israel, 1998).

If a current program of comprehensive psychiatric care decreases psychiatric hospitalization rates of those patients who have overt behavioral and management problems (which is why they were referred), then showing the efficacy of the program would be vital. In the pilot study, a positive outcome (as evidenced by significance in the t-test) indicates the need for further examination. The results of this study may help determine the efficacy and future of a nursing home outreach program.

The rationale for this program is based on the mandates set forth by the 1987 Omnibus Budget Reconciliation Act (OBRA) and Healthy People 2000. OBRA requires all current nursing home patients and new nursing home patients on admission to be screened for mental disorders and treated if needed or transferred to an appropriate psychiatric treatment facility. Eighty percent of all nursing home patients have psychiatric disorders, yet only 4.5% of all nursing home patients with mental

illness receive psychiatric care in the nursing home (Colenda et al., 1999; Reichman et al., 1998). Untreated mental illness can lead to psychiatric hospitalizations (Etterner & Hermann, 1998) which are both emotionally difficult and expensive for the patient. Healthy People 2000 (1991) set a goal,

. . . to improve the health and quality of life for older adults and reduce the average number of days of restricted activity due to acute and chronic conditions by 20 percent, to fewer than 30 days per year for people aged 65 and older.

The pilot study indicated a decrease in psychiatric hospitalizations of patients who received comprehensive psychiatric care, even though this was a "sicker" group of patients whose behaviors were usually too disruptive to allow participation in regular nursing home activities.

Theoretical Framework

The humanistic nursing theory (Paterson & Zderad, 1976) and Roy's (1976) theory of adaptation provided the theoretical framework for interaction with nursing home psychiatric patients. This interaction accepts patients (and nurses) as they are, physically, emotionally, cognitively, and spiritually, and works toward a common goal (of patient and nurse) and values the interaction itself toward "becoming more." Roy specifically deals with the physical adaptations the body makes in response to disease, injury, surgery, and/or medications. Comprehensive psychiatric care is given by exploring and treating the person in all of these physical, spiritual, and emotional contexts (see Figure 1).

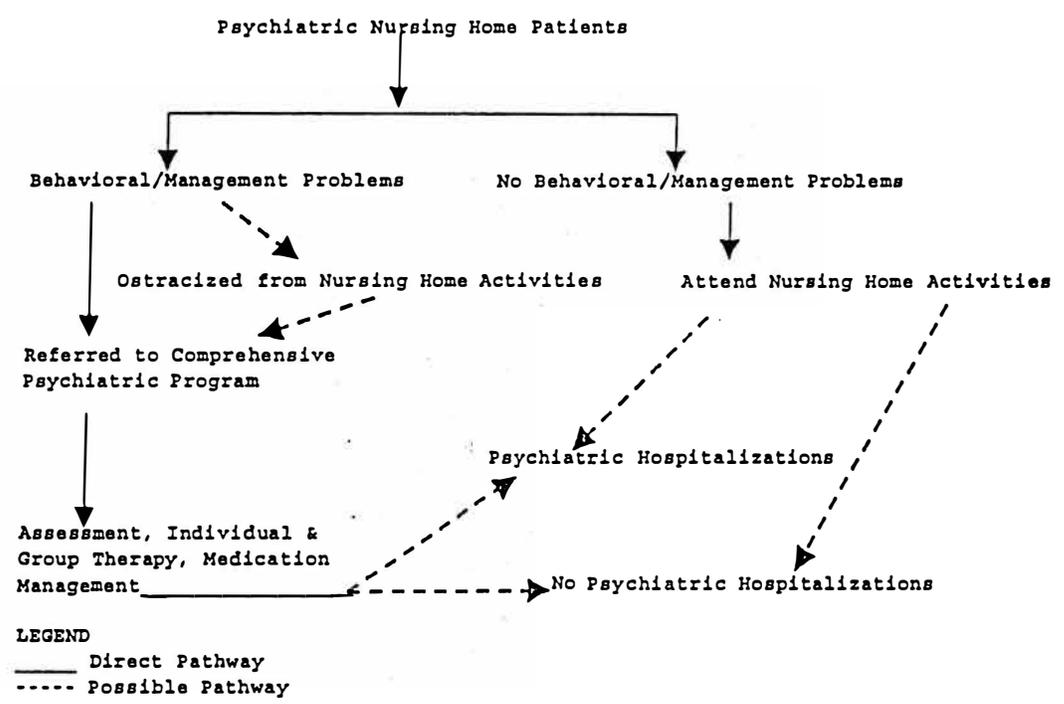


Figure 1. Pathways, interventions, and outcomes with psychiatric nursing home patients.

Comprehensive Psychiatric Program

The Comprehensive Psychiatric Program consists of an assessment, individual therapy, and group therapy (Reminiscence and Grief/Loss). Individual therapy consists of cognitive and supportive therapy according to need. Reminiscence Therapy is used with patients with mild to severe cognitive deficits. The purposes are:

1. To orient patient to person, place, season, day, month, year, and situation.
2. To enhance the quality of life by evoking memories from the past.

3. To assess changes in memory ability indicative of clinical concerns (i.e. TIAs, brain tumors, stroke, infections).

4. To provide a structured forum to facilitate socialized interaction according to commonalities in life experiences.

Grief/Loss Therapy is provided for patients with depression, poor adjustment to the nursing home environment, and/or bereavement issues. The purposes are:

1. To explore current concerns which impair physical and psycho-social well-being (i.e., poor appetite, insomnia, isolation in room, etc.).

2. To provide a feeling of acceptance and security in discussion and processing through grief and loss issues.

3. To assist patients to strive for an increased quality of life in the nursing home setting.

4. To encourage socialization and participation in nursing home activities.

Psychiatric hospitalizations are to be avoided whenever possible. There are some situations, however, that demand immediate hospitalizations such as suicidal/homicidal ideation, drug overdose, drug addiction where there is a need for detoxification, and psychosis with a medical co-morbidity that requires careful medication titrations/monitoring.

Assumptions

1. Nursing home patients deserve care for mental as well as physical disorders.

2. Health incorporates physical and emotional well-being.

3. Receipt of mental health care at a patient's residence (i.e., nursing home) is preferable to receipt of the same care at another institution (i.e., hospital or psychiatric facility).

4. Psychiatric diagnoses are accurate and not a ploy for nursing home admission.

Hypotheses

1. Psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care.

2. Treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients.

Definition of Terms

(C) = Conceptual Definition (O) = Operational Definition

1. Charts: (C) Source of information; proxies for patients.

(O) Nursing home patient records that include demographics, diagnoses, and hospitalizations.

2. Clinical significance: (C) Assessment of the meaningfulness of the research findings.

(O) Information that impacts clinical practice despite non-significant statistical findings.

3. Comprehensive psychiatric care: (C) Program of care.

(O) Monthly patient visit by a member of the mental health team to include: monitoring of behaviors and medication effects, medication evaluation with medication changes as indicated, supportive therapy, and staff consultation. Patients also will receive individual therapy and/or group therapy (Reminiscence Group, Grief and Loss Group) as needed.

4. Nursing homes: (C) For-profit institutions receiving Medicare and Medicaid for care of the elderly and infirm.

(O) Those institutions licensed by the Texas Department of Health to operate in the state of Texas as a long-term care facility and eligible to receive state and/or federal funding.

5. Nursing home patients: (C) Residents of government funded homes for the elderly and infirm.

(O) Persons who have been admitted to a long-term care facility and have a psychiatric diagnosis.

6. Practical significance: (C) Information that is useful in the real world.

(O) Positive outcomes even when not shown to be statistically significant.

7. Psychiatric diagnosis: (C) A medical label from a multi-axial system of categories listed in the Diagnostic Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association (1994).

(O) An Axis I mental disorder defined by the DSM listing (III-R, or IV) in use at the time the illness was identified.

8. Psychiatric hospitalizations: (C) Temporary residence at a facility that specifically treats mental illness.

(O) Admissions to inpatient psychiatric programs in psychiatric wards of med/surg hospitals where the patients were admitted with an alteration of mental status and were discharged with a primary psychiatric diagnosis.

9. Psychiatric hospitalization rates: (C) The number of times that a patient becomes a temporary resident at a facility that specifically treats mental illness.

(O) The separate number of times that an individual nursing home patient is admitted for psychiatric hospitalization during the study period.

Limitations

1. This study was limited to three nursing homes in Texas. Only nursing homes eligible to receive state and/or federal funding were used. This represents 74.8% of all U. S. nursing homes (Health Data Associates, 1994).

2. Attribution due to deaths and alternate placement did not affect this study. Statistical procedures compensated for unequal samples.

3. Information was limited to chart documentation. Missing data were addressed by elimination of those charts without data regarding psychiatric diagnoses and hospitalizations.

4. The same mental health team (consisting of a psychiatrist and psychiatric clinical nurse specialist) cared for all of the program patients at each of the study nursing homes.

Delimitations

1. This study was limited to nursing home patients who carry a psychiatric diagnosis.

2. This study was limited to patients 65 years old and older.

3. This study was limited to nursing homes in Texas and, thus, subject to the staff and training that Texas nursing homes might have.

Summary

This chapter has shown the importance of answering the question, "Does comprehensive psychiatric care in the nursing home decrease psychiatric hospitalizations?" The answer to this important question may shape the future of psychiatric care to the institutionalized elderly. To attempt to answer this question, a study was conducted to examine a current comprehensive psychiatric program in nursing homes and analyze the psychiatric hospitalization rates of their patients. The results may

drive further research and evaluate the use of a current program as a model for wider use.

CHAPTER II

LITERATURE REVIEW

Introduction

A literature review was done to determine the availability of information on the efficacy of psychiatric services in nursing homes. An electronic search of databases which included CINAHL, Medline, PsycINFO, and HealthSTAR was done. Pertinent articles were found primarily in the PsycINFO database. Prior to 1988 few studies on psychiatric services in nursing homes were found in the literature. Nursing homes were originally designed to assist only with the physical care needs of the elderly and disabled. However, over the past 2 decades nursing homes have shifted to care for a large percentage of the elderly mentally ill according to Rovner et al. (1990). The literature review is presented under the subheadings of psychiatric care in nursing homes and financial considerations regarding psychiatric care.

Psychiatric Care in Nursing Homes

Earlier studies identified the quantity and types of psychiatric illnesses in nursing homes (Grossberg, 1990; Rovner, Kafonek, Filipp, Lucas, & Folstein, 1986). In these studies, 80% to 85% of all nursing home patients were identified as having some type of mental illness, including the dementias.

Later studies addressed the lack of mental health care in nursing home settings (Burns et al., 1993; Kim & Rovner, 1995; Strahan & Burns, 1991). The studies established what many health care professionals experience, the more behavioral or management problems presented or perceived by the staff, the more likely the patient is to be referred

for mental health care. Despite this finding, only 4.5% of all nursing home patients with mental illness receive psychiatric care in the nursing home setting (Burns et al., 1993).

In the study by Kales et al. (1999), elderly patients who had co-existing dementia and depression had significantly more psychiatric inpatient days than elderly patients who had either disorder alone. They also had more medical inpatient days and nursing home readmissions than patients with depression alone. Patients with coexisting dementia and depression had significantly more total inpatient days than the other two groups. However, they utilized significantly fewer outpatient resources than the group with depression alone. Kales et al. suggested that aggressive outpatient treatment approaches might reduce utilization of inpatient care for patients with coexisting depression and dementia.

Davis and Rees (1998) compared three studies concerning mental health services for nursing home patients. Directors of nursing in 42 nursing homes completed a questionnaire similar to those used in the other studies. Results from the study, as in the other studies, suggest that there is a significant psychiatric population in nursing homes that are seriously neglected regarding appropriate psychiatric care (Davis & Rees, 1998).

Psychiatric Problems in Nursing Homes

In a study by Kim and Rovner (1995), 94% of the subjects chosen at random from a proprietary intermediate-care nursing home, had a major psychiatric disorder. The psychiatric disorders were most often dementia, (a) specifically primary degenerative dementia, (b) multi-infarct dementia, and (c) Parkinson's disease with dementia. The other patients (6%) with psychiatric illnesses were found to still have an Axis I diagnosis consistent with the DSM-III according to Kim and Rovner.

The purpose of the study by Jackson, Templeton, and Whyte (1999) was to provide an understanding of the nature and prevalence of behavioral difficulties among elderly patients in nursing homes. A comparison of nursing homes to residential homes and long-term units was done. Results showed that nursing homes and elderly long-term units have similar behavior difficulties, with nursing homes experiencing more behavior problems. Residential facilities had behavior difficulties to a lesser extent. Nursing homes were found to have limited formal psychiatric intervention compared to other settings. Behavior difficulties resulted in increased work for staff and increased hospital referrals. Jackson et al. (1999) suggested further research into the antecedents, effects, and treatment of patients with behavior difficulties in nursing homes. Sakauye (1995) noted that the majority of the patients with previously documented psychiatric diagnoses had outstanding behavioral and management problems.

Components of Comprehensive Geriatric Psychiatric Care

The literature on comprehensive geriatric psychiatric care was found primarily in the areas of medicine and nursing. The four major components of comprehensive psychiatric care found in the medical literature included (a) a complete physical and psychological assessment, (b) psychopharmacology, (c) psychotherapy, and (d) somatic therapies.

Nursing literature emphasized a comprehensive geriatric assessment as a basis for all nursing care. The long-term value of a proper, professional, complete admission assessment cannot be overemphasized according to Engberg and McDowell (1999). Nursing literature also placed an emphasis on establishing a safe and therapeutic environment for the

patient, a major concern in nursing homes (Haber, Hoskins, Leach, & Sideleau, 1987; Tibbitts, 1996; Wetle, 1998).

The "comprehensiveness" of all psychiatric care, in both the medical and nursing literature, share four basic elements: (a) thorough assessment, (b) psychopharmacology as indicated, (c) monitoring of behaviors and medication effects, and (d) some type of regular, ongoing reassessment and evaluation of care.

Comprehensive Geriatric Assessment

Engberg and McDowell (1999) described the comprehensive geriatric assessment as an organized means of gathering data that includes physical and psychological evaluations. Quality of subsequent care is often contingent on the adequacy of the initial assessment. Nasr and Osterweil (1999) commented that a comprehensive geriatric and psychiatric evaluation and periodic reassessments are required for optimal management of agitated behavior in elderly patients with dementia living in nursing homes.

Stewart, Gonzalez-Perez, Zhu, and Robinson (1999) stated that resistiveness to physical care among dementia patients is common. Frontal-subcortical function was measured in 49 nursing home patients using the MMSE and the Royall Executive Interview (EXIT). Correlations with resistiveness ratings were stronger for the EXIT ($r = 0.73$) than for the MMSE ($r = 0.46$). The EXIT was found by logistic modeling to be a strong independent predictor of resistiveness. Cognitive dysfunction, as measured by the EXIT, was found to be a major determinant of resistiveness to care in nursing home patients with dementia. Stewart et al. acknowledged these patients do have a tendency toward inertia that could account for the results.

McEnamy (1999) contended that sleep is an integral part of one's life and provides an accurate picture of the quality of life. Disturbed sleep equates with disturbed daytime function noted McEnamy.

Folks (1999) suggested that complaints of insomnia and other sleep complaints among nursing home patients may signal an underlying psychiatric or general medical disorder or may be due to medication, dietary substance, or environmental influences. Folks stated that intervention must be preceded by a comprehensive diagnostic assessment in order to determine clinical management.

Sherrell, Buckwalter, Bode, and Strozdas (1999) commented that nurses cannot understand and improve what they are unable to assess accurately. Two assessment tools, the Cognitive Abilities Screening Instrument (CASI) and the Mini-Mental State Exam (MMSE), were compared to determine the better tool to use in evaluating the cognitive functioning of nursing home patients. Comparisons demonstrated greater specificity of the CASI in determining the level of cognitive function. The CASI, according to Sherrell et al., was found to be a more useful outcome measure for psychiatric nursing interventions designed to improve cognitive function in elderly residents with schizophrenia.

According to Harvey et al. (1997), the Social-Adaptive Functioning Evaluation (SAFE) was developed because previous scales did not consider the additional complications and adaptive changes associated with aging. The scale items measure social-interpersonal, instrumental, and life skills functioning and can be rated by observation, caregiver contact, and interaction with the participant if possible (Harvey et al., 1997).

Predictive validity was examined in a study of 140 patients, 45 of whom were discharged after the assessment. The results indicated that patients who remained hospitalized could be discriminated from those who were sent to nursing homes or community care on the basis of certain

items and sub-scales. The study results support the use of SAFE in studies of geriatric psychiatric patients (Harvey et al., 1997).

Harvey et al. (1998) directly assessed poor outcome geriatric patients with schizophrenia and contrasted their cognitive, symptomatic, and adaptive functioning to that of acutely admitted patients with a better outcome over the lifetime course of the illness. The participants were 97 chronically hospitalized patients with schizophrenia, 37 patients with chronic schizophrenia living in nursing homes, and 31 acutely admitted geriatric patients with schizophrenia. Participants were rated with the Positive and Negative Syndrome Scale, tested with a neuropsychological battery, evaluated with the MMSE, and rated on a scale of social and adaptive deficits, the Social Adaptive Functioning Evaluation Scale (Harvey et al., 1998).

Harvey et al. (1998) noted that each group was discriminable from the other two with nursing home patients displaying the most severe adaptive deficits. The acutely admitted patients were the least cognitively impaired. The strongest predictor of adaptive deficits for all three groups was cognitive impairment. Negative symptom differences among the groups were smaller than differences in cognitive impairment. Nursing home patients had the least severe positive symptoms, and the acutely ill and chronic hospital patients did not differ on positive symptoms. Cognitive impairment is a predictor of both overall outcome and specific adaptive deficits. The data suggested that interventions aimed at cognitive impairment can impact the overall functional status (Harvey et al., 1998).

The compliance rates with placement and mental health recommendations of the pre-admission screening and annual resident review (PASARR) program was examined by Snowden, Piacitelli, and Koepsell (1998) in their retrospective observational study. PASARR

screening forms were used to identify (a) recommendations of inpatient psychiatric care for people who needed more care than provided in nursing homes, (b) alternate dispositions for individuals needing less than nursing home level care, and (c) recommendations for new mental health services when needed but not provided. Participants were all Washington State Medicaid recipients screened from 1992 through 1993. Findings were that inpatient psychiatric care was recommended for 4 of the 523 (0.8%) Medicaid recipients. All received inpatient psychiatric care. Recommended alternate dispositions in 131 (25%) participants occurred for 29%. New services were recommended in 310 (59%) cases. Compliance rates averaged 35%, ranging from 73% for medication to 7% for consultation. Individuals who were depressed were less likely to receive services as recommended. Snowden et al. (1998) contended that many individuals did not receive additional mental health services that were needed. A significant minority of patients could have been given an alternate disposition but rarely were according to Snowden et al. (1998).

Harvey et al. (1999) suggested that cognitive impairment is a major predictor of overall functional deficit in schizophrenia. Study participants were 57 geriatric patients with chronic schizophrenia living in a chronic psychiatric hospital. Participants were examined with measures of (a) adaptive functioning, (b) cognitive impairments, and (c) clinical symptoms. Follow-up was done in an average of 2 1/2 years after participants were referred to nursing home care. A decline in both cognitive functioning and adaptive functioning was noted over the follow-up period with no changes noted in schizophrenia symptoms. Changes in cognitive functioning accounted for 25% of the variance in adaptive decline. The baseline severity of cognitive impairment and schizophrenia symptoms were uncorrelated with adaptive decline. Data

indicate that cognitive decline may predict deterioration in overall functional status and imply that treatment of cognitive impairment might have a beneficial effect on global functional status (Harvey et al., 1999).

Psychopharmacology

The majority of research and writings are specifically in the areas of psychopharmacology. In earlier studies, the use of psychopharmacology in nursing homes was by far the main treatment modality for psychiatric patients (Andersson, 1989; Beardsley, Larson, Burns, & Thompson, 1989; Garrard et al., 1991; Rovner et al., 1990). Use of psychotropic medications in the elderly carries many concerns such as the decreased ability to metabolize medications as well as an increase in adverse medication effects.

Zisselman, Rovner, and Shmuelly (1996) assessed benzodiazepine use and the treatment of depression before admission to an inpatient geriatric psychiatric unit. A retrospective chart review was done on 131 consecutively admitted patients. Pre-admission benzodiazepine drug regimens were reviewed in relation to the Health Care Financing Administration (HCFA) Guidelines for use of benzodiazepines in nursing homes and in relation to psychiatric diagnoses based on DSM-III-R criteria. Benzodiazepine drug regimens of 38 of 59 (64%) patients were outside the HCFA guidelines. Benzodiazepines were used as the only treatment of depression, prior to admission, in 30 of 76 (39.5%) patients with depressive disorders. The study findings suggested that benzodiazepines may be misused in the elderly and indicates the need for education and research on the appropriate use in treating depression (Zisselman et al., 1996).

One goal of nursing homes is to keep patients chemically and physically restraint free if at all possible. Physical restraints often

cause increased agitation and can result in an increase of physical injuries secondary to fighting against the restraints (Sakauye, 1990; Sakauye & Maletta, 1991). OBRA guidelines (1987) require the use of other interventions before restraints and/or psychopharmacology are initiated. Despite this, psychopharmacology remains the principal intervention in the management of psychiatric care in the nursing home (Andersson, 1989; Beardsley et al, 1989; Garrard et al., 1991; Rovner et al., 1990). Kim and Rovner (1995) commented that the high frequency of psychotropic medication prescriptions in nursing home populations demonstrates that nursing homes function as long term psychiatric hospitals for the elderly.

DeSantis, Engberg, and Rogers (1997) examined predictors and reasons for using restraints with geri-psychiatric patients in the geriatric unit of an acute care psychiatric hospital. Participants were 21 staff nurses and 131 patients admitted consecutively over a 6-month period. The disruptive behavior, mobility, and cognitive function of patients were measured. Patients with a diagnosis of dementia, impaired mobility, or behavioral problems were more likely to be restrained. The most frequent reasons for using restraints were with patients with unsteady gait and a risk of falling. The incidence of restraint use was 27.1%. Findings suggested restraint use with geri-psychiatric patients may be more prevalent than previously reported, according to DeSantis, Engberg, and Rogers, 1997.

Anderson et al. (1999) examined selected case mix indicators for their usefulness in separating the variations in outcomes due to differences in patient characteristics versus those due to differences in nursing care. The study sample was part of a larger, ongoing study about nursing practice outcomes in 194 nursing homes. Correlations demonstrated that the facility-level composite index of case mix (CMI)

was not related to behavioral problems or fractures but was significantly correlated to complications of immobility and restraint use. The relationships between risk factors and patient outcomes were strongest between the immobility complications and restraint use. The prevalence based, multi-indicator CMI consistently explained more variance in outcomes. Findings, according to Anderson et al., suggested that the composite CMI does not explain substantial variances in resident outcomes. Study replication was recommended by Anderson et al. (1999).

Psychotherapy

Psychotherapy consists of family therapy, group therapy, individual "talk therapy," or a combination of any of the three (Pilette, Berck, & Achber, 1995). Sessions are tailored to the current needs, such as behavior modification, adapting coping skills, or dealing with grief and loss issues. Psychotherapy can be used alone or with medication intervention. Length of sessions may vary, usually from 1 to 6 months (Stiles & Shapiro, 1995).

A descriptive quantitative methodology was used by Struthers (1999) to explore the perceptions of seven community psychiatric nurses in relation to their use of humor during patient interactions. Findings confirm the paradoxical nature of humor. Humor, when used appropriately, assisted the development of trust and changing the patient's restrictive perceptions. Negative effects were reported if the humor was misinterpreted or perceived by the client as demeaning. Recommendations centered on raising awareness about the use of humor (Struthers, 1999).

Somatic Therapies

Electroconvulsive therapy (ECT) has been used to control schizophrenic patients since the late 1930s but carried with it a social

stigma that still exists to some extent today (Chanpattana, 1999; Fox, 1996). According to Kellner, Pritchett, and Coffey (1997), ECT is an effective treatment for many psychiatric disorders and is safe when administered properly. ECT is recommended when it is important to decrease cognitive impairment, and for patients who have a treatment-resistant depression (Fox, 1996).

Bailine et al. (2000) compared the clinical and cognitive effects of bifrontal electrode placement with standard bitemporal electrode placement in the treatment of 48 patients with major depression. The Hamilton Rating Scale for Depression and the standardized MMSE were administered at baseline and repeated during the course of the ECT. No differences were found between the patients given bifrontal ECT and those given bitemporal ECT in the number of treatments required to reach remission criteria. The MMSE scores of the patients given bitemporal ECT worsened more after treatment than the scores of the patients given bifrontal ECT. Bailine et al. concluded that bifrontal electrode placement was as efficacious as bitemporal placement and resulted in less cognitive impairment.

Phototherapy is a relatively new somatic treatment option that can be used alone or in conjunction with medications. Treatment is fast and can be repeated (Schwartz, 1996). Phototherapy has a 50% to 60% response rate in patients with nonpsychotic winter depression or seasonal affective disorder (Terman, 1996).

Sleep deprivation therapy has been reported to be effective with depressed patients. As many as 60% of depressed patients improve immediately after one night of total sleep deprivation (McEnany, 1996). Some patients become depressed again when they resume sleeping even as little as 2 hours a night. Medications may help prevent relapse after sleep deprivation therapy (McEnany, 1996).

In their study, Boomsma, Dassen, Dingemans, and van den Heuvel (1999) identified the interventions currently used by nurses with the acute and chronically mentally ill. A review of 159 nursing care plans from four participating crisis-oriented and two long-term psychiatric home care teams was done. Results show that in both settings, a wide range of nursing interventions were used. The most frequently used interventions were: (a) medication management, (b) coping assistance, and (c) activity therapy.

Psychiatric Programs and Models

In the early 1990s, there was a short-lived push to combine psychiatric care from free-standing psychiatric centers with nursing homes in the development of "day programs" (Colenda et al., 1999). The idea was that the nursing homes could continue to receive payments of \$100+/day for each patient but would not give care during day hours, usually 9 a.m. to 5 p. m., Monday through Friday. The day programs also billed Medicare/Medicaid for their services. When these programs were closely examined, it was found that only a small amount of services provided were truly services that were not offered in the nursing home. Thus, state and federal funding were abruptly stopped. Many psychiatric facilities, that had hoped to profit from the new mandates, closed as a result.

Some psychiatrists used nursing homes as "feeders" for their hospital practices to receive higher reimbursement (Colenda et al., 1999). Some of these practices continue but are not adequate to care for the large number of patients needing care.

Models of mental health care delivery in nursing homes have been widely researched (Molinari, 2000). Several models of care were introduced into the nursing home setting including (a) psychologists, (b) psychiatrists, and (c) multidisciplinary teams consisting of

psychiatric health care providers. The team members could include psychiatrists, psychologists, physician assistants, social workers, and psychiatric clinical nurse specialists.

Early studies proposed the use of mental health teams. Although most of the teams were initiated to provide direct psychiatric care in the nursing home, many found themselves in a consultation role with staff (Bienenfeld & Wheeler, 1989; Tourigny-Rivard & Drury, 1987).

Recent studies have focused on the patient referral practices of individual mental health practitioners. Referrals were found to be primarily those patients who were management problems for the staff. Management problems were (a) non-compliance, (b) agitation, and (c) verbal and/or physical abuse (Burns et al., 1993; Strahan & Burns, 1991).

Changes in reimbursement opened the door for geriatric advanced practice nurses to render services in the nursing home setting. Wong (1999) found that direct Medicare reimbursement for advanced practice nurses was made a reality due to the lack of access to health care by Medicare beneficiaries and tagging a policy proposal onto the Balanced Act of 1997. Other factors were the national mood to provide cost-effective care, and lobbying by interest groups. Iris (1999) stated that advance practice nurses have demonstrated the ability to positively affect patient outcomes through the provision of high quality, accessible, and cost-effective care.

Slaets, Kauffmann, Duivenvoorden, Pelemans, and Schudel (1997) examined the effect of multidisciplinary treatment by a psychogeriatric team on the level of physical functioning. Substantially more patients assigned to the intervention group ($n = 140$) improved in their physical functioning and fewer became worse.

Medicare and Medicaid

According to Conlan (1999), Congress was informed by providers that payment cuts 75% deeper than projected are putting Medicare nursing home patients at risk of losing access to life-sustaining services. When the Balanced Budget Act of 1997 was passed, the expectation was that the growth of spending for Medicare skilled-nursing facilities would be reduced by \$9.5 billion over 5 years. Recent figures from the Congressional Budget office predict the cuts will total \$16.6 billion. Conlan stated the concerns are that the Perspective Payment System developed by HCFA fails to take into account the medically complex patients with extensive non-therapy ancillary needs.

Whitsell (1999) contended that recent efforts to balance the federal budget have led to a series of changes in the payment systems for both Medicare and Medicaid. Efforts are designed to reduce the amount of money the federal government will spend on health care services in the future (Whitsell, 1999). According to Grimaldi (1999), the Medicare cost-based reimbursement method for skilled nursing facility care has been replaced with a prospective payment system that includes a case-mix adjustment based on resource utilization groups. Medicare payments for most skilled nursing facilities will be reduced by the changeover. Grimaldi contended that the financial risk of operating skilled nursing facilities will be far greater if state Medicaid programs, that reimburse nursing homes on a cost basis, follow Medicare's lead.

Hagglund, Clark, Conforti, and Shigaki (1999) stated that few data exist describing Medicaid's success in providing health care services to people with disabilities. Data were collected from 502 individuals with disabilities receiving Medicaid under fee-for-service reimbursement in central Missouri. Hagglund et al. reported that two-thirds of the

participants reported difficulties obtaining dental, optometric, and personal assistance services. Waltman (1999) contended that some physicians did not accept nursing home patients because of low reimbursement rates.

Costs to the Medicare and Medicaid programs established in 1965 rose as the number of nursing home patients and the care they needed increased. The increasing costs prompted the federal government to design updated regulations to decrease costs and provide appropriate services to meet the needs of the nursing home patients (Norris, 2000).

Studies were done to examine the financial repercussions of implementation of psychiatric care in nursing homes. Several studies were focused specifically on the low reimbursement rates of psychiatric care in nursing homes (Eichmann et al., 1992; Gabel & Jensen, 1989; Swan, Harrington, & Grant, 1988; Wagner, 1989). In general, there is a consensus that Medicare and Medicaid do not reimburse adequately to induce psychiatric professionals to go into nursing homes. Grossberg et al. (1990) contended that untreated mental illness might lead to hospitalizations for psychiatric treatment. Hospitalizations are expensive (Kane et al., 1991; Shea, Smyer, & Streit, 1993) compared to psychiatric care provided in a nursing home. According to Wagner (1989) and Migdail (1992), 1 year of monthly psychiatric care in the nursing home costs less than a single day of inpatient psychiatric care.

Rowe (1999) contended that Congress should change the Medicare program to focus more on preventive medicine. Rowe wrote that preventive programs in geriatrics are still underdeveloped. Great opportunities remain to prevent or delay geriatric disorders through lifestyle modifications. Rowe acknowledged that the Healthy Aging Project is a first step. However, the initiative must be enhanced and its implementation made a central component of HCFA's strategic plan.

Mandates for Psychiatric Care

In 1986, the Institute of Medicine published a study of the quality of care in nursing homes. In response to the concerns raised in the study, Congress passed regulations in the Omnibus Budget Reconciliation Act (OBRA) of 1987. OBRA requires all nursing homes receiving Medicare and/or Medicaid funding to screen all nursing home patients for mental disorders on admission. Necessary treatments are instituted or transfers to an appropriate psychiatric treatment facility are made (OBRA, 1987).

Psychiatric care was added as a part of nursing home care in part due to the study by the Institute of Medicine (1986) on the quality of care in nursing homes. According to Burns (1991), Congress took identified concerns seriously as reflected in the regulations passed in the Omnibus Budget Reconciliation Act of 1987.

For the nursing home industry, the main impetus was the new requirement that all nursing home patients be screened for mental disorders on admission. As nursing homes' financial viability was dependent on a full census, losing patients to psychiatric treatment facilities was a threat to the industry. Thus, efforts to retain patients were implemented. Full time social workers were hired at many nursing homes; however, it was quickly evident that they could not deliver the amount and intensity of care needed. Thus, nursing homes tried to entice psychologists and psychiatrists to come to the nursing homes to deliver care. Low reimbursement rates, which were 80% of "usual and customary" charges of reimbursement for care rendered in physicians' offices or hospitals, quickly changed the minds of most providers (Burns, 1991).

OBRA was not officially implemented until October 1, 1990 (Eichmann et al., 1992). From OBRA's passage in 1987 until the present,

there have been many studies that focused specifically at mental health care in nursing homes.

Financial Penalties

In the 1980s and 1990s, healthcare costs for an aging population became a critical issue for politicians (Schroeder, Nau, Osness, & Poetteiger, 1998). Shea et al. (1993) stated when the cost of monthly psychiatric care in nursing homes for an entire year is less than the cost of a single day of inpatient psychiatric care, it becomes a financial concern to taxpayers. However, a price cannot be put on the cost to the individual patient in terms of their emotional and physical problems secondary to hospitalization. Repeated hospitalizations increased confusion and disorientation as well as resulted in a decrease in overall cognitive functioning (Grossberg et al., 1990; Rovner et al., 1990).

By 1993 it was obvious that only a small percentage of nursing home patients who needed psychiatric care were actually receiving it (Colenda et al., 1999; Etterner & Hermann, 1998). Nursing homes started to receive deficiencies from federal and state mandated surveys causing concern within the nursing home industry. In the mid-1990s, the survey deficiencies started to result in fines for the nursing homes forcing many nursing homes to close or sell. The problem of inadequate psychiatric care continued.

Summary

In earlier studies, 80% to 85% of all nursing home patients was reported to have some type of mental illness (Grossberg, 1990; Rovner et al., 1986). Later studies focused on lack of or limited mental health care in the nursing home setting (Burns et al., 1993; Jackson, Templeton, & Whyte, 1999; Kim & Rovner, 1995; Strahan & Burns, 1991).

Only 4.5% of patients with mental illness were receiving psychiatric care in nursing homes (Burns et al., 1993; Davis & Rees, 1998). Snowden et al. (1998) assessed the compliance rates with the PASARR program. They noted that many individuals did not receive additional mental health services that were needed.

Kales et al. (1999) reported elderly patients with coexisting dementia and depression have more inpatient days than patients with dementia or depression alone, but utilized fewer outpatient resources. Kales et al. suggested that aggressive approaches to outpatient treatment might reduce use of inpatient services.

Jackson, Templeton, and Whyte (1999) and Sakauye (1995) and reported more behavioral difficulties among elderly patients in nursing homes. Patients with behavioral problems were more likely to be referred for mental health care according to Jackson et al. (1999) and Kim and Rovner (1995).

The importance of a comprehensive geriatric assessment was discussed by Engberg and McDowell (1999). Tibbits (1996) and Wetle (1998) emphasized a safe and therapeutic environment.

Stewart et al. (1999) found cognitive dysfunction was a major determinant of resistiveness to care in nursing home patients with dementia. Folks (1999) suggested that sleep complaints may reflect an underlying psychiatric or general medical disorder. McEnamy (1999) contended that disturbed sleep equates with disturbed daytime function.

Sherrell et al. (1999) found the CASI as the best measure for assessing the level of cognitive function in elderly patients with schizophrenia. Harvey et al. (1997) developed the SAFE to measure complications and adaptive changes associated with aging: (a) social-interpersonal, (b) instrumental, and (c) life skills functioning. Harvey et al. (1998) and Harvey et al. (1999) contended that cognitive

impairment is a predictor of both overall outcome and specific adaptive deficits. Harvey et al. (1999) suggested that treatment of cognitive impairment might have a beneficial effect on global functional status.

Andersson, 1989; Beardsley et al., 1989; Gerrard et al., 1991; Rovner et al., 1990; found the use of psychopharmacology in nursing homes was by far the main treatment modality for psychiatric patients. Zisselman et al. (1996) suggested that benzodiazepines may be misused in the elderly. They recommended education and research on the appropriate use in treating depression.

Kim and Rovner (1995) suggested that nursing homes function as long term psychiatric hospitals for the elderly based on the high frequency of psychotropic medication prescriptions.

DeSantis, Engberg, and Rogers (1997), Sakauye (1990), Sakauye and Maletta (1991) discussed the use of restraints with gero-psychiatric patients. DeSantis et al. (1997) found patients with a diagnosis of dementia, impaired mobility, or behavioral problems were more likely to be restrained. Anderson et al. (1999) examined nursing practice and found facility-level composite index of case mix was significantly correlated to complications of immobility and restraint use.

Pilette et al. (1995) and Stiles and Shapiro (1995) discussed psychotherapy for behavior modification, adapting coping skills, or dealing with grief and loss issues. Sessions are individual, family, group, or a combination of the three.

Struthers (1999) explored the use of humor among psychiatric nurses. Humor, when used appropriately, assisted the development of trust and changing the patient's restrictive perceptions. Boomsma et al. (1999) found the most frequently used interventions used by nurses with the acute and chronically mentally ill were: (a) medication management, (b) coping assistance, and (c) activity therapy.

Chanpattana (1999), Fox (1996), and Kellner, Pritchett, and Coffey (1997) discussed ECT as an effective treatment for cognitive impairment and treatment resistant depression. The importance of appropriate use and administration was discussed (Baline et al., 2000; Kellner et al., 1997).

Models of psychiatric care in nursing homes were discussed by Burns (1991), Burns et al. (1993), Molinari (2000), and Strahan and Burns (1991). Models have ranged from individual providers to mental health teams. Individual providers now include geriatric advanced practice nurses (Iris, 1999; Wong, 1999). Slaets et al. (1997) examined the effect of multidisciplinary joint treatment by a psychogeriatric team on the level of physical function with positive results.

In general, there is consensus that Medicare and Medicaid do not reimburse adequately to induce psychiatric professionals to provide services in nursing homes. Numerous concerns about finances regarding geriatric care have been expressed. Conlan (1999) discussed the concerns about Medicare payment cuts and the risk to patients of losing access to life-sustaining services. Whitsell (1999) contended that changes in payment systems for Medicare and Medicaid were designed to reduce federal spending on future health care services. Grimaldi (1999) commented that the changeover in payment systems can reduce Medicare payments for most skilled nursing facilities.

Hagglund et al. (1999) reported difficulties for Medicaid participants to obtain certain services. Waltman (1999) contended that some physicians will not accept nursing home patients due to low reimbursement rates. Norris (2000) wrote that the federal government designed updated regulations to decrease costs and provide appropriate services to meet the needs of nursing home patients. Rowe (1999) contended that Medicare should focus more on preventive medicine.

Mandates for psychiatric care were implemented in response to concerns about quality of care in nursing homes. OBRA was passed in 1987 and psychiatric care was added as a part of nursing home care (Burns, 1991; Eichmann et al., 1992). Psychiatric programs, such as "day programs" were established, but when evaluated later, were found to offer only a small amount of services not offered in nursing homes. State and federal funding stopped, and many of the psychiatric facilities closed. Fines are now levied against nursing homes for failure to provide adequate psychiatric care.

Because of the few mental health programs currently in place, and the extreme lack of mental health care in the nursing homes, models of effective care are badly needed. The previous studies establish the need for mental health care in nursing homes and the financial implications in both the implementation of such care and the consequences of the lack of appropriate mental health care. Swartz, Martin, Martin, Elizur, and Barak (1999) stressed that psychogeriatrics and especially psychiatric services in nursing homes are sorely lacking in research.

The examination of mental health care in nursing homes, using psychiatric hospitalization rates as an indicator of the lack of comprehensive psychiatric care, is not addressed in the current literature. Therefore, evaluation of a current psychiatric mental health program in nursing homes is imperative to establish efficacy of the program goals and to aid in planning future program goals.

A geri-psychiatric outreach program for mental health care was implemented in several local nursing homes in 1994. No research studies were found in the literature that related to the effectiveness of geri-psychiatric outreach programs. This study is needed to fill a gap in the literature as well as to determine the efficacy of the program.

If such a program is found to be effective, it can serve as a model of efficacious comprehensive psychiatric care in the nursing home setting.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A retrospective descriptive design (Valanis, 1997) examining two groups of nursing home psychiatric patients in three nursing homes was utilized. Sixty program and 120 non-program patients were estimated for this study based on a power analysis. Hypothesis 1 stated that psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care. Psychiatric hospitalization rates were compared in each of the four quarters of 1998. Patients in both groups met criteria of having a psychiatric diagnosis and being 65 years or older. Demographics were examined in each of the groups. Cost analysis was used to examine Hypothesis 2 which stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients.

Setting

The setting was three Texas nursing homes. Two nursing homes were in urban areas and one was in a rural area.

Population and Sample

The population of interest was all psychiatric patients in nursing homes in the United States. The study generalized to that population. Due to the limited availability of the program being evaluated, the groups were chosen from a convenience sample from three Texas nursing homes where the program was currently in place.

The program and non-program groups were nursing home patients matched on a psychiatric diagnosis. To obtain the comparison group, charts were pulled and checked for eligibility in the study. To be eligible for study participation, the following criteria had to be met: (a) patients had to be a nursing home inpatient, (b) patients had to be 65 years or older, and (c) patients had to have an Axis I psychiatric diagnosis. The sample size was dependent on the number of program patients in each facility during 1998 and on all eligible non-program patients.

Protection of Human Subjects

As detailed in the Human Subjects Review Committee (HSRC) application, the only potential risk to patients was breach of confidentiality. To minimize the risk, coding numbers (001-N) were assigned to each program group subject and were assigned to control group subjects. No names or identifying numbers (such as Social Security numbers) were used except in the coding book to assure that subjects were not used more than once. Many nursing homes already use unique patient numbers upon admission and those numbers were used in lieu of names or other identifying information in the coding book when available. The coding book is kept in the researcher's locked file cabinet in her home office. All identifying subject information will be shredded in 7 years after the entire study is completed. This study utilized chart data with no patient contact.

Pilot Study Summary

A pilot study was conducted in the Fall of 1997. The setting was a local rural nursing home. The sample size was 27 for the program group and 17 for the comparison group. The data collected did make a strong case for the program being evaluated in light of psychiatric

hospitalizations. Considering that the program patients had overt psychiatric symptoms which precipitated referral into the program, the difference in psychiatric hospitalizations was astounding. What made the findings even more amazing was the fact that most of the comparison group of patients (those patients who had psychiatric diagnoses, but were not having any overt symptoms or behaviors which initiated a referral for comprehensive psychiatric care) were usually main-streamed into nursing home activities which would have reinforced orientation, encouraged socialization, and helped set effective boundaries.

First, the homogeneity of the two groups was examined. Both the program group and the comparison group were similar with respect to age, gender, race, physical diagnoses, and various physical deficits (see Tables E1, E2, and E3 in Appendix E).

Next, the two groups were compared as to psychiatric diagnoses. As shown in Table E4 (see Appendix E), there were differences found. Twelve out of the 17 patients in the comparison group carried a diagnosis of 290.00, SDAT (Senile Dementia, Alzheimer's Type, NOS [i.e. not otherwise specified]) with no modifying codes. None of the 27 patients in the program group carried such a diagnosis. They carried differential diagnoses such as 290.21 (Senile Dementia, Alzheimer's Type, with Depression). This may be due, at least in part, to the comprehensive psychiatric assessment that all of the program patients had upon referral to the program. Previous hospitalizations would have also contributed to a differential diagnosis (see Table E4, Appendix E).

A t-test for independent samples was used to look at hospitalization rates (by quarters in 1996). The first three quarters showed significance at the .05 level of significance. There were no hospitalizations for either group during the fourth quarter of 1996 and

thus no differences of hospitalization rates were found for that quarter (see Table E5, Appendix E).

Table E6 (see Appendix E) illustrates the problems of working with such a small sample. Even so, there is a significant statistical difference between the groups when looking at psychiatric hospitalization rates. From this pilot study, one would presume that all patients in nursing homes who carry psychiatric diagnoses should be thoroughly assessed and receive psychiatric follow-up care if indicated. A further conjecture would be that there are psychiatric patients who would benefit from comprehensive psychiatric treatment to the point of avoiding psychiatric hospitalizations.

Instrument

The instrument (see Appendix A) used was a coding tool for recording the raw data. This tool included the unique patient coding number, psychiatric and medical diagnoses, demographics and psychiatric hospitalization days.

Data Collection

Authorization to conduct the study was obtained from the Texas Woman's University HSRC and the graduate school (see Appendix B), the administrators of each nursing home (see Appendix C), and the program psychiatrist who was over the program in each of the nursing homes (see Appendix D) where the data were collected. All of the program patients' charts for the nursing homes were obtained from the program psychiatrist. These comprehensive psychiatric program patients' charts were already identified by a unique patient number. The pertinent information was entered directly into the study data base. Psychiatric hospitalizations were determined in the same manner as for the non-program patients. Data collection steps for the non-program group included:

1. A patient list of all nursing home patients as of January 1, 1998, at each study nursing home was obtained from the medical records person or the bookkeeper.

2. All program patients' names were identified on the patient list and crossed off.

3. Diagnoses were printed (from the nursing home computer). All patients who did not have a psychiatric (Axis I) diagnosis were crossed off the list.

4. Charts were pulled for the remaining names on the list. The charts were found in either medical records or on the patient floors.

5. Data from the charts were used to fill in the coding sheets (see Appendix A).

6. To determine if the patient had a hospitalization during the study period (January 1, 1998 to December 31, 1998), a check against the bookkeeper's hospital log was done initially.

7. To determine if each hospitalization was a psychiatric hospitalization, the discharge summary was checked for a primary psychiatric diagnosis. Other hospitalizations were not counted.

Treatment of the Data

Descriptive, non-parametric, and inferential statistics were used in analysis. Hypothesis 1 stated that psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care. Hypothesis 1 was tested with the Theta for nominal-ordinal association (Freeman, 1965). Theta (also known as the coefficient of differentiation) was chosen as the statistical test as the treatment groups were nominal data which were examined over the four quarters of 1998 (ordinal data). Theta is a measure of association

between nominal data and ordinal data. The variation may be between 0 and 1 and its magnitude may be interpreted in terms of comparisons of the rankings of individual scores in different nominal-scale classes. Theta is the difference between the proportion of comparisons in which individuals of one class predominate and the proportion in which the individuals of another class predominate. A description of the program and non-program groups over the four quarters of 1998 was conducted with observations by time. For each quarter with a significant chi-square, a point-biserial correlation coefficient was calculated (r_{pb}). The point-biserial correlation (also known as product-moment biserial) is used to explain variance when one variable is dichotomous and the other is nominal (Cohen & Cohen, 1975). Chi-square statistics were used in determining any differences in patients' characteristics among the three nursing homes. Where the Chi-square was significant, the associated strengths were computed using Phi (ϕ) for 2 x 2 tables or Cramer's V (V) for rectangular tables (McMahon & Trichopoulos, 1996). An odds ratio was used to calculate relative risks. Characteristics included the patients' age, gender, medical/psychiatric diagnoses, and physical impairments. A cost analysis using cost data related to the psychiatric treatment program and relevant hospitalizations was done to address Hypothesis 2. Hypothesis 2 stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients. The cost analysis was computed by the total program patient's cost over the non-program patient's cost and vice versa.

CHAPTER IV

ANALYSIS OF DATA

Introduction

A retrospective, descriptive design was used to examine two groups of nursing home patients, a program and a non-program group. Subjects in each group met the criterion of having an Axis I psychiatric diagnosis. Homogeneity of subjects and groups was established. Demographics were obtained from all subject records. Analysis of the demographic information was reported and contrasted by group location (urban and rural). Analysis of demographic information was reported comparing and contrasting three individual nursing homes. Analysis was addressed by Chi-square with relative risks for significant Chi-square.

Hypothesis 1 stated that psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care. Hypothesis 1 was addressed by Theta for nominal-ordinal association. Psychiatric hospitalization rates were compared using a longitudinal approach examining each of the quarters in 1998. Each quarter was examined using Chi-squares with relative risks for significant Chi-squares.

Hypothesis 2 stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients. Hypothesis 2 was addressed by a cost analysis. Actual costs for 1998 hospitalizations from the hospitals were utilized, and the actual reimbursement rates (rather than the community averages) were the basis for the analysis.

Analyses of medical diagnoses (cancer, chronic obstructive pulmonary disease, cerebral vascular accident, diabetes, heart disease, hypertension, seizures) were done by Chi-squares and relative risks of significant Chi-squares. Medical diagnoses were first compared: (a) by treatment group (program and non-program groups), (b) then by nursing home location, and, finally (c) by individual nursing homes (see Tables F33-F53, Appendix F). Sensory deficits (communication, hearing, mobility, and vision) were compared by treatment group, nursing home location, and individual nursing homes (see Tables F4 through F15, Appendix F).

Insurance data were collected for each subject and are presented by treatment group (see Table F16, Appendix F). Insurance categories included: Medicaid only, Medicare only, Medicaid and Medicare, Medicare and private insurance or private pay, and V.A. (Veteran's Administration monies). The majority of patients in both groups had Medicare and Medicaid (76.7%).

Frequency counts were done for each reason for referral (see Tables F17 through F23, Appendix F). The referral reasons included: follow-up from psychiatric hospitalization or history of mental illness, referred for medical evaluation, depressive symptoms, delusional symptoms, episodes of verbal abuse, episodes of physical abuse, and episodes of refusing medications as ordered. The referral reasons were not mutually exclusive.

The most common reasons for referral were for follow-up from a psychiatric hospitalization or history of mental illness and for medication evaluation (51% each). Delusional symptoms followed by depressive symptoms were the next most reported reasons for referral (38.8% and 34.7%, respectively) Verbal and physical abuse towards others by the patients accounted for referrals 26.5% and 24.3%, respectively.

Refusal of medications by the patient was given as a reason for referral only 2% of the time. Discussion in Chapter V will address the issue of referrals and possible alternative reasons why some patients are referred.

Description of the Sample

The sample consisted of 236 nursing home patients who met the study criteria. Subjects had to: (a) be a patient at the data site nursing home as of January 1, 1998; (b) be 65 years of age or older; and (c) have an Axis I psychiatric diagnosis according to DSM III, III-R, or DSM IV criteria in place at the time of the psychiatric diagnosis. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association (1994), all diagnoses are categorized on a multi-axial system:

| | |
|----------|---|
| Axis I | Psychiatric Clinical Disorders |
| Axis II | Personality Disorders |
| | Mental Retardation |
| Axis III | General Medical Conditions |
| Axis IV | Psychosocial and Environmental Problems |
| Axis V | Global Assessment of Functioning |

The sample consisted of two groups: the program group ($n = 49$) and the non-program group ($n = 187$). The uneven group sizes were adjusted through statistical analysis.

Data regarding the subjects' psychiatric diagnoses are presented by (a) treatment group, (b) nursing home location, and (c) individual nursing home (identified only as Texas nursing homes 1, 2, and 3) (see Tables F1, F2, and F3, Appendix F). There is a difference in psychiatric diagnoses between the groups. From a clinical perspective the non-program group, the urban nursing homes, and nursing home #3 did not have as many differential psychiatric diagnoses. These groups tended to have

clusters of diagnoses around the common diagnoses of senile dementia, major depression, and uncomplicated schizophrenia.

A summary of the demographic data for race and gender by program and non-program group, location of nursing home (urban or rural), and individual nursing home is presented in Table 1.

Both the program and non-program groups had over 50% Caucasians followed by over 38% Blacks, with the remainder of subjects being Hispanic and Native American. Rural nursing homes had a higher percentage of Caucasian patients while the urban nursing homes had a higher percentage of Black patients. Female subjects made up approximately 70% of all groups. The subjects' ages ranged from 65 to 103 with a mean age of 82 (see Tables F24 through F32, Appendix F).

The frequency of cancer, chronic obstructive pulmonary disease (COPD), cerebral vascular accident (CVA), diabetes, heart disease, hypertension (HTN), and seizure disorder were examined by treatment group, nursing home location (rural or urban), and by individual nursing homes (see Tables F33 through F53, Appendix F).

Heart disease was found in 21 of the 49 (42.9%) subjects in the program group. Only 39 of the 187 (20.9%) of the non-program group were found to have heart disease. The possible reasons for this finding are explored in Chapter V. Only 27 of the 173 (15.6%) patients in urban nursing homes had a diagnosis of heart disease, compared to 33 of the 63 (52.4%) rural nursing home patients. In the individual nursing homes, nursing home #1 had 19 of 153 (12.4%) patients with heart disease, nursing home #2 had 8 of 20 (40%) patients with heart disease; and nursing home #3 had 33 of 63 (52.4%) patients with heart disease. Possible reasons for these differences are discussed in Chapter V.

Table 1

Demographic Summary Table

| | Race | | | | Gender | |
|---|----------------------|-------------|------------|-----------------|-------------|--------------|
| | Caucasian | Black | Hispanic | Native American | Male | Female |
| | Count and Percentage | | | | | |
| Program Group (<u>n</u> = 49) | 29 59.2% | 19 38.3% | 1 2% | 0 0% | 10 20.4% | 39 79.6% |
| Non-program Group (<u>n</u> = 187) | 96 51.3% | 76 40.6% | 14 7.5% | 1 0.5% | 52 27.8% | 135 72.2% |
| Urban (<u>n</u> = 173) | 67 38.7% | 92 53.2% | 13 7.5% | 1 0.6% | 41 23.7% | 132 76.3% |
| Rural (<u>n</u> = 63) | 58 92.1% | 3 4.8% | 2 3.2% | 0 0% | 21 33.3% | 42 66.7% |
| Nursing Home #1 (<u>n</u> = 153) | 54 35.3% | 86 56.2% | 12 7.8% | 1 0.7% | 39 25.5% | 114 74.5% |
| Nursing Home #2 (<u>n</u> = 20) | 13 65% | 6 30% | 1 5% | 0 0% | 2 10% | 18 90% |
| Nursing Home #3 (<u>n</u> = 63) | 58 92.1% | 3 4.8% | 2 3.2% | 0 0% | 21 33.3% | 42 66.7% |

Sensory deficits in the areas of communication, hearing, mobility, and vision were examined by treatment groups, nursing home location, and individual nursing homes (see Tables F4 through F15, Appendix F). The program group had 37.4% communication deficits compared to 50.8% of the non-program group. Urban nursing homes had 49.7% of patients with communication deficits; whereas the rural nursing homes had 41.3% communication deficits; nursing home #1 had 51.6% communication deficits; while nursing home #2 and nursing home #3 had 35.0% and 41.3%, respectively.

The patients in the non-program group had a higher incidence of hearing deficits (75.9%) than the program group patients (24.5%). Urban nursing home patients showed a higher incidence of hearing deficits (72.3%) than rural nursing home patients (46%). When comparing individual nursing home patients, nursing home #1 had 76.5% hearing deficits, nursing home #2 had 40%, and nursing home #3 had 46%.

The program group had 91.8% mobility deficits, whereas the non-program group had 49.7%. Rural nursing homes showed a higher incidence of mobility deficits (77.8%) than urban nursing homes (51.4%). Both nursing homes #2 and #3 had a majority of patients with mobility deficits (85% and 77.8%, respectively) compared with nursing home #1 patients who had less than half (47.1%). Possible reasons for this difference are discussed in Chapter V.

The patients in the non-program group had a higher incidence of visual deficits (79.1%) than the program group patients (46.9%). Urban nursing homes showed a higher incidence of vision deficits (77.3%) than rural nursing homes (22.7%).

All three nursing homes showed a majority of patients with vision deficits. Nursing home #1 had a higher percentage (79.1%) than nursing homes #2 and #3 (with 60% and 61.9%, respectively). Possible reasons for

these differences are discussed in Chapter V. For further demographic information regarding sensory deficits, see Tables F4 through F15 in Appendix F.

Findings

The purpose of this study was to evaluate the difference between a comprehensive psychiatric program in nursing homes to psychiatric hospitalization rates of those nursing home patients who do and do not receive regular psychiatric care. A cost analysis to determine the financial outcomes was a subsequent concern.

Hypothesis 1

Hypothesis 1 stated that psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care. This was in comparison with psychiatric patients in nursing homes who did not receive comprehensive psychiatric care. The frequency of hospitalization rates by treatment group in the individual quarters of 1998 is displayed in Tables 2 through 5. Table 6 shows Theta for nominal-ordinal association ($\Theta = 1.0000$) and answers Hypothesis 1.

Table 2

1998 Quarter 1 Hospitalizations by Treatment Group

| Non-hospitalizations | Non-program | Program | Total |
|----------------------|-------------|---------|-------|
| Observed value | 187 | 47 | 234 |
| Expected value | 185.4 | 48.6 | 99.2% |
| Row percent | 79.9% | 20.1% | |
| Column percent | 100.0% | 95.9% | |

| Hospitalizations | Non-program | Program | Total |
|------------------|-------------|---------|-------|
| Observed value | 0 | 2 | 2 |
| Expected value | 1.6 | .4 | .8% |
| Row percent | .0% | 100.0% | |
| Column percent | .0% | 4.1% | |

| Non-hospitalizations and hospitalizations | Non-program | Program | Total |
|---|-------------|---------|--------|
| Column total | 187 | 49 | 236 |
| Total percent | 79.2% | 20.8% | 100.0% |

| | Value | Significance |
|--------------------|---------|--------------|
| Chi-square | 7.69789 | .00553 |
| Phi | .18061 | .00553 |
| Relative risk est. | .20085 | |
| r _{pb} | 0.18 | |

The hospitalization rates for this quarter were statistically significant.

Table 3

1998 Quarter 2 Hospitalizations by Treatment Group

| Non-hospitalizations | Non-program | Program | Total |
|----------------------|-------------|---------|-------|
| Observed value | 186 | 49 | 235 |
| Expected value | 186.2 | 48.8 | 99.6% |
| Row percent | 79.1% | 20.9% | |
| Column percent | 99.5% | 100.0% | |

| Hospitalizations | Non-program | Program | Total |
|------------------|-------------|---------|-------|
| Observed value | 1 | 0 | 1 |
| Expected value | .8 | .2 | .4% |
| Row percent | 100.0% | .0% | |
| Column percent | .5% | .0% | |

| Non-hospitalizations and hospitalizations | Non-program | Program | Total |
|---|-------------|---------|--------|
| Column total | 187 | 49 | 236 |
| Total percent | 79.2% | 20.8% | 100.0% |

| | Value | Significance |
|--------------------|---------|--------------|
| Chi-square | .26315 | .60797 |
| Phi | -.03339 | .60797 |
| Relative risk est. | .79149 | |

The hospitalization rate for this quarter was not statistically significant.

Table 4

1998 Quarter 3 Hospitalizations by Treatment Group

| Non-hospitalizations | Non-program | Program | Total |
|----------------------|-------------|---------|--------|
| Observed value | 187 | 49 | 236 |
| Expected value | 187.0 | 49.0 | 100.0% |
| Row percent | 79.2% | 20.8% | |
| Column percent | 100.0% | 100.0% | |
| Column total | 187 | 49 | 236 |
| Total percent | 79.2% | 20.8% | 100.0% |

Statistics could not be computed when the columns and rows were both empty. There were no hospitalizations by either group for this quarter.

Table 5

1998 Quarter 4 Hospitalizations by Treatment Group

| Non-hospitalizations | Non-program | Program | Total |
|----------------------|-------------|---------|-------|
| Observed value | 186 | 49 | 235 |
| Expected value | 186.2 | 48.8 | 99.6% |
| Row percent | 79.1% | 20.9% | |
| Column percent | 99.5% | 100.0% | |

| Hospitalizations | Non-program | Program | Total |
|------------------|-------------|---------|-------|
| Observed value | 1 | 0 | 1 |
| Expected value | .8 | .2 | .4% |
| Row percent | 100.0% | .0% | |
| Column percent | .5% | .0% | |

| Non-hospitalizations and hospitalizations | Non-program | Program | Total |
|---|-------------|---------|--------|
| Column total | 187 | 49 | 236 |
| Total percent | 79.2% | 20.8% | 100.0% |

| | Value | Significance |
|--------------------|---------|--------------|
| Chi-square | .26315 | .60797 |
| Phi | -.03339 | .60797 |
| Relative risk est. | .79149 | |

The hospitalizations for this quarter were not statistically significant.

Table 6

Theta for Nominal-Ordinal Association Psychiatric Hospitalizations
for 1998

| Quarters | 1 | 2 | 3 | 4 |
|-------------------|---|---|---|---|
| Program Group | 2 | 0 | 0 | 0 |
| Non-Program Group | 0 | 1 | 0 | 1 |

Theta = 1.0000

The statistical data for Hypothesis 1 is not supportive, and thus, this hypothesis must be rejected. Clinically, although the tables show the same raw number of psychiatric hospitalizations over 1998, it must be noted that the treatment group only had these hospitalizations in the first quarter of the year and then no subsequent hospitalizations. The possibility of clinical significance must be considered and will be examined further in Chapter V.

Hypothesis 2 stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the cost for non-program patients. Hypothesis 2 is addressed in Table 7. A cost analysis shows the annual rate of comprehensive psychiatric care in the nursing home (based on a once a month visit for each month of 1998), the daily rate of a psychiatric hospitalization (determined by the actual hospital charges for the hospitalized subjects), the number of hospitalization days, and the subsequent hospitalization cost per subject. No subject in the study was hospitalized more than once in the calendar year examined. Each hospitalized subject was confined for exactly 13 days. This phenomenon is discussed at length in Chapter V.

Table 7

Cost Comparison of Program versus Non-Program Participants

| | Program (patient/year) | Non-Program (patient/year) |
|--|---------------------------|-------------------------------|
| Comprehensive Psychiatric Care | \$ 408.72 | \$ 0 |
| Hospitalization Costs (13 day stay) | \$ 7,046.00 | \$ 7,046.00 |
| Total Costs | \$ 7,454.72 | \$ 7,046.00 |
| Ratio comparison between groups (Program to Non-Program & Non-Program to Program) | 1.06 | 0.95 |

Hypothesis 2 stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients. Based on the data presented in Table 7, this hypothesis must be rejected. The program patients did not have lower treatment costs than the non-program patients; however, the ratio of costs between the two groups is negligible.

CHAPTER V

SUMMARY OF THE STUDY

The purpose of this retrospective, descriptive study was twofold: (a) the first was to evaluate the effect of a comprehensive psychiatric program in nursing homes on psychiatric hospitalization rates of those nursing home psychiatric patients who do and do not receive regular comprehensive psychiatric care, and (b) to examine the financial burden each group places on the health care system. The study sample consisted of 236 subjects, 65 years or older, who had a psychiatric diagnosis. The program group consisted of 49 subjects and the non-program group consisted of 187 subjects who resided in the three nursing homes included in the study. All 236 patients had psychiatric diagnoses, but only 49 were referred to the program. This is consistent with studies that showed only 4.5% of patients with mental illness were receiving psychiatric care in the nursing home (Burns et al., 1993; Davis & Rees, 1998).

Nursing home medical records provided the data source for all subjects. Data were entered on a coding sheet to avoid duplication of subjects and allow for ease of study. Data entry techniques allowed each subject an individual number, but no information that could lead back to the identification of the individual was used. Data were analyzed by the SPSS 6.1 program. The SPSS program is a comprehensive tool for data management, analyzation, and display. In this chapter the findings of this study have been summarized and discussed; conclusions, implications for nursing, and recommendations for further studies are included.

Summary of Findings

Demographic data were analyzed. Both the program and non-program groups were homogeneous with regard to race, gender, and age. The mean age was 82 years old. This was a retrospective, descriptive study with all program and non-program patients having a psychiatric diagnosis. The program patients had more differential diagnoses than the non-program group. Urban nursing homes had more patients with differential diagnoses than rural nursing homes.

Two hypotheses were presented. Hypothesis 1 stated that psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care. Hypothesis 1 was examined using a longitudinal approach. A Theta coefficient for nominal-ordinal data was computed and found to have no statistical significance (Freeman, 1965). Hypothesis 1 was rejected.

The program group had hospitalizations for only one quarter (the first quarter) of 1998, whereas the non-program group had hospitalizations for half (50%) of the year (quarters 2 and 4). The actual number of subjects admitted for psychiatric hospitalizations was the same in each group for the entire year.

Hypothesis 2 stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients. As the total number of hospitalizations and the length of stay for both groups were equal, this hypothesis was rejected.

Analysis of medical diagnoses and physical deficits was accomplished by the use of Chi-square statistics. Where the Chi-square was significant, the associated strength was computed using

Phi ϕ for 2 x 2 tables or Cramer's V (V) for rectangular tables. An odds ratio was used to calculate relative risks.

There was a difference in the diagnosis of heart disease between the program and non-program groups, rural and urban nursing homes, and by individual nursing homes. The diagnosis of cerebral vascular accident differed among individual nursing homes.

Physical deficits differed in the treatment groups, nursing homes location, and by individual nursing homes. The most surprising finding in this area was that more of the non-program group (50.8%) had communication deficits than those patients in the program group (34.7%). This is examined more closely in the discussion of the findings.

There was no difference in the types of insurance carried by patients in the program and non-program group. The majority of patients in both groups had Medicare and Medicaid insurance. The fact that all of the subjects were over 65 years old and that 65 is the age for receipt of Medicare benefits, it was to be expected.

Referral reasons given by nursing home staff for patient inclusion in the program group were analyzed. There were seven inclusion reasons and they were not mutually exclusive. A prior psychiatric history for follow-up care and request for medication evaluation were the major referral reasons, each being cited in 51% of the referrals. Delusional and depressive symptoms were cited as the next most often used referral reasons (38.8% and 34.7%, respectively). Referral for verbal and physical abuse accounted for 26.5% and 14.3%, respectively. Patients referred to the program group for refusing to take medications as ordered accounted for only 2%.

Discussion of the Findings

Findings related to each hypothesis are discussed. Additional findings are also presented.

Hypothesis 1

Hypothesis 1 predicted an inverse relationship of comprehensive psychiatric care to psychiatric hospitalizations. This hypothesis was rejected. It should be noted that out of a total of 236 subjects, there were only 4 psychiatric hospitalizations in 1998. Half of these subjects were from the program group and the other half were from the non-program group.

There are several reasons that might explain why the psychiatric hospitalization rates were so low. The program group patients were considered "sicker" at the start. It was their overt behavioral manifestations that initially lead to referral for program group inclusion. This is consistent with the findings of Kim and Rovner (1995) and Jackson et al. (1999). Psychiatric hospitalizations would not be unexpected for this group; however, the program of comprehensive psychiatric care was established to take care of these patients' needs in the nursing homes and to limit psychiatric hospitalizations. It could be conjectured that non-program patients probably attended more nursing home activities that induced a feeling of support as well as consistent reality orientation. These two components might have been instrumental in keeping down psychiatric hospitalization rates in this group.

The observation that the program group did not have any psychiatric hospitalizations after the first quarter is of clinical significance (LeFort, 1993). Relying on statistical significance testing as the yardstick to evaluate research results may have little relevance clinically as seen in this study. Clinical significance is

of importance or potential importance to the clinical population. The clinical significance of this finding is considered of value although it was not treated statistically. According to Kirk (1996), practical significance is a concept whose time has come. The efficacy of the clinical intervention with the program group, the extent of the behavioral change, and the length of this change (over the rest of the year) was of clinical and practical significance (Kirk, 1996; LeFort, 1993).

When a working income is stopped and the only remaining monies are from limited savings, pension, and Social Security fund, it is not unusual to find many people, especially those with chronic health problems, in need of assistance. Medicaid was established to fill that need. It was not surprising, therefore, that all of the hospitalized patients from both the program and non-program groups had both Medicare and Medicaid insurance. However, Eichmann et al. (1992), Gabel and Jensen (1989), Norris (2000), and Swan et al., (1988) contended that reimbursement rates for nursing homes and hospitals as well were not adequate to provide psychiatric services. Mandates, such as OBRA, were passed to provide better care in nursing homes and psychiatric care was included. Medicare and Medicaid enforced OBRA regulations through surveys and holding of reimbursement monies when deficiencies were found. Staff development requirements are specifically mandated to ensure proper training of staff. Changes in the Texas Medicaid system are currently underway with transitions to a Health Maintenance Organization (HMO). The changes are directed at cost containment while continuing to meet basic care needs.

The cost effectiveness and implementation of a more intensive program with nursing home patients need to be researched. With more

studies examining the efficacy of psychiatric programs in the nursing home, an optimum program can be established. Cost effectiveness and quality of life of these nursing home patients must be examined. The state and federal dollars, as well as personal resources, need to be allocated in the most efficacious manner for positive outcomes (Conlan, 1999; Whitsell, 1999). While clinical significance has been considered a value in the findings of this study, adequate utilization of available resources for optimum patient outcomes should be further researched.

A primary reason for such low hospitalization rates could be related to economics (Grimaldi, 1999). When a patient is not physically in the nursing home (i.e., admitted to a hospital), the nursing home loses its daily monies for that patient. Medicare and Medicaid policy in Texas do not allow for reimbursement of beds held for hospitalized patients "bed-hold." Unless the patient or patient's family can afford to place a "bed-hold" at the nursing home (usual cost about \$100/day), that nursing home bed will be filled by the next qualified applicant to the nursing home. There is usually some lag time in filling empty nursing home beds. For a nursing home, a lower census means a lower reimbursement rate. Thus, nursing home administrators are not pro-hospitalization unless absolutely warranted. The comprehensive psychiatric program was established specifically to fill this need, giving care in the nursing home rather than necessitating psychiatric hospitalizations.

With both the hospital and nursing home competing for Medicare and Medicaid dollars (Conlan, 1999; Grimaldi, 1999), it would be expected that each would want to hold on to patients as long as possible. That was not the case as found in this study. When all hospitalized patients had exactly 13 days of hospitalization, it was

thought to be coincidental. Upon further investigation, it was found to be common with agreement on the parts of both the hospital and nursing home.

Hospitals have two issues they have to contend with. One concern is that after 2 weeks of hospitalization reimbursement, rates drop and are computed in a different fashion that is not advantageous to the hospital. This is consistent with the findings of Hagglund et al. (1999). The federal government has designed updated regulations to decrease costs and at the same time provide appropriate services to meet the needs of nursing home patients (Norris, 2000).

Besides the immediate financial concerns, placement of these elderly psychiatric patients after hospitalization is sometimes quite difficult. Nursing homes want to fill empty beds as soon as possible so they can receive revenue. Knowing up-front that placement is a serious concern, most hospitals and nursing homes discuss this prior to hospital admission. This researcher found that it is common practice for nursing homes to accept patients back after hospitalization if they were readmitted to the nursing home within 2 weeks. This would relieve hospital social workers and discharge planners of finding placement. Thus, the fact that all of the hospitalized patients in this study were hospitalized for exactly 13 days may be suspect but not surprising.

The pilot study in 1996 supported Hypothesis 1 that stated that psychiatric patients in nursing homes who receive comprehensive psychiatric care will have fewer psychiatric hospitalizations than those who do not receive comprehensive psychiatric care. Hypothesis 1 in this study must now be rejected. There are several reasons that could account for this change. State and federal mandates regarding psychiatric care in the nursing homes are being strongly enforced at

this time with nursing homes receiving written deficiencies resulting in loss of accreditation and financial reimbursements. The medical directors and attending physicians are now more acutely aware of the need for accurate psychiatric assessment with appropriate diagnoses and treatments. This is borne out in Tables F1, F2, and F3 (Appendix F) as seen by an increase in differential diagnoses in 1998 from the pilot study of 1996. It could be conjectured that more appropriate medical management is a result of an appropriate differential psychiatric diagnosis and this might be the factor that decreases psychiatric hospitalizations in the non-program group.

Training for nursing home staff is now mandated to include care and management of patients with behavioral problems and psychiatric diagnoses. Better training could be a factor in better patient management and, thus, decreased need for psychiatric hospitalizations.

Hypothesis 2

Hypothesis 2 stated that treatment costs for patients receiving comprehensive psychiatric care in the nursing home will be less than the costs for non-program patients. Hypothesis 2, although supported by pilot study data, had to be rejected in this study. Both the program and control group had the same number of hospitalizations consisting of an equal number of days and, therefore, equal costs. The program group had an additional cost of being in the program, although this cost was < \$400 for the entire year.

Additional Findings

When looking at physical diagnoses of the study groups, heart disease showed up as a significant difference. Tables F37, F44, and F51 (Appendix F) display some surprising information. Fifty percent

of the program group had a diagnosis of heart disease, where only about 20% of the non-program group had this diagnosis. The rural nursing homes had a 52.4% rate while the urban nursing homes had only 15.6% of patients with heart disease. Nursing home #1 had only 12.4% of patients with heart disease, while nursing homes #2 and #3 had rates of 40% and 52.4%, respectively. One possible explanation for these striking differences could be related to screening procedures. If this was true, then one would expect that urban nursing home patients, who possibly have more access to specialists and advanced technology, to show a higher incidence of heart disease. Actually, the opposite was the case. The fact that half of the program patients had a diagnosis of heart disease while only one-fifth of the non-program patients did, could perhaps be related to the extra assessment that the program patients received. This would be consistent with the findings of Engberg and McDowell (1999) and Nasr and Osterweil (1999) who described the comprehensive geriatric assessment and the need for periodic reassessments.

There were some interesting findings when examining physical deficits. It could be rationalized that patients who have several physical deficits such as communication problems, hearing deficits, and vision impairments might be more demanding and have behavioral outbursts based on their inability to process stimuli. The data, however, showed that the non-program group had a majority of these impairments. Another surprising finding was that the program group had almost twice the mobility impairments (91.8%) as the non-program group (49.7%). Perhaps this finding could be attributed to the overt/behavioral problems of the program group patients which might have limited their participation in group activities, such as exercise classes and group outings.

Conclusions

The research reported here examined: (a) hospitalization rates of psychiatric patients in nursing homes who did and did not receive comprehensive psychiatric care in the nursing home, and (b) financial implications of psychiatric hospitalizations of nursing home patients. The conclusions are presented as follows:

1. The comprehensive psychiatric program was not statistically significant in decreasing hospitalizations; however, a case could be made for clinical significance based on the fact that after the first quarter of 1998, there were no further psychiatric hospitalizations of the program group.

2. The number of hospitalizations and the lengths of stay and associated costs for both the program and non-program groups were equal. The program group patients, however, had an additional cost of \$408/year to cover their comprehensive psychiatric care in the nursing home.

Implications

Implications of the study are:

1. The clinical significance of a comprehensive psychiatric program in nursing homes was that after the first quarter of involvement, the program patients had no further psychiatric hospitalizations. Nurses should evaluate the efficacy of the components of this program which included a comprehensive assessment, individual therapy, group therapy, and medication management and their impact on the quality of life of nursing home patients.

2. Current reimbursement and placement issues dictate the duration of psychiatric hospitalizations of nursing home patients. Nurses should become actively involved in lobbying legislative issues such as reimbursement. Nurses also should communicate and work with

policy makers to ensure adequate funding for care of this vulnerable population of psychiatric nursing home patients.

Recommendations for Future Study

There is a need for further studies:

1. To examine physical impairments in light of being referred to a comprehensive psychiatric program.
2. To examine hospitalizations in regard to reimbursement and placement considerations.
3. To evaluate the cost-effectiveness and implementation of a more intensive psychiatric program with nursing home patients.
4. To assess quality of life issues of psychiatric patients in the nursing home.
5. To evaluate the use and interactions of medications in nursing home patients and possible adverse effects.
6. To assess staff development needs of community service providers in working with nursing home psychiatric patients.
7. To evaluate the difference between psychiatric care in both for-profit and non-profit long-term care facilities (e.g., independent living, assisted living, and skilled care).
8. To evaluate selected outcomes of specific interventions that address mental health needs of nursing home patients.

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APPENDIX A
Instrument

NAME OF NURSING HOME: _____

| | | |
|-------------|----------|------|
| Prepared By | Initials | Date |
| Approved By | | |

C. WILSON JONES

0714 GREEN 7214 BUFF

| PT. # | PATIENT LAST NAME, FIRST NAME | PSYCH. DX (AXIS I) | MEDICAL DX | | AXIS II C P | RACE | SEX | BIRTH DATE |
|-----------|-------------------------------|--------------------|------------|--------|-----------------|-----------------|---------------|------------|
| | | | 1-YES 2-NO | EX: | | | | |
| 001 - 999 | LAST, FIRST | EX 296.20 | CVA=1 | COPD=2 | 10-90 10-90 | 1=MALE 2=FEMALE | EX 04 26 1976 | |
| | | | HTN=1 | DIS=1 | 99=MISSING DATA | 1=Cauc | | |
| | | | SEIZ=2 | CA=2 | | 2=BLACK | | |
| | | | DIAB=2 | | | 3=HISPANIC | | |
| | | | CVA= | COPD= | 1=NONE | 4=NAT. AM. | | |
| | | | HTN= | DIS= | 2=MILD | 5=OTHER | | |
| | | | SEIZ= | CA= | 3=MODERATE | 9=UNKNOWN | | |
| | | | DIAB= | | 4=SEVERE | | | |
| | | | | | 5=EXTREME | | | |
| | | | CVA= | COPD= | 9=MISSING DATA | | | |
| | | | HTN= | DIS= | | | | |
| | | | SEIZ= | CA= | | | | |
| | | | DIAB= | | | | | |
| | | | CVA= | COPD= | | | | |
| | | | HTN= | DIS= | | | | |
| | | | SEIZ= | CA= | | | | |
| | | | DIAB= | | | | | |
| | | | CVA= | COPD= | | | | |
| | | | HTN= | DIS= | | | | |
| | | | SEIZ= | CA= | | | | |
| | | | DIAB= | | | | | |
| | | | CVA= | COPD= | | | | |
| | | | HTN= | DIS= | | | | |
| | | | SEIZ= | CA= | | | | |
| | | | DIAB= | | | | | |

NH LOC=.. NH=
TX: C=0 P=1

| TX C=0 P=1 | PT# (001-N) | PT NAME | MED DX Y=1 N=2 | SENSORY DEFICITS Y=1 N=2 | #1998 PSY HOSP | CONSULT REASONS Y=1 N=2 |
|---------------|----------------|---------|--|----------------------------------|--------------------------------------|--|
| | | | CVA= HTN= SEIZ= DIAB= COPD= ▽ DIS= CA= | EYES= EARS= VERB= MOBI= | QTR 1= QTR 2= QTR 3= QTR 4= | FU/HX= MED EV= DEP SX= DEL SX= VRB AB= PHY AB= RF MED= |
| | | | CVA= HTN= SEIZ= DIAB= COPD= ▽ DIS= CA= | EYES= EARS= VERB= MOBI= | QTR 1= QTR 2= QTR 3= QTR 4= | FU/HX= MED EV= DEP SX= DEL SX= VRB AB= PHY AB= RF MED= |
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| | | | CVA= HTN= SEIZ= DIAB= COPD= ▽ DIS= CA= | EYES= EARS= VERB= MOBI= | QTR 1= QTR 2= QTR 3= QTR 4= | FU/HX= MED EV= DEP SX= DEL SX= VRB AB= PHY AB= RF MED= |
| | | | CVA= HTN= SEIZ= DIAB= COPD= ▽ DIS= CA= | EYES= EARS= VERB= MOBI= | QTR 1= QTR 2= QTR 3= QTR 4= | FU/HX= MED EV= DEP SX= DEL SX= VRB AB= PHY AB= RF MED= |

APPENDIX B

Texas Woman's University HSRC and
Graduate School Approvals to
Conduct Study

TEXAS WOMAN'S
UNIVERSITY
DENTON/DALLAS/HOUSTON

THE GRADUATE SCHOOL
P.O. Box 425649
Denton, TX 76204-5649
Phone: 940/898-3400
Fax: 940/898-3412

June 9, 1999

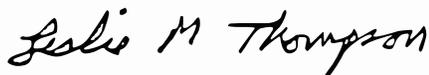
Ms. Susan Ellen Margolis
10166 Trail Ridge Dr.
Benbrook, Tx 76126

Dear Ms. Margolis:

Thank you for providing the materials necessary for the final approval of your *Dissertation* prospectus in the Graduate School. I am pleased to approve the prospectus entitled "The Efficacy of a Comprehensive Psychiatric Program on Nursing Home Patients", and I look forward to seeing the results of your study.

If I can be of further assistance, please let me know.

Sincerely yours,



Leslie M. Thompson
Associate Vice President for Research and
Dean of the Graduate School

LMT/sgm

cc Dr. Margaret Beard, Nursing
Dr. Carolyn Gunning, Nursing

To: HSRC
 From: Susan Margolis, doctoral candidate, School of Nursing
 Date: June 20, 1999
 Subject: Content change of #4 under methodology in HSR Application
 Title: "The Efficacy of a Comprehensive Psychiatric Program on Nursing Home Patients"

My dissertation committee has convinced me that I need to look at the most recent data available for my study. We have also discussed that it might not be possible to get a medical records person or the Director of Nursing to aid in data collection from each nursing home (although they will still be asked). Because of these changes, and the fact that my committee has decided that Chi-square would be the appropriate statistical measure for comparing the frequency of psychiatric hospitalizations, I would like to submit the following to take the place of the content under #4 in the methodology section of my HSR Application.

4. In chart reviews, the psychiatric hospitalization rates will be compared in a longitudinal approach examining each quarter of 1998. The control group will be matched on having an Axis I psychiatric diagnosis. Demographics will be examined in each of the groups using t-tests and ANOVA. Psychiatric hospitalization rates will be compared using Chi-Square. The program patients' charts will be reviewed from the program director's office. All patients are coded according to the order they entered the program (001-N), thus, no identifying information as to the individual (name or social security number) will be used. The information (demographics and hospitalizations) is already coded by the program personnel and this information will be used to correlate findings with control groups. The nursing home facilities (named in section 9) would be asked, through the Administrator, to allow a medical records person, or researcher's assistant who would have confidentiality clearance and access to needed data, to aid in data collection of non-program patients to establish control groups. Whoever assists the researcher would be financially compensated for their time and effort up to a maximum of \$150 per nursing home. The researcher would give the data collector an inservice and coding outline and assist in actual collection/review of data for accuracy.

Request: I request an updated letter reflecting these latest changes.

Thank you for your time and patience,

Susan Margolis
 461-76-7664

s_margolis@venus.edu.rwu
margolis@flnsh.net

Home address: 10166 Trail Ridge Drive
 Benbrook, Texas 76126

Home: 817-249-4400 Home Fax: 817-249-4077 Pager: 871-620-8499

*Approved
 Jerry Wilkerson
 6/23/99*

APPENDIX C

Nursing Home Administrator Authorization Form

TEXAS WOMAN'S UNIVERSITY
SUBJECT CONSENT TO PARTICIPATE IN RESEARCH

“THE EFFICACY OF A COMPREHENSIVE PSYCHIATRIC
PROGRAM ON NURSING HOME PATIENTS”

The investigator of this study is Susan Margolis, a doctoral student in the College of Nursing. Her faculty advisor is Dr. Margaret Beard. Dr. Beard can be reached at 940-898-2401. Ms. Margolis can be reached through her office, 972-224-7777, or by pager at 817-620-8499.

Existing program data from the _____ will be analyzed and compared to groups of patients from three area nursing homes. The comparison groups of patients will have been a resident of the nursing home in 1998 (the year being analyzed) and will have an Axis I (psychiatric) diagnosis and will not have had comprehensive psychiatric care in the nursing home during 1998. A comparison of psychiatric hospitalization rates will be analyzed to determine the efficacy of the current psychiatric outreach program at the _____ in decreasing the number of psychiatric hospitalizations.

The results of this study will be a key component in determining future psychiatric care offered by the

As the cost of a year of comprehensive psychiatric care in the nursing home is currently less than the cost of a single day of psychiatric hospitalization, it is important to weigh financial benefits as well as quality of life benefits to the patients.

This study began with a pilot study conducted in the fall of 1997 with data collected from one nursing home. This is a dissertation study which will incorporate the results of the pilot study and add data from three additional nursing homes. Dr. Margaret Beard is the faculty advisor and dissertation chairperson.

There will be no patient contact--this study will be by chart audit only. The only potential risk is breach of confidentiality. All data files will be treated with confidentiality and all data will be stored in a locked

file cabinet at the investigator's home office. The data will be shredded in 7 years after the dissertation is accepted and the data disk will be incinerated. No individual patient will be identified in any way.

The data will be analyzed by groups (nursing homes) and the results will be reported by the following terms:

Rural/Urban Nursing Home #N Program Patients
Rural/Urban Nursing Home #N Control Patients

There are no personal benefits to the individual subject, however the results may influence future mental health care accessibility within the nursing home setting.

Participation of a nursing home is voluntary and the administrator may withdraw from the study at any time. Refusal to participate will involve no penalty or loss of benefits to which the administrator, nursing home, or individual patients are otherwise entitled.

Before you sign consent to allow Ms. Margolis (or her designated agent) to conduct a chart audit as mentioned above for her research, please read the below statement:

“If I have any questions about the research or about my rights as a subject, I should ask the researchers: their phone numbers are at the top of this form. If I have questions later, or wish to report a problem, I may call the researchers of the office of Research & Grants Administration at 940-898-3377.”

Thank you for your participation.

Nursing Home: _____

Administrator's Signature: _____

Date: _____

APPENDIX D

Program Psychiatrist Authorization Form

TEXAS WOMAN'S UNIVERSITY
SUBJECT CONSENT TO PARTICIPATE IN RESEARCH

“PSYCHIATRIC HOSPITALIZATION RATES OF NURSING HOME
PATIENTS”

The investigator of this study is Susan Margolis, a doctoral student in the College of Nursing. Her faculty advisor is Dr. Margaret Beard. Dr. Beard can be reached at 940-898-2401. Ms. Margolis can be reached through her office, 972-224-7777, or by pager at 817-620-8499.

Existing program data from the _____ will be analyzed with correlation statistics and compared to control groups of patients from four area nursing homes. The control groups of patients will have been a resident of the nursing home in 1998 (the year being analyzed) and will have an Axis I (psychiatric) diagnosis and will not have had comprehensive psychiatric care in the nursing home during 1998. A comparison of psychiatric hospitalization rates will be analyzed to determine the efficacy of the current psychiatric outreach program at the _____ in decreasing the number of psychiatric hospitalizations.

The results of this study will be a key component in determining future psychiatric care offered by the _____
As the cost of a year of comprehensive psychiatric care in the nursing home is currently less than the cost of a single day of psychiatric hospitalization, it is important to weigh financial benefits as well as quality of life benefits to the patients.

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file cabinet at the investigator's home office. The data will be shredded in 7 years after the dissertation is accepted and the data disk will be incinerated. No individual patient will be identified in any way.

The data will be analyzed by groups (nursing homes) and the results will be reported by the following terms:

| | |
|----------------------------------|------------------|
| Program Patients | Control Patients |
| Nursing Home #1 Program Patients | Control Patients |
| Nursing Home #2 Program Patients | Control Patients |
| Nursing Home #3 Program Patients | Control Patients |

There are no personal benefits to the individual subject, however the results may influence future mental health care accessibility with the nursing home setting.

Participation of the _____ is voluntary and the organization may withdraw from the study at any time. Refusal to participate will involve no penalty or loss of benefits to which the Psychiatric Center of North Texas are otherwise entitled.

Before you sign consent to allow Ms. Margolis (or her designated agent) to conduct a chart audit as mentioned above for her research, please read the below statement:

“If I have any questions about the research or about my rights as a subject, I should ask the researchers: their phone numbers are at the top of this form. If I have questions later, or wish to report a problem, I may call the researchers of the office of Research & Grants Administration at 940-898-3377.”

Thank you for your participation.

Dr. _____
Date: _____

APPENDIX E
Pilot Study Data

Table E1

Demographics of the Two Groups (Pilot Study)

| Variable | Comparison Group (<u>n</u> = 17) | Program Group (<u>n</u> = 27) |
|----------|---|---|
| Age | Mean = 82.12 | Mean = 80.44 |
| Gender | Male = 5 Female = 12 | Male = 3 Female = 24 |
| Race | White = 11 Black = 5 Hispanic = 1 | White = 21 Black = 6 Hispanic = 0 |

Table E2

Comparison of Physical Diagnoses of the Two Groups (Pilot Study)

| Physical Diagnosis | Comparison Group | Program Group |
|--------------------|------------------|---------------|
| Cancer | 3 | 1 |
| COPD | 5 | 5 |
| CVA | 6 | 13 |
| Diabetes | 2 | 9 |
| Heart Disease | 8 | 17 |
| HTN | 11 | 22 |
| Seizures | 2 | 2 |

Table E3

Comparison of Physical Deficits of the Two Groups (Pilot Study)

| Deficits | Comparison Group | Program Group |
|---------------|------------------|---------------|
| Communication | 9 | 9 |
| Hearing | 11 | 12 |
| Mobility | 14 | 26 |
| Visual | 14 | 24 |

Table E4

Differential Psychiatric Diagnoses for Comparison Group and Program Group (Pilot Study)

| Psychiatric Diagnosis | Comparison Group (<u>n</u> = 17) | Program Group (<u>n</u> = 27) |
|---|--------------------------------------|-----------------------------------|
| 290.00 SDAT, NOS | 12 | 0 |
| 290.20 SDAT, with delusions | 0 | 4 |
| 290.21 SDAT, with depression | 0 | 10 |
| 290.40 Vascular dementia | 0 | 2 |
| 290.42 Vascular dementia with delusions | 0 | 2 |
| 290.43 Vascular dementia with depression | 0 | 3 |
| 293.83 Organic mood disorder | 0 | 1 |
| 296.00 Bipolar disorder | 3 | 0 |
| 296.32 Major depression, recurrent, moderate severity | 0 | 1 |
| 296.33 Major depression, recurrent, severe, without psychosis | 0 | 1 |
| 297.10 Delusional disorder | 1 | 0 |
| 300.00 Anxiety disorder | 1 | 0 |
| 300.12 Generalized anxiety disorder | 0 | 1 |
| 305.91 Mixed substance abuse, continuous | 0 | 1 |

Table E5

t-Test for Independent Samples for Hospitalization Rates by Quarters in 1996 (Pilot Study)

Comparison Group = 0 Program Group 1

Quarter 1 of 1996

| Group | No. of Cases | Mean | <u>SD</u> | SE of Mean |
|-------|--------------|-------|-----------|------------|
| 0 | 17 | .0588 | .243 | .059 |
| 1 | 27 | .0000 | .000 | .000 |

Mean Difference = .0588.

Levene's Test for Equality of Variances: $F = 7.331$; $p = .010$.

t-test for Equality of Means

| Variances | <u>t-value</u> | <u>df</u> | 2-tail sig. | SE of Diff. | 95% CI for Diff. |
|-----------|----------------|-----------|-------------|-------------|------------------|
| Equal | 1.27 | 42 | .211 | .046 | -.035, .152 |
| Unequal | 1.00 | 16.00 | .332 | .059 | -.066, .184 |

Quarter 2 of 1996

| Group | No. of Cases | Mean | <u>SD</u> | SE of Mean |
|-------|--------------|-------|-----------|------------|
| 0 | 17 | .1765 | .393 | .095 |
| 1 | 27 | .0000 | .000 | .000 |

Mean Difference = .1765.

Levene's Test for Equality of Variances: $F = 35.784$, $p = .000$.

Table E5 (continued)

t-test for Equality of Means

| Variiances | <u>t</u> -value | <u>df</u> | 2-tail sig. | SE of Diff. | 95% CI for Diff. |
|------------|-----------------|-----------|-------------|-------------|------------------|
| Equal | 2.35 | 42 | .024 | .075 | -.025, .328 |
| Unequal | 1.85 | 16.00 | .083 | .095 | -.026, .379 |

Quarter 3 of 1996

| Group | No. of Cases | Mean | <u>SD</u> | SE of Mean |
|-------|--------------|-------|-----------|------------|
| 0 | 17 | .1176 | .332 | .081 |
| 1 | 27 | .0000 | .000 | .000 |

Mean Difference = .1176.

Levene's Test for Equality of Variances: $F = 18.300$, $p = .000$.

t-test for Equality of Means

| Variiances | <u>t</u> -value | <u>df</u> | 2-tail sig. | SE of Diff. | 95% CI for Diff. |
|------------|-----------------|-----------|-------------|-------------|------------------|
| Equal | 1.85 | 42 | .071 | .063 | -.010, .246 |
| Unequal | 1.46 | 16.00 | .163 | .081 | -.053, .288 |

Quarter 4 of 1996

| Group | No. of Cases | Mean | <u>SD</u> | SE of Mean |
|-------|--------------|-------|-----------|------------|
| 0 | 17 | .0000 | .000 | .000 |
| 1 | 27 | .0000 | .000 | .000 |

Note. Unable to calculate t-test for Quarter 4 because of no hospitalizations.

Table E6

Breakdown of Psychiatric Hospitalizations for 1996 Quarters (Pilot Study)

| Psychiatric Hospitalizations (1996) | Comparison Group (<u>n</u> = 17) | Program Group (<u>n</u> = 27) |
|-------------------------------------|-----------------------------------|--------------------------------|
| Quarter 1 | 1 | 0 |
| Quarter 2 | 3 | 0 |
| Quarter 3 | 2 | 0 |
| Quarter 4 | 0 | 0 |

APPENDIX F
Main Study Data

Table F1

Psychiatric Diagnoses by Treatment Group

| Psychiatric DX DSM-IV Code Diagnosis | Program Group Count Expected Value % of Group Row % | Non-Program Group Count Expected Value % of Group Row % | Count Row % |
|---|---|---|----------------|
| 290.00 Dementia of the Alzheimer's Type, Uncomplicated | 4 9.8 8.2% 8.5% | 43 37.2 23.0% 91.5% | 47 19.9% |
| 290.12 Dementia of the Alzheimer's Type Early Onset with Delusions | 0 .6 0% 0% | 3 2.4 1.6% 100.0% | 3 1.3 |
| 290.13 Dementia of the Alzheimer's Type Early Onset with Depressed Mood | 0 .4 0% 0% | 2 1.6 1.1% 100.0 % | 2 .8 % |
| 290.20 Dementia of the Alzheimer's Type Late Onset with Delusions | 15 3.3 30.6% 93.8% | 1 12.7 .5% 6.3% | 16 6.8% |
| 290.21 Dementia of the Alzheimer's Type Late Onset with Depressed Mood | 12 3.1 24.5% 80.0% | 3 11.9 1.6% 20.0% | 15 6.4% |
| 290.40 Vascular Dementia Uncomplicated | 3 .8 6.1% 75.0% | 1 3.2 .5% 25.0% | 4 1.7% |
| 290.42 Vascular Dementia With Delusions | 0 .2 .0% .0% | 1 .8 .5% 100.0% | 1 .4% |
| 290.43 Vascular Dementia with Depressed Mood | 3 .6 6.1% 100.0% | 0 2.4 0% 0% | 3 1.3% |
| 291.20 Alcohol-Induced Persisting Dementia | 0 .4 0% 0% | 2 1.6 1% 100.0% | 2 .8% |

Table F1 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Program Group Count Expected Value % of Group Row % | Non-Program Group Count Expected Value % of Group Row % | Count Row % |
|---|---|---|------------------------|
| 293.00 | 0.0 | 1.0 | 1 |
| Psychotic Disorder due to Medical Condition | .2 .0% .0% | .8 .5% 100.0% | .4% |
| 293.81 | 1.0 | 0.0 | 1 |
| Psychotic Disorder due to Medical Condition with Delusions | .2 2.0% 100.0% | .8 .0% .0% | .4% |
| 293.83 | 1.0 | .0 | 1 |
| Mood Disorder due to General Medical Condition | .2 2.0% 100.0% | .8 .0% .0% | .4% |
| 293.90 | 0 | 1 | 1 |
| Mental Disorder Not Otherwise Specified Due to a General Medical Condition | .2 0.0% 0.0% | .8 .5% 100.0% | .4% |
| 294.10 | 0 | 24 | 24 |
| Dementia due to Parkinson's Disease | 5.0 0.0% 0.0% | 19.0 12.8% 100.0% | 10.2% |
| 294.80 | 0 | 2 | 2 |
| Dementia Not Otherwise Specified | .4 0.0% 0.0% | 1.6 1.1% 100.0% | .8% |
| 294.90 | 0 | 5 | 5 |
| Cognitive Disorder Not Otherwise Specified | 1.0 0.0% 0.0% | 4.0 2.7% 100.0% | 2.1% |
| 295.00 | 0 | 3 | 3 |
| Schizophrenia | .6 0.0% 0.0% | 2.4 1.6% 100.0% | 1.3% |
| 295.30 | 0 | 4 | 4 |
| Schizophrenia, Paranoid Type | .8 0.0% 0.0% | 3.2 2.1% 100.0% | 1.7% |
| 295.32 | 0 | 1 | 1 |
| Schizophrenia, Paranoid Type, Chronic | .2 0.0% 0.0% | .8 .5% 100.0% | .4% |

Table F1 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Program Group Count Expected Value % of Group Row % | Non-Program Group Count Expected Value % of Group Row % | Count Row % |
|--|---|---|----------------|
| 295.70 Schizoaffective Disorder | 0 .4 0.0% 0.0% | 2 1.6 1.1% 100.0% | 2 .8% |
| 295.90 Schizophrenia, Undifferentiated Type | 1 .6 2.0% 33.3% | 2 2.4 1.1% 66.7% | 3 1.3% |
| 296.00 Bipolar I Disorder, Single Manic Episode, Unspecified | 0 .4 0.0% 0.0% | 2 1.6 1.1% 100.0% | 2 .8% |
| 296.20 Major Depressive Disorder, Single Episode, Unspecified | 0 .2 0.0% 0.0% | 1 .8 .5% 100.0% | 1 .4% |
| 296.30 Major Depressive Disorder, Recurrent, Unspecified | 1 .2 2.0% 100.0% | 0 .8 0.0% 0.0% | 1 .4% |
| 296.32 Major Depressive Disorder, Recurrent, Moderate | 1 .2 2.0% 100.0% | 0 .8 0.0% 0.0% | 1 .4% |
| 296.33 Major Depressive Disorder, Recurrent, Severe, Without Psychotic Features | 1 .2 2.0% 100.0% | 0 .8 0.0% 0.0% | 1 .4% |
| 296.34 Major Depressive Disorder, Recurrent, Severe, With Psychotic Features | 0 .2 0.0% 0.0% | 1 .8 .5% 100.0% | 1 .4% |
| 296.40 Bipolar I Disorder, Most Recent Episode, Manic | 0 .2 0.0% 0.0% | 1 .8 .5% 100.0% | 1 .4% |

Table F1 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Program Group Count Expected Value % of Group Row % | Non-Program Group Count Expected Value % of Group Row % | Count Row % |
|--|---|---|----------------|
| 298.90 | 1 | 10 | 11 |
| Psychotic Disorder | 2.3 | 8.7 | |
| Not Otherwise | 2.0% | 5.3% | |
| Specified | 9.1% | 90.9% | 4.7% |
| 300.00 | 1 | 1 | 2 |
| Anxiety Disorder | .4 | 1.6 | |
| Not Otherwise | 2.0% | .5% | |
| Specified | 50.0% | 50.0% | .8% |
| 300.01 | 0 | 1 | 1 |
| Panic Disorder | .2 | .8 | |
| Without Agoraphobia | 0.0% | .5% | |
| | 0.0% | 100.0% | .4% |
| 300.02 | 0 | 1 | 1 |
| Generalized Anxiety | .2 | .8 | |
| Disorder | 0.0% | .5% | |
| | 0.0% | 100.0% | .4% |
| 303.90 | 0 | 2 | 2 |
| Alcohol Dependence | .4 | 1.6 | |
| | 0.0% | 1.1% | |
| | 0.0% | 100.0% | .8% |
| 305.00 | 0 | 3 | 3 |
| Alcohol Abuse | .6 | 2.4 | |
| | 0.0% | 1.6% | |
| | 0.0% | 100.0% | 1.3% |
| 310.90 | 0 | 9 | 9 |
| Organic Personality | 1.9 | 7.1 | |
| Disorder | 0.0% | 4.8% | |
| | 0.0% | 100.0% | 3.8% |
| 311.00 | 4 | 29 | 33 |
| Depressive Disorder | 6.9 | 26.1 | |
| Not Otherwise | 8.2% | 15.5% | |
| Specified | 12.1% | 87.9% | 14.0% |
| 311.30 | 0 | 1 | 1 |
| Depressive | .2 | .8 | |
| Disorder, | 0.0% | .5% | |
| Melancholic Type | 0.0% | 100.0% | .4% |
| 316.00 | 0 | 1 | 1 |
| Psychological | .2 | .8 | |
| Factor Affecting | 0.0% | .5% | |
| General Medical | 0.0% | 100.0% | .4% |
| Condition | | | |

Table F1 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Program Group Count Expected Value % of Group Row % | Non-Program Group Count Expected Value % of Group Row % | Count Row % |
|--|---|---|----------------|
| 319.00 | 0 | 1 | 1 |
| Mental Retardation, Severity Unspecified | .2 0.0% 0.0% | .8 .5% 100.0% | .4% |
| 331.00 | 0 | 22 | 22 |
| Alzheimer's Disease As Medical Disease | 4.6 0.0% 0.0% | 17.4 11.8% 100.0% | 9.3% |
| Totals: | | | |
| Count | 49 | 187 | 236 |
| Percentages | 20.8% | 79.2% | 100.0% |

Chi-Square = 154.92695; Significance = .00000; Cramer's V = .81023

Table F2

Psychiatric Diagnoses by Nursing Home Location

| Psychiatric DX DSM-IV Code Diagnosis | Urban Site Count Expected Value % of Group Row% | Rural Site Count Expected Value % of Group Row% | Count Row% |
|---|---|---|---------------------------|
| 290.00 Dementia of the Alzheimer's Type, Uncomplicated | 23 34.5 13.3% 48.9% | 24 12.5 38.1% 51.1% | 47 19.9% |
| 290.12 Dementia of the Alzheimer's Type Early Onset with Delusions | 0 2.2 0.0% 0.0% | 3 .8 4.8% 100.0% | 3 1.3% |
| 290.13 Dementia of the Alzheimer's Type Early Onset with Depressed Mood | 0 1.5 0.0% 0.0% | 2 .5 3.2% 100.0% | 2 .8% |
| 290.20 Dementia of the Alzheimer's Type Late Onset with Delusions | 14 11.7 8.1% 87.5% | 2 4.3 3.2% 12.5% | 16 6.8% |
| 290.21 Dementia of the Alzheimer's Type Late Onset with Depressed Mood | 10 11.0 5.8% 66.7% | 5 4.0 7.9% 33.3% | 15 6.4% |
| 290.40 Vascular Dementia Uncomplicated | 3 2.9 1.7% 75.0% | 1 1.1 1.6% 25.0% | 4 1.7% |
| 290.42 Vascular Dementia with Delusions | 1 .7 .6% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 290.43 Vascular Dementia With Depressed Mood | 2 2.2 1.2% 66.7% | 1 .8 1.6% 33.3% | 3 1.3% |

Table F2 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Urban Site Count Expected Value % of Group Row% | Rural Site Count Expected Value % of Group Row% | Count Row% |
|--|---|---|---------------|
| 291.20 | 2 | 0 | 2 |
| Alcohol-Induced Persisting Dementia | 1.5 1.2% 100.0% | .5 0.0% 0.0% | .8% |
| 293.00 | 1 | 0 | 1 |
| Psychotic Disorder due to Medical Condition | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 293.81 | 1 | 0 | 1 |
| Psychotic Disorder due to Medical Condition with Delusions | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 293.83 | 1 | 0 | 1 |
| Mood Disorder due to General Medical Condition | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 293.90 | 1 | 0 | 1 |
| Mental Disorder Not Otherwise Specified due to a General Medical Condition | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 294.10 | 24 | 0 | 24 |
| Dementia due to Parkinson's Disease | 17.6 13.9% 100.0% | 6.4 0.0% 0.0% | 10.2% |
| 294.80 | 2 | 0 | 2 |
| Dementia Not Otherwise Specified | 1.5 1.2% 100.0% | .5 0.0% 0.0% | .8% |
| 294.90 | 5 | 0 | 5 |
| Cognitive Disorder Not Otherwise Specified | 3.7 2.9% 100.0% | 1.3 0.0% 0.0% | 2.1% |
| 295.00 | 2 | 1 | 3 |
| Schizophrenia | 2.2 1.2% 66.7% | .8 1.6% 33.3% | 1.3% |

Table F2 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Urban Site Count Expected Value % of Group Row% | Rural Site Count Expected Value % of Group Row% | Count Row% |
|--|---|---|-------------------|
| 295.30 Schizophrenia, Paranoid Type | 4 2.9 2.3% 100.0% | 0 1.1 0.0% 0.0% | 4 1.7% |
| 295.32 Schizophrenia, Paranoid Type, Chronic | 1 .7 .6% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 295.70 Schizoaffective Disorder | 2 1.5 1.2% 100.0% | 0 .5 0.0% 0.0% | 2 .8% |
| 295.90 Schizophrenia, Undifferentiated Type | 3 2.2 1.7% 100.0% | 0 .8 0.0% 0.0% | 3 1.3% |
| 296.00 Bipolar I Disorder, Single Manic Episode, Unspecified | 1 1.5 .6% 50.0% | 1 .5 1.6% 50.0% | 2 .8% |
| 296.20 Major Depressive Disorder, Single Episode, Unspecified | 1 .7 .6% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 296.30 Major Depressive Disorder, Recurrent, Unspecified | 0 .7 0.0% 0.0% | 1 .3 1.6% 100.0% | 1 .4% |
| 296.32 Major Depressive Disorder, Recurrent, Moderate | 1 .7 .6% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 296.33 Major Depressive Disorder, Recurrent, Severe, Without Psychotic Features | 0 .7 0.0% 0.0% | 1 .3 1.65% 100.0% | 1 .4% |

Table F2 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Urban Site Count Expected Value % of Group Row% | Rural Site Count Expected Value % of Group Row% | Count Row% |
|---|---|---|-----------------------|
| 296.34 | 0 | 1 | 1 |
| Major Depressive Disorder, Recurrent, Severe, with Psychotic Features | .7 0.0% 0.0% | .3 1.6% 100.0% | .4% |
| 296.40 | 0 | 1 | 1 |
| Bipolar I Disorder, Most Recent Episode, Manic | .7 0.0% 0.0% | .3 1.6% 100.0% | .4% |
| 298.90 | 10 | 1 | 11 |
| Psychotic Disorder Not Otherwise Specified | 8.1 5.8% 90.9% | 2.9 1.6% 9.1% | 4.7% |
| 300.00 | 1 | 1 | 2 |
| Anxiety Disorder Not Otherwise Specified | 1.5 .6% 50.0% | .5 1.6% 50.0% | .8% |
| 300.01 | 1 | 0 | 1 |
| Panic Disorder Without Agoraphobia | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 300.02 | 1 | 0 | 1 |
| Generalized Anxiety Disorder | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 303.90 | 1 | 1 | 2 |
| Alcohol Dependence | 1.5 .6% 50.0% | .5 1.6% 50.0% | .8% |
| 305.00 | 3 | 0 | 3 |
| Alcohol Abuse | 2.2 1.7% 100.0% | .8 0.0% 0.0% | 1.3% |
| 310.90 | 9 | 0 | 9 |
| Organic Personality Disorder | 6.6 5.2% 100.0% | 2.4 0.0% 0.0% | 3.8% |

Table F2 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Urban Site Count Expected Value % of Group Row% | Rural Site Count Expected Value % of Group Row% | Count Row% |
|---|---|---|-----------------------|
| 311.00 | 17 | 16 | 33 |
| Depressive Disorder Not Otherwise Specified | 24.2 9.8% 51.5% | 8.8 25.4% 48.5% | 14.0% |
| 311.30 | 1 | 0 | 1 |
| Depressive Disorder, Melancholic Type | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 316.00 | 1 | 0 | 1 |
| Psychological Factor Affecting General Medical Condition | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 319.00 | 1 | 0 | 1 |
| Mental Retardation, Severity Unspecified | .7 .6% 100.0% | .3 0.0% 0.0% | .4% |
| 331.00 | 22 | 0 | 22 |
| Alzheimer's Disease As Medical Disease | 16.1 12.7% 100.0% | 5.9 0.0% 0.0% | 9.3% |
| Totals: | | | |
| Count | 173 | 63 | 236 |
| Percentages | 73.3% | 26.7% | 100.0% |

Chi-Square = 84.92805; Significance = .00003; Cramer's V = .59989.

Table F3

Psychiatric Diagnoses by Individual Nursing Home

| Psychiatric DX DSM-IV Code Diagnosis | Nursing Home #1 Count Exp. Value % of Group Row% | Nursing Home #2 Count Exp. Value % of Group Row% | Nursing Home #3 Count Exp. Value % of Group Row% | Count Row% |
|---|---|---|---|-------------------------------|
| 290.00 Dementia of the Alzheimer's Type, Uncomplicated | 21 30.5 13.7% 44.7% | 2 4.0 10.0% 4.3% | 24 12.5 38.1% 51.1% | 47 19.9% |
| 290.12 Dementia of the Alzheimer's Type Early Onset With Delusions | 0 1.9 0.0% 0.0% | 0 .3 0.0% 0.0% | 3 .8 4.8% 100.0% | 3 1.3% |
| 290.13 Dementia of the Alzheimer's Type Early Onset With Depressed Mood | 0 1.3 0.0% 0.0% | 0 .2 0.0% 0.0% | 2 .5 3.2% 100.0% | 2 .8% |
| 290.20 Dementia of the Alzheimer's Type Late Onset With Delusions | 12.0 10.4 7.85 75.0% | 2 1.4 10.0% 12.5% | 2 4.3 3.2% 12.5% | 16 6.8% |
| 290.21 Dementia of the Alzheimer's Type Late Onset with Depressed Mood | 7 9.7 4.6% 46.7% | 3 1.3 15.0% 20.0% | 5 4.0 7.9% 33.3% | 15 6.4% |
| 290.40 Vascular Dementia Uncomplicated | 2 2.6 1.3% 50.0% | 1 .3 5.0% 25.0% | 1 1.1 1.6% 25.0% | 4 1.7% |
| 290.42 Vascular Dementia With Delusions | 0 .6 0.0% 0.0% | 1 .1 5.0% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 290.43 Vascular Dementia With Depressed Mood | 1 1.9 .7% 33.3% | 1 .3 5.0% 33.3% | 1 .8 1.6% 33.3% | 3 1.3% |

Table F3 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Nursing Home #1 Count Exp. Value % of Group Row% | Nursing Home #2 Count Exp. Value % of Group Row% | Nursing Home #3 Count Exp. Value % of Group Row% | Count Row% |
|--|---|---|---|---------------|
| 291.20 | 2 | 0 | 0 | 2 |
| Alcohol-Induced Persisting Dementia | 1.3 1.3% 100.0% | .2 0.0% 0.0% | .5 0.0% 0.0% | .8% |
| 293.00 | 1 | 0 | 0 | 1 |
| Psychotic Disorder due to Medical Condition | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 293.81 | 1 | 0 | 0 | 1 |
| Psychotic Disorder due to Medical Condition with Delusions | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 293.83 | 1 | 0 | 0 | 1 |
| Mood Disorder due to General Medical Condition | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 293.90 | 1 | 0 | 0 | 1 |
| Mental Disorder Not Otherwise Specified Due to a General Medical Condition | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 294.10 | 24 | 0 | 0 | 24 |
| Dementia due to Parkinson's Disease | 15.6 15.7% 100.0% | 2.0 0.0% 0.0% | 6.4 0.0% 0.0% | 10.2% |
| 294.80 | 0 | 2 | 0 | 2 |
| Dementia Not Otherwise Specified | 1.3 0.0% 0.0% | .2 10.0% 100.0% | .5 0.0% 0.0% | .8% |
| 294.90 | 4 | 1 | 0 | 5 |
| Cognitive Disorder Not Otherwise Specified | 3.2 2.6% 80.0% | .4 5.0% 20.0% | 1.3 0.0% 0.0% | 2.1% |
| 295.00 | 1 | 1 | 1 | 3 |
| Schizophrenia | 1.9 .7% 33.3% | .3 5.0% 33.3% | .8 1.6% 33.3% | 1.3% |

Table F3 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Nursing Home #1 Count Exp. Value % of Group Row% | Nursing Home #2 Count Exp. Value % of Group Row% | Nursing Home #3 Count Exp. Value % of Group Row% | Count Row% |
|---|---|---|---|---------------|
| 295.30 Schizophrenia, Paranoid Type | 4 2.6 2.6% 100.0% | 0 .3 0.0% 0.0% | 0 1.1 0.0% 0.0% | 4 1.7% |
| 295.32 Schizophrenia, Paranoid Type, Chronic | 1 .6 .7% 100.0% | 0 .1 0.0% 0.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 295.70 Schizoaffective Disorder | 2 1.3 1.3% 100.0% | 0 .2 0.0% 0.0% | 0 .5 0.0% 0.0% | 2 .8% |
| 295.90 Schizophrenia, Undifferentiated Type | 3 1.9 2.0% 100.0% | 0 .3 0.0% 0.0% | 0 .8 0.0% 0.0% | 3 1.3% |
| 296.00 Bipolar I Disorder, Single Manic Episode, Unspecified | 0 1.3 0.0% 0.0% | 1 .2 5.0% 50.0% | 1 .5 1.6% 50.0% | 2 .8% |
| 296.20 Major Depressive Disorder, Single Episode, Unspecified | 1 .6 .7% 100.0% | 0 .1 0.0% 0.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 296.30 Major Depressive Disorder, Recurrent, Unspecified | 0 .6 0.0% 0.0% | 0 .1 0.0% 0.0% | 1 .3 1.6% 100.0% | 1 .4% |
| 296.32 Major Depressive Disorder, Recurrent, Moderate | 0 .6 0.0% 0.0% | 1 .1 5.0% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 296.33 Major Depressive Disorder, Recurrent, Severe, Without Psychotic Features | 0 .6 0.0% 0.0% | 0 .1 0.0% 0.0% | 1 .3 1.6% 100.0% | 1 .4% |

Table F3 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Nursing Home #1 Count Exp. Value % of Group Row% | Nursing Home #2 Count Exp. Value % of Group Row% | Nursing Home #3 Count Exp. Value % of Group Row% | Count Row% |
|--|---|---|---|-------------------------------|
| 296.34 Major Depressive Disorder, Recurrent, Severe, With Psychotic Features | 0 .6 0.0% 0.0% | 0 .1 0.0% 0.0% | 1 .3 1.6% 100.0% | 1 .4% |
| 296.40 Bipolar I Disorder, Most Recent Episode, Manic | 0 .6 0.0% 0.0% | 0 .1 0.0% 0.0% | 1 .3 1.6% 100.0% | 1 .4% |
| 298.90 Psychotic Disorder Not Otherwise Specified | 10 7.1 6.5% 90.0% | 0 .9 0.0% 0.0% | 1 2.9 1.6% 9.1% | 11 4.7% |
| 300.00 Anxiety Disorder Not Otherwise Specified | 1 1.3 .7% 50.0% | 0 .2 0.0% 0.0% | 1 .5 1.6% 50.0% | 2 .8% |
| 300.01 Panic Disorder Without Agoraphobia | 1 .6 .7% 100.0% | 0 .1 0.0% 0.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 300.02 Generalized Anxiety Disorder | 0 .6 0.0% 0.0% | 1 .1 5.0% 100.0% | 0 .3 0.0% 0.0% | 1 .4% |
| 303.90 Alcohol Dependence | 1 1.3 .7% 50.0% | 0 .2 0.0% 0.0% | 1 .5 1.6% 50.0% | 2 .8% |
| 305.00 Alcohol Abuse | 3 1.9 2.0% 100.0% | 0 .3 0.0% 0.0% | 0 .8 0.0% 0.0% | 3 1.3% |
| 310.90 Organic Personality Disorder | 9 5.8 5.9% 100.0% | 0 .8 0.0% 0.0% | 0 2.4 0.0% 0.0% | 9 3.8% |

Table F3 (continued)

| Psychiatric DX DSM-IV Code Diagnosis | Nursing Home #1 Count Exp. Value % of Group Row% | Nursing Home #2 Count Exp. Value % of Group Row% | Nursing Home #3 Count Exp. Value % of Group Row% | Count Row% |
|---|---|---|---|-------------------------------|
| 311.00 | 14 | 3 | 16 | 33 |
| Depressive Disorder Not Otherwise Specified | 21.4 9.2% 42.4% | 2.8 15.0% 9.1% | 8.8 25.4% 48.5% | 14.0% |
| 311.30 | 1 | 0 | 0 | 1 |
| Depressive Disorder, Melancholic Type | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 316.00 | 1 | 0 | 0 | 1 |
| Psychological Factor Affecting General Medical Condition | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 319.00 | 1 | 0 | 0 | 1 |
| Mental Retardation, Severity Unspecified | .6 .7% 100.0% | .1 0.0% 0.0% | .3 0.0% 0.0% | .4% |
| 331.00 | 22 | 0 | 0 | 22 |
| Alzheimer's Disease As Medical Disease | 14.3 14.4% 100.0% | 1.9 0.0% 0.0% | 5.9 0.0% 0.0% | 9.3% |
| Totals: Count Percentages | 153 64.8% | 20 8.5% | 63 26.7% | 236 100.0% |

Chi-square = 169.06935; Significance = .00000; Cramer's V = .59850.

Table F4

Crosstab and Chi-square for Presence of Communication Deficits by Treatment Groups

| Have Comm. Deficits | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Expected Value | 17 | 95 |
| Observed Value | 23.3 | 88.7 |
| Group Percentage | 34.7% | 50.8% |
| Percentage of Sample | 15.2% | 84.8% |

| Do not have Comm. Deficits | Program Group | Non-Program Group |
|----------------------------|---------------|-------------------|
| Expected Value | 32 | 92 |
| Observed Value | 25.7 | 98.3 |
| Group Percentage | 65.3% | 49.2% |
| Percentage of Sample | 25.8% | 74.2% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 4.04 | 0.04 |

Associated Strength: Phi = 0.13; Relative Risk Estimates: 1.94373.

Table F5

Crosstab and Chi-square for Presence of Hearing Deficits by TreatmentGroups

| Have Hearing Deficits | Program Group | Non-Program Group |
|-----------------------|---------------|-------------------|
| Expected Value | 32.0 | 122.0 |
| Observed Value | 12 | 142 |
| Group Percentage | 24.5% | 75.9% |
| Percentage of Sample | 7.8% | 92.2% |

| Do not have Hearing Deficits | Program Group | Non-Program Group |
|------------------------------|---------------|-------------------|
| Expected Value | 17.0 | 65.0 |
| Observed Value | 37 | 45 |
| Group Percentage | 75.5% | 24.1% |
| Percentage of Sample | 45.1% | 54.9% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 45.32 | 0.00 |

Associated Strength Phi = 0.43; Relative Risk Estimates: 9.72963.

Table F6

Crosstab and Chi-square for Diagnosis of Communication Deficit
by Individual Nursing Home

| Have Communication Deficit | NH1 | NH2 | NH3 |
|----------------------------|-------|-------|-------|
| Expected Value | 72.6 | 9.5 | 29.9 |
| Observed Value | 79 | 7 | 26 |
| Group Percentage | 51.6% | 35.0% | 41.3% |
| Percentage of Sample | 70.5% | 6.3% | 23.2% |

| Do not have Communication Deficit | NH1 | NH2 | NH3 |
|-----------------------------------|-------|-------|-------|
| Expected Value | 80.4 | 10.5 | 33.1 |
| Observed Value | 74 | 13 | 37 |
| Group Percentage | 48.4% | 65.0% | 58.7% |
| Percentage of Sample | 59.7% | 10.5% | 29.8% |

| | Value | Significance |
|-------------|---------|--------------|
| $\chi^2(2)$ | 3.28235 | 0.19375 |

Table F7

Crosstab and Chi-square for Presence of Visual Deficits by Treatment Groups

| Have Visual Deficits | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Expected Value | 35.7 | 136.3 |
| Observed Value | 23 | 149 |
| Group Percentage | 46.9% | 79.7% |
| Percentage of Sample | 13.4% | 86.6% |

| Do not have Visual Deficits | Program Group | Non-Program Group |
|-----------------------------|---------------|-------------------|
| Expected Value | 13.1 | 49.9 |
| Observed Value | 26 | 37 |
| Group Percentage | 53.1% | 19.8% |
| Percentage of Sample | 41.3% | 58.7% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 22.07 | 0.00 |

Associated Strength Phi = 0.30.

Relative Risk Estimates: 4.43249.

Table F8

Crosstab and Chi-square for Presence of Communication Deficits by Nursing Home Location

| Have Comm. Deficits | Urban N. H.s | Rural N. H.s |
|----------------------|--------------|--------------|
| Expected Value | 82.1 | 29.9 |
| Observed Value | 86 | 26 |
| Group Percentage | 49.7% | 41.3% |
| Percentage of Sample | 76.8% | 23.2% |

| Do not have Comm. Deficits | Urban N.H.s | Rural N.H.s |
|----------------------------|-------------|-------------|
| Expected Value | 90.9 | 33.1 |
| Observed Value | 87 | 37 |
| Group Percentage | 50.3% | 58.7% |
| Percentage of Sample | 70.2% | 29.8% |

| | Value | Significance |
|--------------|-------|--------------|
| $\chi^2 (1)$ | 1.32 | .25 |

Associated StrengthPhi = 0.07.

Table F9

Crosstab and Chi-square for Presence of Hearing Deficits by Nursing Home Location

| Have Hearing Deficits | Urban N. H.s | Rural N. H.s |
|-----------------------|--------------|--------------|
| Expected Value | 112.9 | 41.1 |
| Observed Value | 125 | 29 |
| Group Percentage | 72.3% | 46.0% |
| Percentage of Sample | 81.2% | 18.8% |

| Do not have Hearing Deficits | Urban N.H.s | Rural N.H.s |
|------------------------------|-------------|-------------|
| Expected Value | 60.1 | 21.9 |
| Observed Value | 48 | 34 |
| Group Percentage | 27.7% | 54.0% |
| Percentage of Sample | 58.5% | 41.5% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 14.01 | .00018 |

Associated Strength Phi = 0.30.

Relative Risk Estimate = 3.05.

Table F10

Crosstab and Chi-square for Presence of Mobility Deficits by Nursing Home Location

| Have Mobility Deficits | Urban N. H.s | Rural N. H.s |
|------------------------|--------------|--------------|
| Expected Value | 101.2 | 36.8 |
| Observed Value | 89 | 49 |
| Group Percentage | 51.4% | 77.8% |
| Percentage of Sample | 64.5% | 35.5% |

| Do not have Mobility Deficits | Urban N.H.s | Rural N.H.s |
|-------------------------------|-------------|-------------|
| Expected Value | 71.8 | 26.2 |
| Observed Value | 84 | 14 |
| Group Percentage | 48.6% | 22.2% |
| Percentage of Sample | 85.7% | 14.3% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 13.19 | .00028 |

Associated Strength Phi = -.23639.

Relative Risk Estimate = .30.

Table F11

Crosstab and Chi-square for Presence of Vision Deficits by Nursing HomeLocation

| Have Vision Deficits | Urban N. H.s | Rural N. H.s |
|----------------------|--------------|--------------|
| Expected Value | 126.1 | 45.9 |
| Observed Value | 133 | 39 |
| Group Percentage | 76.9% | 61.9% |
| Percentage of Sample | 77.3% | 22.7% |

| Do not have Vision Deficits | Urban N.H.s | Rural N.H.s |
|-----------------------------|-------------|-------------|
| Expected Value | 46.9 | 17.1 |
| Observed Value | 40 | 24 |
| Group Percentage | 23.1% | 38.1% |
| Percentage of Sample | 62.5% | 37.5% |

| | Value | Significance |
|-------------|---------|--------------|
| $\chi^2(1)$ | 5.23911 | .02208 |

Associated Strength Phi = 0.14900.

Relative Risk Estimate = 2.05.

Table F12

Crosstab and Chi-square for Communication Deficit by Individual
Nursing Home

| Have Communication Deficit | NH1 | NH2 | NH3 |
|----------------------------|-------|-------|-------|
| Expected Value | 72.6 | 9.5 | 29.9 |
| Observed Value | 79 | 7 | 26 |
| Group Percentage | 51.6% | 35.0% | 41.3% |
| Percentage of Sample | 70.5% | 6.3% | 23.2% |

| Do not have Communication Deficit | NH1 | NH2 | NH3 |
|-----------------------------------|-------|-------|-------|
| Expected Value | 80.4 | 10.5 | 33.1 |
| Observed Value | 74 | 13 | 37 |
| Group Percentage | 48.4% | 65.0% | 58.7% |
| Percentage of Sample | 59.7% | 10.5% | 29.8% |

| | Value | Significance |
|-------------|---------|--------------|
| $\chi^2(2)$ | 3.28235 | 0.19375 |

Table F13

Crosstab and Chi-square for Hearing Deficit by Individual
Nursing Home

| Have Hearing Deficit | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Expected Value | 99.8 | 13.1 | 41.1 |
| Observed Value | 117 | 8 | 29 |
| Group Percentage | 76.5% | 40.0% | 46.0% |
| Percentage of Sample | 76.0% | 5.2% | 18.8% |

| Do not have Hearing Deficit | NH1 | NH2 | NH3 |
|-----------------------------|-------|-------|-------|
| Expected Value | 53.2 | 6.9 | 21.9 |
| Observed Value | 36 | 12 | 34 |
| Group Percentage | 23.5% | 60.0% | 54.0% |
| Percentage of Sample | 43.9% | 14.6% | 41.5% |

| | Value | Significance |
|-------------|----------|--------------|
| $\chi^2(2)$ | 24.38252 | 0.00 |

Table F14

Crosstab and Chi-square for Mobility Deficit by Individual
Nursing Home

| Have Mobility Deficit | NH1 | NH2 | NH3 |
|-----------------------|-------|-------|-------|
| Expected Value | 89.5 | 11.7 | 36.8 |
| Observed Value | 72 | 17 | 49 |
| Group Percentage | 47.1% | 85.0% | 77.8% |
| Percentage of Sample | 52.2% | 12.3% | 35.5% |

| Do not have Mobility Deficit | NH1 | NH2 | NH3 |
|---------------------------------|-------|-------|-------|
| Expected Value | 63.5 | 8.3 | 26.2 |
| Observed Value | 81 | 3 | 14 |
| Group Percentage | 52.9% | 15.0% | 22.2% |
| Percentage of Sample | 82.7% | 3.1% | 14.3% |

| | Value | Significance |
|-------------|----------|--------------|
| $\chi^2(2)$ | 23.67430 | 0.00 |

Table F15

Crosstab and Chi-square for Vision Deficit by Individual
Nursing Home

| Have Vision Deficits | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Expected Value | 111.5 | 14.6 | 45.9 |
| Observed Value | 121 | 12 | 39 |
| Group Percentage | 79.1% | 60.0% | 61.9% |
| Percentage of Sample | 70.3% | 7.0% | 22.7% |

| Do not have Vision Deficits | NH1 | NH2 | NH3 |
|-----------------------------|-------|-------|-------|
| Expected Value | 40.8 | 5.3 | 16.8 |
| Observed Value | 31 | 8 | 24 |
| Group Percentage | 20.3% | 40.0% | 38.1% |
| Percentage of Sample | 49.2% | 12.7% | 38.1% |

| | Value | Significance |
|--------------|---------|--------------|
| $\chi^2 (2)$ | 9.61297 | 0.04748 |

Table F16

Insurance by Treatment Group

| INSURANCE | Count Exp Val Row Pct Col Pct | Treatment Group | | Row Total |
|-------------------|--|--------------------------------|------------------------------|---------------|
| | | Non- Program | Program | |
| Medicaid only | 1 | 15 14.3 83.3% 8.0% | 3 3.7 16.7% 6.1% | 18 7.6% |
| Medicare only | 2 | 18 18.2 78.3% 9.6% | 5 4.8 21.7% 10.2% | 23 9.7% |
| Medicaid&Medicare | 3 | 140 143.4 77.3% 74.9% | 41 37.6 22.7% 83.7% | 181 76.7% |
| Medicare&Private | 5 | 3 2.4 100.0% 1.6% | 0 .6 .0% .0% | 3 1.3% |
| Private | 6 | 4 3.2 100.0% 2.1% | 0 .8 .0% .0% | 4 1.7% |
| VA | 7 | 1 .8 100.0% .5% | 0 .2 .0% .0% | 1 .4% |
| Missing Data | 9 | 6 4.8 100.0% 3.2% | 0 1.2 .0% .0% | 6 2.5% |
| Column Total | | 187 79.2% | 49 20.8% | 236 100.0% |

Table F16 (continued)

| Chi-Square | Value | DF | | Significance |
|------------|---------|-------|--|--------------|
| ----- | ----- | ----- | | ----- |
| Pearson | 4.25801 | 6 | | .64180 |

| Statistic | Value | ASE1 | Val/ASE0 | Approximate Significance |
|------------|--------|-------|----------|-----------------------------|
| ----- | ----- | ----- | ----- | ----- |
| Cramer's V | .13432 | | | .64180 *1 |

*1 Pearson chi-square probability

Table F17

Program Patients Who Were Referred for Follow-up from Psychiatric
Hospitalization or History of Mental Illness

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------------------------|-------|-----------|---------|------------------|----------------|
| Patients with FUPHX reason | 1 | 25 | 51.0 | 51.0 | 51.0 |
| Patients without FUPHX reason | 2 | 24 | 49.0 | 49.0 | 100.0 |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49

Missing cases = 0

Table F18

Patients Who Were Referred for Medication Evaluation

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|------------------------------------|-------|-----------|---------|------------------|----------------|
| Patients with MEDEVAL reason | 1 | 25 | 51.0 | 51.0 | 51.0 |
| Patients without MEDEVAL reason | 2 | 24 | 49.0 | 49.0 | 100.0 |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49 Missing cases = 0

Table F19

Patients Who Were Referred for Depressive Symptoms

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-----------------------------------|-------|-----------|---------|------------------|----------------|
| Patients with DEPRSX reason | 1 | 17 | 34.7 | 34.7 | 34.7 |
| Patients without DEPRSX reason | 2 | 32 | 65.3 | 65.3 | 100.0 |
| | | ----- | ----- | ----- | |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49

Missing cases = 0

Table F20

Patients Who Were Referred to the Program for Delusional Symptoms

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------------------------|-------|-----------|---------|------------------|----------------|
| Patients with DELSX reason | 1 | 19 | 38.8 | 38.8 | 38.8 |
| Patients without DELSX reason | 2 | 30 | 61.2 | 61.2 | 100.0 |
| | | ----- | ----- | ----- | |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49

Missing cases = 0

Table F21

Patients Who Were Referred to the Program for Episodes of Verbal Abuse

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------------------------------|-------|-----------|---------|------------------|----------------|
| Patients with VERBALAB reason | 1 | 13 | 26.5 | 26.5 | 26.5 |
| Patients without VERBALAB reason | 2 | 36 | 73.5 | 73.5 | 100.0 |
| | | ----- | ----- | ----- | |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49

Missing cases = 0

Table F22

Patients Who Were Referred to the Program for Episodes of Physical Abuse

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-----------------------------------|-------|-----------|---------|------------------|----------------|
| Patients with PHYSAB reason | 1 | 7 | 14.3 | 14.3 | 14.3 |
| Patients without PHYSAB reason | 2 | 42 | 85.7 | 85.7 | 100.0 |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49 Missing cases = 0

Table F23

Patients Who Were Referred to the Program for Episodes of Refusing Medications as Ordered

| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|----------------------------------|-------|-----------|---------|---------------|-------------|
| Patients with REFMEDES reason | 1 | 1 | 2.0 | 2.0 | 2.0 |
| Patients without REFMEDES reason | 2 | 48 | 98.0 | 98.0 | 100.0 |
| | | ----- | ----- | ----- | |
| | Total | 49 | 100.0 | 100.0 | |

Valid cases = 49

Missing cases = 0

| | Value | Significance |
|-------------|----------|--------------|
| $\chi^2(2)$ | 24.38252 | 0.00 |

Table F24

Race by Treatment Group

| RACE | Count Exp Val Row Pct Col Pct | TX | | Row Total |
|-----------------|--|-----------------|---------|--------------|
| | | Non- Program | Program | |
| Caucasion | 1 | 96 | 29 | 125 |
| | | 99.0 | 26.0 | 53.0% |
| | | 76.8% | 23.2% | |
| | | 51.3% | 59.2% | |
| Black | 2 | 76 | 19 | 95 |
| | | 75.3 | 19.7 | 40.3% |
| | | 80.0% | 20.0% | |
| | | 40.6% | 38.8% | |
| Hispanic | 3 | 14 | 1 | 15 |
| | | 11.9 | 3.1 | 6.4% |
| | | 93.3% | 6.7% | |
| | | 7.5% | 2.0% | |
| Native American | 4 | 1 | 0 | 1 |
| | | .8 | .2 | .4% |
| | | 100.0% | .0% | |
| | | .5% | .0% | |
| Column Total | | 187 | 49 | 236 |
| | | 79.2% | 20.8% | 100.0% |

| Chi-Square | Value | DF | Significance |
|------------|---------|----|--------------|
| Chi-square | 2.55861 | 3 | .46479 |

| Statistic | Value | ASE1 | Val/ASE0 | Approximate Significance |
|------------|--------|------|----------|-----------------------------|
| Cramer's V | .10412 | | | .46479 *1 |

*1 Pearson Chi-square probability
Number of Missing Observations: 0

Table F25

Race by Nursing Home Location

| RACE | Count Exp Val Row Pct Col Pct | Nursing Home Location | | Row Total |
|-----------------|--|-----------------------|------------|--------------|
| | | Urban 1 | Rural 2 | |
| Caucasion | 1 | 67 | 58 | 125 |
| | | 91.6 | 33.4 | 53.0% |
| | | 53.6% | 46.4% | |
| | | 38.7% | 92.1% | |
| Black | 2 | 92 | 3 | 95 |
| | | 69.6 | 25.4 | 40.3% |
| | | 96.8% | 3.2% | |
| | | 53.2% | 4.8% | |
| Hispanic | 3 | 13 | 2 | 15 |
| | | 11.0 | 4.0 | 6.4% |
| | | 86.7% | 13.3% | |
| | | 7.5% | 3.2% | |
| Native American | 4 | 1 | 0 | 1 |
| | | .7 | .3 | .4% |
| | | 100.0% | .0% | |
| | | .6% | .0% | |
| Column Total | | 173 | 63 | 236 |
| | | 73.3% | 26.7% | 100.0% |

| Chi-Square | Value | DF | Significance |
|------------|----------|------|--------------|
| Chi-square | 53.43018 | 3 | .00000 |
| Statistic | Value | ASE1 | Val/ASE0 |
| Cramer's V | .47581 | | .00000 *1 |

*1 Pearson Chi-square probability
Number of Missing Observations: 0

Table F26

Race by Individual Nursing Homes

| RACE | Count | Individual Nursing Homes | | | Row Total |
|-----------------|---------|--------------------------|-------|-------|-----------|
| | | 1 | 2 | 3 | |
| Caucasion | 1 | 54 | 13 | 58 | 125 |
| | Exp Val | 81.0 | 10.6 | 33.4 | 53.0% |
| | Row Pct | 43.2% | 10.4% | 46.4% | |
| | Col Pct | 35.3% | 65.0% | 92.1% | |
| Black | 2 | 86 | 6 | 3 | 95 |
| | Exp Val | 61.6 | 8.1 | 25.4 | 40.3% |
| | Row Pct | 90.5% | 6.3% | 3.2% | |
| | Col Pct | 56.2% | 30.0% | 4.8% | |
| Hispanic | 3 | 12 | 1 | 2 | 15 |
| | Exp Val | 9.7 | 1.3 | 4.0 | 6.4% |
| | Row Pct | 80.0% | 6.7% | 13.3% | |
| | Col Pct | 7.8% | 5.0% | 3.2% | |
| Native American | 4 | 1 | 0 | 0 | 1 |
| | Exp Val | .6 | .1 | .3 | .4% |
| | Row Pct | 100.0% | .0% | .0% | |
| | Col Pct | .7% | .0% | .0% | |
| Column Total | | 153 | 20 | 63 | 236 |
| | | 64.8% | 8.5% | 26.7% | 100.0% |

| Chi-Square | Value | DF | Significance |
|------------|----------|----|--------------|
| Pearson | 59.79868 | 6 | .00000 |

| Statistic | Value | ASE1 | Val/ASE0 | Approximate Significance |
|------------|--------|------|----------|--------------------------|
| Cramer's V | .35594 | | | .00000 *1 |

*1 Pearson Chi-square probability
Number of Missing Observations: 0

Table F27

Gender by Treatment Group

| GENDER | Count Exp Val Row Pct Col Pct | Treatment Groups | | Row Total | |
|------------|--|--------------------------------|------------------------------|---------------|-----------------------------|
| | | Non- Program | Program | | |
| Male | 1 | 52 49.1 83.9% 27.8% | 10 12.9 16.1% 20.4% | 62 26.3% | |
| Female | 2 | 135 137.9 77.6% 72.2% | 39 36.1 22.4% 79.6% | 174 73.7% | |
| | Column Total | 187 79.2% | 49 20.8% | 236 100.0% | |
| Chi-Square | | Value | | DF | Significance |
| Pearson | | 1.09747 | | 1 | .29482 |
| Statistic | | Value | ASE1 | Val/ASE0 | Approximate Significance |
| Phi | | .06819 | | | .29482 *1 |

*1 Pearson chi-square probability
Number of Missing Observations: 0

Table F28

Gender by Nursing Home Location

| GENDER | Count | Nursing Home Location | | Row Total |
|--------------|---------|-----------------------|-------|-----------|
| | | Urban | Rural | |
| | Exp Val | | | |
| | Row Pct | | | |
| | Col Pct | 1 | 2 | |
| Male | 1 | 41 | 21 | 62 |
| | | 45.4 | 16.6 | 26.3% |
| | | 66.1% | 33.9% | |
| | | 23.7% | 33.3% | |
| Female | 2 | 132 | 42 | 174 |
| | | 127.6 | 46.4 | 73.7% |
| | | 75.9% | 24.1% | |
| | | 76.3% | 66.7% | |
| Column Total | | 173 | 63 | 236 |
| | | 73.3% | 26.7% | 100.0% |

| Chi-Square | Value | DF | Significance |
|------------|---------|------|--------------|
| Pearson | 2.21291 | 1 | .13686 |
| Statistic | Value | ASE1 | Val/ASE0 |
| Phi | -.09683 | | .13686 *1 |

*1 Pearson chi-square probability.
Number of Missing Observations: 0

Table F29

Gender by Individual Nursing Home

| | | Individual Nursing Homes | | | |
|--------|--|--------------------------|------------|-------------|---------------|
| GENDER | Count Exp Val Row Pct Col Pct | 1 | 2 | 3 | Row |
| | | | | | Total |
| Male | 1 | 39 | 2 | 21 | 62 26.3% |
| | | 40.2 | 5.3 | 16.6 | |
| | | 62.9% | 3.2% | 33.9% | |
| | | 25.5% | 10.0% | 33.3% | |
| Female | 2 | 114 | 18 | 42 | 174 73.7% |
| | | 112.8 | 14.7 | 46.4 | |
| | | 65.5% | 10.3% | 24.1% | |
| | | 74.5% | 90.0% | 66.7% | |
| | Column Total | 153 64.8% | 20 8.5% | 63 26.7% | 236 100.0% |

| Chi-Square | Value | DF | Significance |
|------------|---------|------|--------------|
| Pearson | 4.40406 | 2 | .11058 |
| Statistic | Value | ASE1 | Val/ASE0 |
| Cramer's V | .13661 | | .11058 *1 |

*1 Pearson chi-square probability

Number of Missing Observations: 0

Table F30

Age by Treatment Group

| Variable | Number of Cases | Mean | SD | SE of Mean |
|-------------------|--------------------|---------|-------|------------|
| AGE | | | | |
| Non-Program Group | 187 | 81.4545 | 8.975 | .656 |
| Program Group | 49 | 82.6531 | 8.095 | 1.156 |

Mean Difference = -1.1985

Levene's Test for Equality of Variances: $F = 1.056$ $P = .305$

t-test for Equality of Means

95%

| Variances | <u>t</u> -value | <u>df</u> | 2-tail Sig | SE of Diff | CI for Diff |
|-----------|-----------------|-----------|------------|------------|-----------------|
| Equal | -.85 | 234 | .397 | 1.413 | (-3.981, 1.584) |
| Unequal | -.90 | 81.72 | .370 | 1.330 | (-3.844, 1.447) |

Table F31

Age by Nursing Home Locationt-tests for Independent Samples

| Variable | Number of Cases | Mean | <u>SD</u> | SE of Mean |
|---------------------|-----------------|---------|-----------|------------|
| AGE | | | | |
| Urban Nursing Homes | 173 | 81.7225 | 9.158 | .696 |
| Rural Nursing Homes | 63 | 81.6508 | 7.784 | .981 |

Mean Difference = .0717

Levene's Test for Equality of Variances: F = 3.877 P = .050t-test for Equality of Means

95%

| Variances | t-value | df | 2-Tail Sig | SE of Diff | CI for Diff |
|-----------|---------|--------|------------|------------|-----------------|
| Equal | .06 | 234 | .956 | 1.297 | (-2.484, 2.627) |
| Unequal | .06 | 128.50 | .953 | 1.203 | (-2.308, 2.451) |

Table F32

Age by Individual Nursing Home

Analysis of Variance

| Source | df | Sum of Squares | Mean Squares | F Ratio | F Prob. |
|----------------|-----|----------------|--------------|---------|---------|
| Between Groups | 2 | 265.8992 | 132.9496 | 1.7289 | .1797 |
| Within Groups | 233 | 17917.3380 | 76.8984 | | |
| Total | 235 | 18183.2373 | | | |

| Group | Count | Mean | Standard Deviation | Standard Error | 95 Pct Conf Int | for Mean |
|-------|-------|---------|--------------------|----------------|-----------------|----------|
| Grp 1 | 153 | 81.2745 | 9.0954 | .7353 | 79.8217 TO | 82.7273 |
| Grp 2 | 20 | 85.1500 | 9.1380 | 2.0433 | 80.8733 TO | 89.4267 |
| Grp 3 | 63 | 81.6508 | 7.7837 | .9807 | 79.6905 TO | 83.6111 |
| Total | 236 | 81.7034 | 8.7963 | .5726 | 80.5753 TO | 82.8315 |

| GROUP | MINIMUM | MAXIMUM |
|-------|---------|----------|
| Grp 1 | 65.0000 | 103.0000 |
| Grp 2 | 65.0000 | 99.0000 |
| Grp 3 | 66.0000 | 95.0000 |
| TOTAL | 65.0000 | 103.0000 |

Table F33

Crosstab and Chi-square for Diagnosis of Cancer by Treatment Group

| Have Cancer | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 1 | 6 |
| Expected Value | 1.5 | 5.5 |
| Group Percentage | 2.0% | 3.2% |
| Percentage of Sample | 14.3% | 85.7% |

| Do not have Cancer | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 48 | 181 |
| Expected Value | 47.5 | 181.5 |
| Group Percentage | 98.0% | 96.8% |
| Percentage of Sample | 21.0% | 79.0% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | .18 | 0.66* |

*Relative risk cannot be calculated.

Table F34

Crosstab and Chi-square for Diagnosis of COPD by Treatment Groups

| Have COPD | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 10 | 33 |
| Expected Value | 8.9 | 34.1 |
| Group Percentage | 20.4% | 17.6% |
| Percentage of Sample | 23.3% | 76.7% |

| Do not have COPD | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 39 | 154 |
| Expected Value | 40.1 | 152.9 |
| Group Percentage | 79.6% | 82.4% |
| Percentage of Sample | 20.2% | 79.8% |

| | Value | Significance |
|--------------|-------|--------------|
| χ^2 (1) | .19 | 0.65* |

*Relative risk cannot be calculated.

Table F35

Crosstab and Chi-square for Diagnosis of CVA by Treatment Groups

| Have CVA | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 9 | 36 |
| Expected Value | 9.3 | 35.7 |
| Group Percentage | 18.4% | 19.3% |
| Percentage of Sample | 20.0% | 80.0% |

| Do not have CVA | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 40 | 15 |
| Expected Value | 39.7 | 151.3% |
| Group Percentage | 81.6% | 80.7% |
| Percentage of Sample | 20.9% | 79.1% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | .19 | 0.88* |

*Relative risk cannot be calculated.

Table F36

Crosstab and Chi-square for Diagnosis of Diabetes by Treatment Group

| Have Diabetes | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 6 | 40 |
| Expected Value | 9.6 | 36.4 |
| Group Percentage | 12.2% | 21.4% |
| Percentage of Sample | 13.0% | 87.0% |

| Do not have Diabetes | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 43 | 147 |
| Expected Value | 39.4 | 150.6 |
| Group Percentage | 87.8% | 78.6% |
| Percentage of Sample | 22.6% | 77.4% |

| | Value | Significance |
|----------|-------|--------------|
| χ^2 | .19 | 0.88* |

*Relative risk cannot be calculated.

Table F37

Crosstab and Chi-square for Diagnosis of Heart Disease by Treatment Group

| Have heart disease | Program group | Non-program group |
|----------------------|---------------|-------------------|
| Observed value | 21 | 39 |
| Expected value | 12.5 | 47.5 |
| Group percentage | 42.9% | 20.9% |
| Percentage of Sample | 35.0% | 65.0% |

| Do not have heart disease | Program group | Non-program group |
|---------------------------|---------------|-------------------|
| Observed value | 28 | 148 |
| Expected value | 12.5 | 47.5 |
| Group percentage | 42.9% | 20.9% |
| Percentage of Sample | 35.0% | 65.0% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 9.91 | 0.00 |

Associated Strength Phi = -0.20.

Relative Risk Estimates: .35135.

Table F38

Crosstab and Chi-square for Diagnosis of Hypertension by TreatmentGroups

| Have Hypertension | Program Group | Non-Program Group |
|----------------------|---------------|-------------------|
| Observed Value | 27 | 79 |
| Expected Value | 22.0 | 84.0 |
| Group Percentage | 55.1% | 42.2% |
| Percentage of Sample | 25.5% | 74.5% |

| Do not have Hypertension | Program Group | Non-Program Group |
|--------------------------|---------------|-------------------|
| Observed Value | 22 | 108 |
| Expected Value | 27.0 | 103.0 |
| Group Percentage | 44.9% | 57.8% |
| Percentage of Sample | 16.9% | 83.1% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 2.59 | 0.10* |

*Relative risk cannot be calculated.

Table F39

Crosstab and Chi-square for Diagnosis of Seizure Disorder by Treatment Groups

| Have Seizure Disorder | Program Group | Non-program Group |
|-----------------------|---------------|-------------------|
| Observed value | 7 | 13 |
| Expected Value | 4.2 | 15.8% |
| Group percentage | 14.3% | 7.0% |
| Percentage of Sample | 35.0% | 65.0% |

| Do Not Have Seizure Disorder | Program Group | Non-program Group |
|------------------------------|---------------|-------------------|
| Observed value | 42 | 174 |
| Expected Value | 44.8% | 171.2 |
| Group percentage | 85.7% | 93.0% |
| Percentage of Sample | 19.4% | 80.6% |

| | Value | Significance |
|----------|-------|--------------|
| χ^2 | 2.69 | 0.10* |

*Relative risk cannot be calculated.

Table F40

Crosstab and Chi-square for Diagnosis of Cancer by Nursing Home Location

| Have Cancer | Urban Group | Rural Group |
|----------------------|-------------|-------------|
| Observed value | 7 | 0 |
| Expected Value | 5.1 | 1.9% |
| Group percentage | 40.0% | .0% |
| Percentage of Sample | 100.0 | .0% |

| Do Not Have Cancer | Urban Group | Rural Group |
|----------------------|-------------|-------------|
| Observed value | 166 | 63 |
| Expected Value | 167.9 | 61.1 |
| Group percentage | 96.0% | 100.0 |
| Percentage of Sample | 72.5% | 27.5% |

| | Value | Significance |
|----------|-------|--------------|
| χ^2 | 2.62 | 0.10* |

*Relative risk cannot be calculated.

Table F41

Crosstab and Chi-square for Diagnosis of COPD by Nursing
Home Location

| Have COPD | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 28 | 15 |
| Expected Value | 31.5 | 11.5 |
| Group Percentage | 16.2% | 23.8% |
| Percentage of Sample | 65.1% | 34.9% |

| Do not have COPD | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 145 | 48 |
| Expected Value | 141.5 | 51.5 |
| Group Percentage | 83.8% | 76.2% |
| Percentage of Sample | 75.1% | 24.9% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 1.80 | 0.17% |

*Relative risk cannot be calculated.

Table F42

Crosstab and Chi-square for Diagnosis of Cerebral Vascular Accident by
Nursing Home Location

| Have CVA | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 29 | 16 |
| Expected Value | 33.0 | 12.0 |
| Group Percentage | 16.8% | 25.4% |
| Percentage of Sample | 64.4% | 35.6% |

| Do not have CVA | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 144 | 47 |
| Expected Value | 140.0 | 51.0 |
| Group Percentage | 83.2% | 74.6% |
| Percentage of Sample | 75.4% | 24.6% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 2.23 | 0.13* |

*Relative risk cannot be calculated

Table F43

Crosstab and Chi-square for Diagnosis of Diabetes by Nursing Home Location

| Have Diabetes | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 34 | 12 |
| Expected Value | 33.7 | 12.3 |
| Group Percentage | 19.7% | 19.0% |
| Percentage of Sample | 73.9% | 26.1% |

| Do not have Diabetes | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 139 | 51 |
| Expected Value | 139.3 | 50.7 |
| Group Percentage | 80.3% | 81.0% |
| Percentage of Sample | 73.2% | 26.8% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 0.10 | 0.91 |

*Relative risk cannot be calculated.

Table F44

Crosstab and Chi-square for Diagnosis of Heart Disease by Nursing Home Location

| Have Heart Disease | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 27 | 33 |
| Expected Value | 44.0 | 16.0 |
| Group Percentage | 15.6% | 52.4% |
| Percentage of Sample | 45.0% | 55.0% |

| Do not have Heart Disease | Urban | Rural |
|---------------------------|-------|-------|
| Observed Value | 146 | 30 |
| Expected Value | 129.0 | 47.0 |
| Group Percentage | 84.4% | 47.6% |
| Percentage of Sample | 83.0% | 17.0% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 32.93 | 0.00 |

Associated Strength Phi = -0.37

Relative risk estimate = .1682.

Table F45

Crosstab and Chi-square for Diagnosis of Hypertension by Nursing HomeLocation

| Have Hypertension | Urban | Rural |
|----------------------|-------|-------|
| Observed Value | 75 | 31 |
| Expected Value | 77.1 | 28.3 |
| Group Percentage | 43.4% | 49.2% |
| Percentage of Sample | 70.8% | 29.2% |

| Do not have Hypertension | Urban | Rural |
|--------------------------|-------|-------|
| Observed Value | 98 | 32 |
| Expected Value | 95.3 | 34.7 |
| Group Percentage | 56.6% | 50.8% |
| Percentage of Sample | 75.4% | 24.6% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | .63 | 0.42* |

*Relative risk cannot be calculated.

Table F46

Crosstab and Chi-square for Diagnosis of Seizure Disorder by Nursing
Home Location

| Have Seizure Disorder | Urban | Rural |
|-----------------------|-------|-------|
| Observed Value | 15 | 5 |
| Expected Value | 14.7 | 5.3 |
| Group Percentage | 8.7% | 7.9% |
| Percentage of Sample | 75.0% | 25.0% |

| Do not have Seizure Disorder | Urban | Rural |
|------------------------------|-------|-------|
| Observed Value | 158 | 58 |
| Expected Value | 158.3 | 57.7 |
| Group Percentage | 91.3% | 92.1% |
| Percentage of Sample | 73.1% | 26.9% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 0.03 | 0.85% |

*Relative risk cannot be calculated.

Table F47

Crosstab and Chi-square for Diagnosis of Cancer by Individual Nursing Home

| Have Cancer | NH1 | NH2 | NH3 |
|----------------------|--------|------|------|
| Observed Value | 7 | 0 | 0 |
| Expected Value | 4.5 | 0.6 | 1.9 |
| Group Percentage | 4.6% | 0.0% | 0.0% |
| Percentage of Sample | 100.0% | 0.0% | 0.0% |

| Do not have Cancer | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 146 | 20 | 63 |
| Expected Value | 148.5 | 19.4 | 61.1 |
| Group Percentage | 95.4 | 100.0 | 100.0 |
| Percentage of Sample | 63.8% | 8.7% | 27.5% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 3.91 | 0.14* |

*Relative risk cannot be calculated.

Table F48

Crosstab and Chi-square for Diagnosis of COPD by Individual Nursing Home

| Have COPD | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 23 | 5 | 15 |
| Expected Value | 27.9 | 3.6 | 11.5 |
| Group Percentage | 15.0% | 25.0% | 23.8% |
| Percentage of Sample | 53.5% | 11.6% | 34.9% |

| Do not have COPD | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 130 | 5 | 15 |
| Expected Value | 27.9 | 3.6 | 11.5 |
| Group Percentage | 85.0% | 75.0% | 76.2% |
| Percentage of Sample | 67.4% | 7.8% | 24.9% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 2.98 | 0.22* |

*Relative risk cannot be calculated.

Table F49

Crosstab and Chi-square for Diagnosis of Cerebral Vascular Accident by Individual Nursing Home

| Have CVA | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed value | 22 | 7 | 16 |
| Expected value | 29.2 | 3.8 | 12.0 |
| Group percentage | 14.4% | 35.0% | 35.6% |
| Percentage of sample | 48.9 | 15.6 | 25.4 |

| Do Not Have CVA | NH1 | NH2 | NH3 |
|----------------------|--------|-------|-------|
| Observed value | 131 | 13 | 47 |
| Expected value | 123.8% | 16.2% | 51.05 |
| Group percentage | 85.6% | 65.0% | 74.6% |
| Percentage of sample | 68.6% | 6.8% | 24.6% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 7.10 | 0.02 |

*Relative risk cannot be calculated.

Associate Strength Cramer's V* 0.17.

Table F50

Crosstab and Chi-square for Diagnosis of Diabetes by Individual Nursing Home

| Have Diabetes | NH1 | NH2 | NH3 |
|----------------------|-------|-------|--------|
| Observed Value | 30 | 4 | 12 |
| Expected Value | 29.8 | 3.9 | 12.3 |
| Group Percentage | 19.6% | 20.0% | 19.0% |
| Percentage of Sample | 65.2% | 8.7% | 26.01% |

| Do not have Diabetes | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 123 | 16 | 51 |
| Expected Value | 123.2 | 16.1 | 50.7 |
| Group Percentage | 80.4% | 8.4% | 81.0% |
| Percentage of Sample | 64.7% | 80.0% | 26.8% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 0.01 | 0.99* |

*Relative risk cannot be calculated

Table F51

Crosstab and Chi-square for Diagnosis of Heart Disease by Individual
Nursing Home

| Have heart Disease | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 19 | 8 | 33 |
| Expected Value | 38.9 | 5.1 | 16.0 |
| Group Percentage | 12.4% | 40.0% | 52.4% |
| Percentage of Sample | 31.7% | 13.3% | 55.0% |

| Do not have Heart Disease | NH1 | NH2 | NH3 |
|---------------------------|-------|-------|-------|
| Observed Value | 134 | 12 | 30 |
| Expected Value | 114.1 | 14.9 | 47.0 |
| Group Percentage | 76.1% | 60.0% | 47.6% |
| Percentage of Sample | 87.6% | 6.8% | 17.0% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 0.41 | 0.00 |

Table F52

Crosstab and Chi-square for Diagnosis of Hypertension by Individual
Nursing Home

| Have HTN | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 66 | 9 | 31 |
| Expected Value | 68.7 | 9.0 | 28.3 |
| Group Percentage | 43.1% | 45.0% | 49.2% |
| Percentage of Sample | 62.3% | 8.5% | 29.2% |

| Do not have HTN | NH1 | NH2 | NH3 |
|----------------------|-------|-------|-------|
| Observed Value | 87 | 11 | 32 |
| Expected Value | 84.3 | 11.0 | 34.7 |
| Group Percentage | 56.9% | 55.0% | 50.8% |
| Percentage of Sample | 66.9% | 8.5% | 24.6% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 0.66 | 0.71* |

*Relative risk cannot be calculated.

Table F53

Crosstab and Chi-square for Diagnosis of Seizure Disorder by Individual
Nursing Home

| Have Seizure Disorder | NH1 | NH2 | NH3 |
|-----------------------|------|-------|-------|
| Observed Value | 11 | 4 | 5 |
| Expected Value | 13.0 | 1.7 | 5.3 |
| Group Percentage | 7.2% | 20.0% | 7.9% |
| Percentage of Sample | 55.% | 20.0% | 25.0% |

| Do not have Seizure Disorder | NH1 | NH2 | NH3 |
|------------------------------|-------|-------|-------|
| Observed Value | 142 | 16 | 58 |
| Expected Value | 140.0 | 18.3 | 57.7 |
| Group Percentage | 92.8% | 80.0% | 92.1% |
| Percentage of Sample | 65.7% | 7.4% | 26.9% |

| | Value | Significance |
|-------------|-------|--------------|
| $\chi^2(1)$ | 3.77 | 0.15* |

*Relative Risk cannot be calculated.