DISSERTATION

Lora Humphrey-Beebe

The Graduate School

University of Kentucky

2000

COMMUNITY NURSING SUPPORT FOR SCHIZOPHRENIC CLIENTS

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A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy
at the University of Kentucky

By

Lora Humphrey-Beebe

Lexington, Kentucky

Co-Directors: Margaret R. Grier, Professor of Nursing
Ann R. Peden, Associate Professor of Nursing

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Decreasing hospital stays necessitate various community supports for persons with schizophrenia. However, there is little research on the effectiveness of community-based nursing interventions for this population. A true experimental, post test only design was used to evaluate the effectiveness of a telephone nursing intervention in increasing community survival, and decreasing the number and length of stay of rehospitalizations for persons with schizophrenia.

The sample consisted of 48 schizophrenic persons discharged from a state psychiatric hospital located in the southeast. The subjects were randomly assigned to the experimental group, which received the telephone nursing intervention weekly, or the control group, which received an informational follow-up call at 6 weeks and 12 week. Subjects were followed for three months, and community survival, as well as the number and length of readmissions were compared.

The findings were: (a) no significant differences in community survival between the two groups, (b) no significant difference in number of readmissions between the two groups, and (c) the length of stay upon readmission was shorter for experimental subjects,

but the difference was not statistically significant.

The results of this study suggest that the first month after discharge is one of high risk for readmission in persons with schizophrenia. Variables relating to social support and the utilization of community resources for psychiatric care need to be considered when providing care to this population. Preliminary data suggest that the telephone intervention was successful in fostering community survival after the first month in the community. However, replication with a larger sample is required to demonstrate the significance of this finding. In addition, more research is needed to ascertain if the intervention can be refined to promote community stability during the high-risk period immediately after hospital discharge. Therefore, continued study of telephone nursing intervention with schizophrenic clients residing in the community is recommended.

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CHAPTER ONE

Introduction

The purpose of this study was to evaluate the effectiveness of a telephone nursing intervention in improving outcomes for persons with schizophrenia. Severe mental illness affects as many as 4 million Americans (National Institute of Mental Health [NIMH], 1991). Approximately 2.7 million of these individuals suffer from schizophrenia (Swerdlow, 1995). Both the individual and societal costs of schizophrenia are high. This chapter includes a brief overview of the background for the study, along with the specific aims.

In schizophrenic populations, brief hospitalizations have been linked to increases in relapse (Appleby, Desai, Luchins, Gibbons, & Hedeker, 1993). Considering the trend for decreasing hospital stays, an innovative support service for this vulnerable group was explored. Telephone intervention has been shown to be efficacious in a variety of populations. Telephone intervention reduced costs (Wasson et al., 1992), increased attendance at psychiatric outpatient clinic appointments (Swenson & Pekarik, 1988), and improved clients' sense of connectedness to others (Mermelstein & Holland, 1991). However, there is little research on the effectiveness of community-based nursing interventions in improving outcomes for persons with schizophrenia. The specific aims of this study were to: (a) evaluate the effectiveness of a telephone nursing intervention for schizophrenic persons in increasing community length of stay, and decreasing the number and length of rehospitalizations; (b) describe the community follow-up available for persons with schizophrenia; and (c) identify the correlates of rehospitalization.

Background

Schizophrenia is the most chronic and disabling of the severe mental disorders,

causing psychotic symptoms, social withdrawal, and bizarre behavior. Even with treatment, only one in five persons diagnosed with schizophrenia recovers (NIMH, 1995), and most suffer chronic lifelong symptoms. In addition, the combined cost of treatment and lost income from schizophrenia in the United States is more than $30 billion annually (NIMH, 1995). Using a national database, Weiden and Olfson (1995) estimated the cost of hospitalizations and rehospitalizations for persons with schizophrenia to be $2.3 billion per year. Within two years after discharge the cost of readmissions approached $2 billion. Even so, cost estimates fail to capture the devastating human dimensions of this illness.

Current knowledge of schizophrenia is not sufficient to produce a cure. The usual treatment protocols respond to biological as well as environmental dysfunctions. Medications are the primary approach to biologic dysfunction, while psychosocial interventions focus on providing and enhancing environmental supports. The goal of treatment is to support the client to function at his or her maximum potential in the least restrictive environment possible.

Findings from the study will provide direction for the community-based nursing care of clients with schizophrenia. Nursing is at the forefront in providing community care, but research is needed to address specific interventions designed to enhance outcomes (Vaccaro, Young, & Glynn, 1993). Psychological, sociological, and nursing theories have long provided the basis for intervening with persons suffering from schizophrenia, but these approaches have seldom been empirically tested or their effectiveness validated. The research describes available community follow-up and adds to the knowledge base about nursing interventions and their impact upon length of stay in the community and rehospitalization rates for persons with schizophrenia.

Theoretical Framework

Biological, social, and environmental factors have been identified in the outcomes of rehospitalization for schizophrenia. A number of models contributed to choices of measures and development of the intervention, including the neurotransmitter model (Turner, Fedtsova, & Jeste, 1997), the executive function model (McGrath, Scheldt, Welham, & Clair, 1997), stress-coping theory (Lazarus & Holroyd, 1982), and the social support model (Caplan, 1974). The overall framework for the study was the vulnerability-stress model of schizophrenia (Rabkin, 1982). The nursing intervention was guided by Peplau's *Theory of Interpersonal Relations in Nursing* (Peplau, 1952). The study framework and contributing models will be discussed in detail in Chapter 2.

Summary

Research is needed to test the effectiveness of nursing interventions for persons with schizophrenia. The recent national agenda of health care reform highlighted the need for research on cost-effective care delivery options. This study evaluated a telephone nursing intervention and its effect on the community length of stay and rehospitalization of persons with schizophrenia. The results provide information on the response of schizophrenic clients in the community to telephone intervention. This information may facilitate the development of interventions to yield favorable outcomes while minimizing economic costs. The knowledge generated adds to our understanding of community living by persons with schizophrenia, and contributes to our ability to address their needs.

In Chapter Two a detailed review of literature related to schizophrenia will be provided, as well as discussion of relevant intervention studies, the theoretical framework for the study, and the rationale for the experimental intervention.

CHAPTER TWO

Literature Review

Schizophrenia

In this chapter a detailed review of the literature related to schizophrenia will be provided. Interacting psychological, physiological, sociocultural, and developmental variables, as well as prevalence and treatment of the disease will be discussed. The conceptual models that contributed to the study framework will be discussed, the hypotheses will be described, and the theoretical basis for the intervention will be explicated.

Schizophrenia is a chronic thought disorder that usually manifests itself in adolescence or early adulthood. The disease is characterized by exacerbations and remissions, the symptoms of which have been divided into positive and negative types (Andreasen & Black, 1995). During acute exacerbations, positive symptoms (e.g., delusions, hallucinations, and bizarre behavior) which are thought to result from excessive prefrontal dopamine (Turner, Fedtsova, & Jeste, 1997) prevail. Negative symptoms involving deficits in executive ability (McGrath, Schedlt, Welham, & Clair, 1997) characterize the remission phase and include autistic thinking, withdrawal, passivity, and isolation.

The course of schizophrenia is highly variable, ranging from complete recovery to incapacitation, and appears to vary based upon gender. Angermeyer, Kuhn, and Goldstein (1990) reviewed 102 studies and reported that, regardless of outcome measure (clinical or social), about one-half showed a significant effect of gender on the disease, with sexual and vocational adjustment being significantly poorer in men. McGlashan (1988)

reviewed all long-term studies since 1963 whose follow-up period was at least 10 years. He concluded that, while the outcome of schizophrenia is worse than that of other major mental illnesses, the symptom deterioration appears to plateau within 5-10 years of first diagnosis.

Periodic relapses necessitating rehospitalizations are the rule for many persons with schizophrenia, and the cost of these is staggering. The total cost to treat mental illness in psychiatric and acute care hospitals was over $12 billion in 1988, the average cost of a single inpatient day was $478 (Rice, Kelman, & Miller, 1992). For schizophrenia alone, the cost of treatment and lost income exceeds $30 billion a year (NIMH, 1995). Nursing research is needed to evaluate interventions designed to assist persons with schizophrenia to maintain themselves in the community.

Diagnosis

Schizophrenia usually is diagnosed by presentation of the symptoms listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (American Psychiatric Association, 1994). The DSM-IV criteria for the diagnosis of schizophrenia include:

1. Two of the following symptoms present for at least one month -delusions, hallucinations, disorganized speech, disorganized behavior, negative symptoms (i.e., poor hygiene and social isolation).
2. Dysfunction in one or more of the following - work, interpersonal relationships or self-care.
3. Continuous disturbance for at least six months.
4. Rule out mood disorder with psychotic features, which may cause symptoms

similar to those exhibited in schizophrenia.

5. Symptoms not due to substance use (DSM-IV, American Psychiatric Association, 1994, pp. 274-287).

Age at Onset

Although the prevalence of the disease is similar in both genders, there is consensus in the literature that males with schizophrenia are diagnosed an average of 3 to 5 years earlier than females (Castle & Murray, 1991; Hafner, Maurer, Loffler, & Riecher-Rossler, 1993; Loranger, 1984; Mayer, Kelterborn, & Naber, 1993; Perlick, Mattis, Stastny, & Teresi, 1992). Loranger (1984) studied 100 male and 100 female schizophrenics on three indices: family's first awareness of symptoms, first treatment, and first hospitalization. Of this sample, 90% of the male and 66% of the female schizophrenic persons were diagnosed before age 30 years, and 92% of males and 84% of females were diagnosed before age 35. Of the female schizophrenic persons, 10% were diagnosed after 40 years of age. Schizophrenia often is associated with the physiological stressor of birth trauma in males and environmental stressors in females (Al-Issa, 1993).

The prevalence of the disease is similar in both genders, with the late cohort of female diagnoses offsetting the majority of males who are diagnosed at a younger age (Mayer, Kelterborn, & Naber, 1993). Pope and Lipinsky (1978) speculated that the late onset of schizophrenia in females may in reality be a group of misdiagnosed affective psychoses. Other authors pointed to social artifacts like role obligations and societal expectations to explain the gender and age differences in the diagnoses of schizophrenia (Al-Issa, 1993). Later onset provides an opportunity for development of higher premorbid social competence and predicts a more positive outcome (Warner &

deGirolamo, 1995).

Course and Prognosis

The course of schizophrenia is highly variable, ranging from complete recovery to incapacitation, and appears to vary with gender. Test, Burks, and Wallisch (1990) followed 122 schizophrenic clients (average age 23 years) for two years and found males to have higher relapse rates and longer hospital stays. This validated the findings of Salokangas' (1983) eight-year follow-up of 175 persons with schizophrenia. He found that, while only small differences in clinical condition were noted over time, psychosexual situation and work adjustment were consistently poorer in men. These findings could be due to the effects of schizophrenic symptomatology on male and female sociocultural roles and the generally greater societal expectations of males in work performance. In addition, hospitalization itself reduces social skills and functioning (Brown, Bone, Dalison, & Wing, 1966; Wing & Brown, 1970), and since male schizophrenics use hospitals more often, this could account in part for their greater social difficulties. Early onset of the disease (common in males) also is associated with poor medication response and negative long-term outcomes (Meltzer et al., 1997).

Developmental Variables

In a long term follow-up study, Angermeyer, Kuhn, and Goldstein (1990) found women to have shorter hospital stays and increased tenure in the community. This differential effect of gender was found by Childers and Harding (1990) to decrease slightly over time, perhaps due to postmenopausal loss of estrogen. However, this hypothesis does not account for the prepubertal differences noted by Foerster et al. (1991) after 73 interviews of mothers with schizophrenic adolescents.

The female brain exhibits earlier neuronal connections and lateralization (Taylor, 1969), which reduces its vulnerability to birth trauma compared to the male brain. Schizophrenia often is associated with birth trauma in males (Al-Issa, 1993). Also, women have almost twice the percentage of body weight from fat as men. Fat facilitates medication storage and contributes to the documented better medication response in women with schizophrenia (Castle & Murray, 1991; Seeman & Lang, 1990).

A minority of investigators reported few significant differences between male and female schizophrenic persons (Haas et al., 1990; Josiassen, Roemer, Johnson, & Shagass, 1990), but smaller samples were used in these studies than in studies showing gender-related differences. Additional confounding factors are the differing times at which follow up was done in different studies, and the use of different diagnostic systems. Lewine, Burbach, and Meltzer (1984) noted that at least six different diagnostic systems are available, each with varying degrees of stringency and thus, differing effects upon diagnoses of males and females. Most studies do not stipulate the diagnostic criteria used. Persons with schizophrenia, regardless of the diagnostic conceptualization or criteria, show variability in age and type of onset, premorbid adjustment, symptoms, treatment response, and course of illness. Extensive between-subject variability also is observed in risk factors (e.g., familial, genetic, gestational, and birth complications) and associated biological and psychological factors (Carpenter, Buchanan, & Kirkpatrick, 1985).

McGlashan (1988) reviewed all long term studies since 1963 whose follow up period was at least 10 years and concluded that, while the average outcome of schizophrenia is worse than that of other major mental illnesses, the symptom deterioration appears to plateau within 5-10 years of first diagnosis. Statistics concerning

relapse rates are difficult to interpret due to chronicity bias, since persons with milder forms of the disease may relapse less and therefore fail to remain in treatment or follow-up.

Prevalence

A number of studies confirm that high rates of mental disorders, particularly schizophrenia, are concentrated in the central low-income districts of many cities in the United States (Gerard & Houston, 1953; Klee, 1967; Schroeder, 1942). Warner and deGirolamo (1995) offered the following theories in explanation:

1. Social Drift or Selection - Those in the early stages of schizophrenia drift down to lower socioeconomic status due to mental impairments caused by the disease. In the United States there is a definite urban industrial factor in schizophrenia.
2. Social Stress or Causation - The stress of poverty, deprivation, and social disorganization increase the risk of schizophrenia. This explanation has more broad, worldwide application.
3. Neurodevelopmental - People of lower socioeconomic status encounter more developmental risk due to obstetric complications, perinatal infection, and other factors (Warner & deGirolamo, 1995).

Treatment

Current knowledge of schizophrenia is not sufficient to produce a cure. The usual treatment protocols consist of medications, whose primary function is to induce physiologic changes, such as dopamine receptor blockade, that improve positive symptoms. Psychosocial interventions such as individual, group, or family therapies are used to reduce negative symptoms. The goal of treatment is to support the client to

function at his or her maximum level of stability in the least restrictive environment possible.

Community care. National deinstitutionalization policies reduced the number of state psychiatric hospital beds from 559,000 in 1955 to 103,000 in 1992 (Lamb, 1992). Psychiatric beds per 100,000 population dropped from 339 to 41 over the same period (Lamb, 1992). Deinstitutionalization originally was conceptualized as a two-part event, with reduction in inpatient beds complemented by a simultaneous increase in supports like outpatient and community treatment and support services. Unfortunately, the environment of most persons with schizophrenia does not include the full range of services needed to support stable functioning. Community treatment programs are as effective or better than hospitalization, and more economical (Budson, 1994; Marks, 1992; Weisbrod, Test, & Stein, 1980). The dominant trend in community mental health services since the 1980's, however, has been one of decline (Thompson, 1994). In many places where supports are lacking, persons with schizophrenia have been forced to return repeatedly to hospital psychiatric units, thus perpetuating the revolving door phenomenon (Beebe, 1989).

Recidivism. Much of the literature on schizophrenia focuses on identifying the client at risk for rehospitalization by examining a multitude of variables. The studies examining factors associated with recidivism are difficult to compare due to differences in follow-up intervals. For example, Buchanan et al. (1992), Ventura (1992), and Sullivan, Bulik, Forman, and Mezzich (1993) used follow-up periods ranging from three months to five years. Hospital recidivism in persons with schizophrenia is related to age, gender, employment, medication noncompliance, race, and number of prior

hospitalizations (Green, 1988; Havassy & Hopkin, 1989; Sullivan, Bulik, Forman, & Mezzich, 1993). Kane, Testani, Crilly, Auberger, and Norton (1992) studied factors predictive of long-term hospitalization in 68 young adult clients, 42 of whom were schizophrenic. The authors reported four significant predictors of longer hospital stays: discharge placement problems, low levels of functioning, involuntary hospital admission , and history of violence. In a follow-up of persons with schizophrenia after discharge from their first hospitalization, Lambert, Sherwood, and Fitzpatrick (1983) found six predictors of rehospitalization: age, delusions, assaultive behavior, out of state residence, indigence, and living with parents. The most frequently identified predictors of rehospitalization are number of prior hospitalizations and medication noncompliance. Kiesler (1982) concluded that hospitalization tends to reinforce hospitalization, and prognosis worsens with each successive admission.

In persons with schizophrenia, brief hospitalization has been linked to an increased rate of relapse during the first month after discharge (Appleby, Desai, Luchins, Gibbons, & Hedeker, 1993). Given the trend for decreasing psychiatric hospital stays, this linkage underscores the need for innovative community services to provide support during this high-risk period. Inadequate discharge planning was postulated by Caton, Koh, Fleiss, Barrow, and Goldstein (1985) as a causative factor in the rapid rehospitalizations of persons with chronic schizophrenia. Inadequate discharge planning may have resulted in a created environment that was inadequate to meet client needs. In a review of first admission studies of persons with schizophrenia, Ram, Bromet, and Eaton (1992) noted relapse rates of 40% to 60% within two years of first treatment for schizophrenia. Even in patients who were compliant with medications, the annual relapse

rates were above 40%.

Periodic monitoring may provide opportunities for intervening in the form of stress reduction, social support, and aftercare. These therapies might increase community tenure for at risk populations (Caton, Koh, Fleiss, Barrow, & Goldstein, 1985). Soni, Mallik, Reed, and Gaskell (1992) investigated differences between chronic schizophrenics in hospitals versus those in the community after subjects were matched for age, gender, and diagnosis. Hospitalized patients exhibited increased severity of thought disorder and negative symptoms, while clients in the community suffered from more depression and anxiety and required higher doses of medication. They concluded that community living presents different problems than long term hospitalization due to exposure to stressors, the possibility of negative family interactions, and the availability of alcohol and substances. Schizophrenic clients in the community appear to need specialized interventions to assist them in coping effectively with environmental stress to maintain stability. This is because the internal environment of a person with schizophrenia is uncomfortable and distracting at even moderate symptom levels. Efforts to cope with this discomfort as well as worsening symptoms can produce a psychotic relapse (O'Connor, 1994).

The above studies demonstrate that schizophrenic clients in the community need specialized intervention to facilitate stability. Approaches need to be developed and tested with the goal of providing better outcomes in terms of community stability and recidivism prevention. Research is needed to develop and test innovative, cost effective, treatment strategies to increase community length of stay for individuals with schizophrenia (Caton, Koh, Fleiss, Barrow, & Goldstein, 1985).

Intervention Studies

Most of the intervention research with schizophrenic clients and their families focuses on educational or psychosocial approaches. A prospective, quasi-experimental study was conducted by Brooker, Tarrier, Barrowclough, Butterworth, and Goldberg (1992) to evaluate the effects of psychosocial interventions delivered by community psychiatric nurses to families caring for 34 schizophrenic relatives. The weekly sessions averaged 47 minutes in length and consisted of family assessment, health education, and family stress management strategies. After the one-year follow-up, both positive and negative symptoms of the schizophrenic client decreased and social functioning increased significantly. However, the small sample size limits the generalizability of the findings.

Holmes, Ziemba, Evans, and Williams (1994) followed 17 clients with schizophrenia for one year after a psychoeducational intervention by psychiatric nurses. Each client was assigned to a clinical nurse specialist who carried out an individualized psychoeducational plan. The educational interventions included monitoring stress responses, social and leisure skills, and referrals to available self-help groups. This study contained only descriptive data and cited problems with the participation rates of eligible clients as well as low family involvement.

In another intervention study, a nurse, three therapists, and two psychologists provided a family management intervention (Randolph et al., 1994). The family management consisted of education about schizophrenia, communication skills, and problem solving. Twenty-five sessions were conducted with each of 41 families over a one-year period. The authors reported symptom exacerbations in 14% of the schizophrenic clients in the experimental group versus 55% in the control group. There

was no significant difference between the groups in the number of inpatient days. The findings of this study also have limited generalizability, because only the most stable clients were chosen to participate.

Symptom Management

Some of the nursing literature focused on responses to the symptoms of schizophrenia. Sandford (1993) suggested that psychiatric nurses respond to hallucinations by encouraging clients to take an active role in coping. Active coping suggests proactive responses such as distraction rather than passive acceptance. Moller and Murphy (1995) stated that the goal of intervening with clients who are hallucinating is to increase their awareness of the hallucination as a symptom, so they can begin to distinguish the hallucination from reality. This is accomplished by interacting with clients on the basis of real events and identifying the needs being met by the hallucination. The clients can then be assisted to use real resources in the external environment to meet their needs. While these interventions are based upon Peplau's theory (1952), they have not been empirically tested. Field (1985) collected data on hospitalized psychiatric patients over a 13-year period to evaluate the effect of prescriptions of dismissal on auditory hallucinations. Clients were taught to forcefully respond, "Go away and leave (client's first name) alone!" when voices were heard. The author reported that a significant (unspecified) number of clients using this technique experienced relief; however the research protocol, sample size, subject diagnoses, and statistical methods were not described.

The literature on intervening with persons with schizophrenia is minimal. The majority of studies explore family intervention rather than intervention with

schizophrenic clients themselves. In addition, the majority of nursing interventions provided to persons with schizophrenia lack empirical validation.

Telephone Intervention

The value of telephone intervention has been demonstrated in a variety of client populations. Levy et al. (1980) surveyed client telephone contacts in three pediatric care centers and reported that a small number of complaints accounted for most of the calls. They suggested a structured protocol approach for responding to common complaints. Wasson et al. (1992) noted an estimated cost savings of approximately $828 per client per year in a randomized trial of 497 elderly males with chronic diseases who received telephone care versus the usual follow-up care. A telephone call is cost effective, time efficient, and culturally acceptable.

Community psychiatric clients. There is limited research exploring the use of telephone intervention for psychiatric clients in the community. Several studies examined the use of telephone prompts to reduce missed clinic appointments (Carr, 1985; Kluger & Karras, 1983; Swenson & Pekarik, 1988). Each of these authors reported significant reductions in no-show rates after telephone prompts. In contrast, Shivack and Sullivan (1989) used telephone prompts on all inpatient referrals to an inner city outpatient clinic for three months and concluded that this intervention was not cost effective for their clients. They reported that calls had to be made repeatedly and callers often were required to leave messages. Their sample averaged only a 3% increase in clinic attendance if clients were contacted directly, and less if messages were left. In a psychiatric outpatient clinic where telephone prompts were used, Burgoyne, Acosta, and Yamamoto (1983) concluded that increased rates of attendance were likely to be

associated with socioeconomic factors enabling clients to afford a telephone. Since there is literature supporting the role of telephone contact in reducing missed psychiatric outpatient appointments, telephone intervention may be a cost-effective way to reduce the risk of rehospitalization in this group.

Social support. In mental health treatment, the telephone has been central to the development of suicide hotlines, 24-hour counseling services, and educational programs (Maximen, 1978). Rosenbaum (1977) surveyed 40 psychiatrists and reported that 86% followed at least some patients by long distance telephone. Goodman and Pynoos (1988) developed two telephone networks to provide social support to family caregivers of Alzheimer's victims. Five spouses and five children of Alzheimer's victims were matched in pairs for three months. Each person received one call and made one call weekly (average length 15 minutes). Their program also included 25 audiotaped minilectures that could be accessed by telephone. Reported benefits included increased self-acceptance, self-awareness, and self-confidence. These authors noted that telephone intervention can be readily adapted to new populations.

Counseling. Mermelstein and Holland (1991) used individual telephone counseling successfully. Their telephone therapy was structured just as any regular 50-minute psychotherapy session. These authors noted the benefits of telephone counseling in reducing isolation and increasing the client's sense of connectedness to others, which may be especially important immediately after hospital discharge. The sense of control the client gains by using the telephone from home may also result in less defensiveness. Negative aspects of telephone counseling include the loss of visual and nonverbal cues, and these must be compensated for by greater attention to voice tone, quality, and pauses

during speech. Therapists must then validate their perceptions verbally by asking direct questions.

Skipwith (1994) used tri-weekly telephone counseling sessions of 15 minutes each to assist caregivers of elders in the community. Sessions were described as therapeutic and problem solving in nature. Major interventions included exploring care options, maintaining family support, providing health education, exploring resources, problem solving, and reducing stress. This author concluded that telephone counseling "is an appropriate dimension of psychiatric nursing practice and can be incorporated as one approach to providing mental health services" (p. 12).

Hunter (1997) reported five case studies of persons with schizophrenia who received weekly telephone nursing intervention for three months. The subjects were all women between the ages of 26 and 45. The intervention included nurse-initiated calls at least weekly, and 24-hour telephone access to the nurse during the 3-month follow-up period. Encouragement, praise, problem solving strategies and agency, physician and therapist advocacy were offered. In all five cases rehospitalization was avoided compared to a 35% rehospitalization rate of the 14 control subjects.

Four of the five experimental subjects experienced critical events successfully managed via telephone. Three of these four critical events were a duplicate of the critical events resulting in hospitalization previously. This suggests that proactive telephone support can be effective in managing potentially toxic events that often trigger the downward spiral into unmanageable clinical symptoms requiring hospitalization.

Melton and Smoyak (1992) reported on telephone therapy conducted via conference calls with groups of disabled persons. The disabilities included neurological

disorders, traumatic accidents, and serious mental disorders (unspecified). In these populations, the telephone helped address travel and isolation limitations. Groups were 90 minutes long, "met" once a week, and consisted of six to eight members. These authors also encouraged therapist attention to verbal cues such as drawn-out sentences, throat clearings, and lengthy silences.

The studies of telephone intervention in psychiatric populations indicate the following benefits: reduction in isolation, increased feelings of control, and increased community tenure. The interventions provided via telephone included support, education, problem solving, and stress reduction. Thus, telephone intervention is efficient and economical, and has demonstrated feasibility with persons with schizophrenia (Hunter, 1997).

Theoretical Frameworks

Models of Schizophrenia

Numerous biological, social, and environmental models of schizophrenia have been proposed. While several of these models contributed to choices of measures and interventions in the proposed study, the vulnerability-stress model will be used as an overall framework.

Biological models. The biological models of schizophrenia are the most highly developed and widely disseminated (Harrison, Burnet, Falkai, Bogerts, & Eastwood, 1997; Ismail, Gracee, & McNeil, 1998; Kindermann, Karimi, Symonds, Brown, & Jeste, 1997; McGrath, Scheldt, Welham, & Clair, 1997; Mowry, Nancarrow, & Levinson, 1997; Robert et al., 1997; Turner, Fedtsova, & Jeste, 1997; Woodruff et al., 1997; Zipursky et al., 1997). They include the neurotransmitter model (Turner, Fedtsova, & Jeste, 1997)

and the executive function model (McGrath, Scheldt, Welham, & Clair, 1997; Robert et al., 1997). The neurotransmitter model focuses on chemical transmission in the prefrontal cortex, hippocampus, and temporal lobes of the brain, postulating that increased dopamine receptor activity in these areas results in the hallucinations and delusions of the disease (Turner, Fedtsova, & Jeste, 1997). The so-called typical antipsychotic medications (such as Haldol, Prolixin, Mellaril, and Navane) act primarily to block dopamine receptors and increase dopamine destruction (Cook & Fontaine, 1991). This mechanism of action is thought to explain the effectiveness of these medications in reducing the positive symptoms of schizophrenia. The so-called atypical medications (such as Zyprexa and Risperidone) have an antagonist function against dopamine as well as serotonin through mechanisms not well understood (Physicians Desk Reference, 1997). Their primary advantages over the typical medications are control of symptoms (when the typical medications fail), and fewer, less severe, side effects.

A record review (Appendix A) at the site where subjects will be recruited for the proposed study indicated that 89% of the patients discharged with a diagnosis of schizophrenia were prescribed one of the typical antipsychotic medications (Payne, 1997). Medications, dosage, and compliance will be monitored during the study to ascertain if relationships exist between the type or dosage of antipsychotic medications prescribed and rehospitalizations, as well as between compliance with the medication regimen and rehospitalizations.

The executive model explains schizophrenic symptoms in terms of neurocognitive deficits associated with dysfunction in prefrontal brain systems (McGrath, Scheldt, Welham, & Clair, 1997). The processes involved in cognitive control of action and

thought operate on two levels. The routine level includes activities where learned responses are used. The supervisory level operates when learned responses are inadequate, for example when the solution to a task is unknown or when extraneous stimuli must be inhibited to perform some task (Robert et al., 1997). Persons with schizophrenia exhibit difficulties with supervisory level functions, including difficulties in ordering sequential behaviors, establishing goal-directed plans, maintaining task when interrupted, monitoring personal behavior, and associating knowledge with required responses. Difficulties with activities of daily living are especially evident when nonautomatic actions are involved.

Executive ability has been shown to be a useful predictor of the level of community functioning (McGrath, Scheldt, Welham, & Clair, 1997). During the weekly intervention, executive functioning was assessed as subjects discussed the occurrences of the week and their responses to these.

The contribution of biology to the symptoms and course of schizophrenia is clear from the literature. The medical treatment of biological dysfunction, however, provides only a partial solution for persons with this disease. Lehman analyzed published research on schizophrenia and concluded, ... medication alone is not enough, ... the most effective approach integrates appropriate medication management with psychosocial treatments" (Lehman, 1998, p. 20). His 5-year study found that the key to improving outcomes for patients is adoption of a comprehensive and individualized treatment plan, combining appropriate medications, patient and family education and support, and assertive community treatment for high risk persons (Lehman, 1998).

Environmental models. Environmental models become important in view of the

importance of psychosocial approaches to positive outcomes in schizophrenia. Stress and coping and social support are environmental models providing additional conceptual guidance for the measures and interventions included in the study.

To guide practitioners providing clinical interventions to persons with schizophrenia, O'Connor (1994) developed a model of symptom regulation based upon stress and coping theory (Lazarus & Holroyd, 1982). The model specifies stressors and moderators that exert a protective effect against stress. Stressors may be neurological, psychobiological, environmental, or interpersonal. Stress moderators include symptom regulation skills, coping strategies, social support, and medications. Stressors and moderators experienced by the schizophrenic participants living in the community were assessed during the weekly intervention using open-ended questions. When necessary, intervention was provided to enhance the function of the moderators.

The symptom regulation model specifies supporting and intervening functions, which are provided to enhance the client's ability to moderate stressors and thereby reduce symptoms. O' Connor (1994) recommended several types of nursing interventions that need to be tested, including provision of support, assessment of medication response, and teaching. Each of these nursing actions was included in the intervention on an as needed basis. In addition, this symptom regulation model provides the rationale for the collection of data regarding the symptoms leading to hospitalization and coping methods attempted prior to hospitalization. Based upon O'Connor's model, one would expect hospitalization to be preceded by some identifiable stressor, for example escalating symptoms. The presence of psychiatric symptomatology is viewed as a stressor in this model. Identification of coping methods used prior to hospitalization

will provide information as to the ability of the subjects, their families, and/or caregivers to moderate the identified stressor. This will point to areas where additional intervention may be needed to prevent rehospitalization.

To continue with the example of escalating symptoms, perhaps the subject needs teaching as to ways to effectively cope with symptoms, for instance reducing stimuli, using medications, or talking with a support person. Such supportive and intervening actions were provided during the weekly telephone contact with experimental subjects.

Caplan (1974) stated that social support is provided by individuals, networks, or groups, and consists of opportunities for feedback about self and validation of expectations about others. Such feedback may offset existing deficiencies within individuals. Social support is embedded within social networks and consists of two primary functions: practical support and emotional support (Cresswell, Kuipers, & Power, 1992). It includes such dimensions as frequency, intensity, and duration of contact. The frequency and duration of subject contact, the interventions provided, and subject response were monitored and recorded during the study.

Several authors examined social support as a factor in the course and treatment of schizophrenia (Beels, Gutwirth, Berkeley, & Streuning, 1984; Cresswell, Kuipers, & Power, 1992; Wing, 1978). Cresswell, Kuipers, and Power (1992) reported a significant positive correlation between social isolation and frequency of hospital admission in persons with schizophrenia. The majority of their subjects said they desire support when stressors occur and such support usually is sought from professionals. It appears that professionals caring for those with long-term mental illness may be fulfilling an important social support function. Data on living arrangements was collected during the

proposed study to facilitate examination of the correlation between social isolation and frequency of hospital admission in the sample of schizophrenic persons living in the community. Given the need for emotional distance in schizophrenia (Wing, 1978) and the importance of outreach to those who might not seek support, telephone intervention seems a logical choice for providing both practical and emotional support for this population.

Heller, Swindle, and Dusenbury (1986) constructed a model of social support highlighting esteem enhancing appraisals and stress related interpersonal interactions. These authors hypothesized that social support positively influences health outcome if the recipient sees it as esteem enhancing or if it involves providing stress reducing interpersonal aid. Interpersonal aids include emotional support, cognitive restructuring, or direct helping actions, all of which can be conceptualized as coping aids. Emotional supports that may be used during the proposed intervention include statements accurately reflecting subjects' emotional states and immediate concerns, while conveying active interest on the part of the nurse. Cognitive restructuring may take place as information is shared to correct misconceptions or present reality. Direct helping actions during the intervention included assistance with obtaining appointments, transportation, medications, and other tangible aid.

Given the overlapping nature of the above listed models, and the inability of a single model to account for the range of schizophrenic symptoms and outcomes, it seems probable that symptoms are produced through interaction of the various models. The vulnerability model was used as a framework for the study. The vulnerability framework is an attempt to articulate the interaction of the various models discussed above. (Rabkin,

1982).

The vulnerability hypothesis states that stressors trigger symptoms of disease in vulnerable populations (Rabkin, 1982). Thus, biochemical vulnerability is seen as combining with social and environmental conditions to lead to schizophrenia (Ciompi, 1983). Many investigators suggested that this vulnerability is a necessary precondition for the appearance of schizophrenic symptoms (Rosenthal, 1970; Strauss & Carpenter, 1981; Wing & Brown, 1970; Zubin & Spring, 1977). To be included in the study, subjects were required to be diagnosed as schizophrenic according to DSM-IV criteria (DSM-IV, American Psychiatric Association, 1994). Thus, all subjects possessed the biologic vulnerability of this diagnosis. Social and environmental conditions were assessed by collection of sociodemographic data, as well as during weekly telephone contact with the experimental subjects.

The vulnerability model postulates that persons with schizophrenia are biologically vulnerable due to their increased sensitivity to stress and reduced ability to cope, and therefore, relapse occurs when stressors are not moderated. Factors that moderate life events include environmental factors, social network, and treatment regimen. According to this model, the intervention was hypothesized to function as a moderating factor to reduce the effects of stress on biologically vulnerable persons. The intervention was a proactive moderator that was provided on a weekly basis regardless of whether stressors had been identified. If stressors were identified during telephone intervention, the nurse assessed these and responded based upon the individual need of the subject for moderation. Reduced stress was expected to exert a stabilizing effect on the vulnerable subjects, which would result in reductions in the number and length of

psychiatric rehospitalizations, and longer survival of schizophrenic persons in the community. See Figure 1.

The nursing intervention provided addressed concerns that varied at each contact. The nursing intervention was guided by Peplau's theory of interpersonal relations (1952), in which communication techniques are chosen and modified based upon each client's presented needs and/or symptoms.

Peplau

Peplau provided specific guidance for the communication techniques used in nursing intervention. A key concept is that the nurse's communication be based upon information presented by clients regarding their immediate needs. The relationship is client-driven (Peplau, 1952). To assist clients to recognize and understand their needs, the nurse facilitates exploration of thoughts and feelings by using open-ended questions (Peplau, 1952). These techniques were used in the intervention.

Peplau conceptualized nursing interaction as proceeding from what the client knows with the nurse responding to the client's needs (Peplau, 1952). The intervention protocol (Appendix B) follows from this conceptualization. The specific content of the protocol items regarding attendance at follow-up and medication compliance was chosen due to the documented usefulness of this information in predicting rehospitalizations in psychiatric populations (Aviram, 1990; Buchanan et al., 1992; Carpenter, 1985; Ford, Young, Perez, Obermeyer, & Rohner, 1992; Goodpastor & Hare, 1991; Green, 1988; Havassy & Hopkin, 1989; Miller, Beck, & Fraps, 1984; Schulberg & Bromet, 1982; Seeman, Littman, Plummer, Thornton, & Jeffries, 1982; Setze & Bond, 1985; Solomon, Davis, & Gordon, 1984; Ventura, 1992; Winston, Perdes, Papernik, & Breslin, 1977).

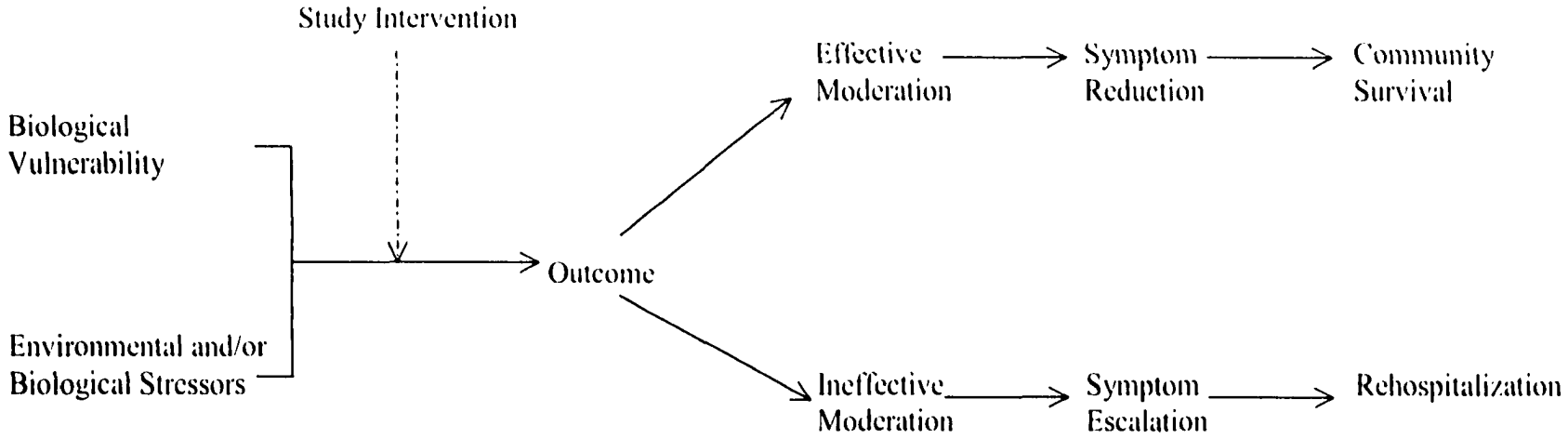


Figure 1. Vulnerability framework integrating various models of schizophrenia.

The general content of the protocol was nondirective. Its purpose was to provide the subject an opportunity to describe recent life events and h/her responses to these, in order to assess daily coping efforts (O'Connor, 1994), including executive functioning (McGrath, Scheldt, Welham, & Clair, 1997) and social support (Heller, Swindle, & Dusenbury, 1986). Interventions based upon Peplau's theory (traditionally used for persons with schizophrenia) include the presentation of reality, teaching the nature of illness, symptoms, and medications, as well as assessing daily functioning (including executive function), anxiety level, and presence of schizophrenic symptoms such as hallucinations or delusions (Cook & Fontaine, 1991).

Peplau described nursing as a relationship that engages the client as an active partner (Peplau, 1952). She further emphasized nursing's role in orienting and informing clients of the nature of the therapeutic contract. For this research, the contract involved informing experimental subjects of a (maximum) 15-minute telephone conversation once weekly for three months, and eliciting their agreement to participate in the study.

Research Hypotheses

The research hypotheses of the study were:

H 1: Subjects who receive the telephone nursing intervention will have longer survival in the community (prior to their first rehospitalization) during the 3-month follow-up period than subjects in the control group. The telephone nursing intervention was designed to identify subjects' stressors and potential stressors that could be moderated by the telephone interaction to increase subject stability and increase community length of stay.

H 2: Subjects who receive the telephone nursing intervention will have fewer

psychiatric rehospitalizations during the 3-month study period compared to control subjects. The telephone nursing intervention was designed to identify stressors and potential stressors that could be moderated to increase subject stability and reduce the need for rehospitalization.

H 3: Subjects who receive the telephone nursing intervention and are rehospitalized for psychiatric care during the 3-month study period will have shorter lengths of hospital stay than control subjects. For instance, subjects who receive the telephone nursing intervention to enhance wellness may still require hospitalization, but a hospitalization of shorter duration because of less severe symptoms or symptoms identified in a more timely manner during the telephone contact.

In addition to testing these hypotheses, data were collected to describe (a) the community care available to persons with schizophrenia, and (b) the correlates of rehospitalization in this population. The relationships among and between all variables concerning rehospitalization were explored.

Summary

It appears from this review that facilitating decision-making regarding treatment regime and providing emotional support by telephone have been effective interventions for a variety of populations. Given the small number of studies involving psychiatric patients and the minimal economic cost of telephone intervention, research was conducted to examine the efficacy of this method for delivering psychiatric nursing intervention. Following Peplau's theory of interpersonal relations in nursing, a nursing intervention was tested for its impact on the stability of a person with schizophrenia

living in the community. The goal of the intervention was to assess the effects and potential effects of stressors on persons with schizophrenia, in order to moderate the negative effects of stressors. This would theoretically increase system stability for persons with schizophrenia in the community, and reduce the need for repeated hospitalizations.

In Chapter Three the study design, sample, measures, data collection and analysis will be described.

CHAPTER THREE

Methods

Design

A true experimental, post-test only, control group design was used to evaluate the effectiveness of a telephone intervention in improving outcomes for clients with schizophrenia. After hospital discharge, the experimental subjects received a weekly telephone intervention along with routine community-based follow-up care for three months, while the control subjects received routine community-based follow-up care only. Subjects were followed for number of rehospitalizations and number of days in the community for three-months post hospital discharge.

Sample

The sample (N = 48) was recruited from psychiatric clients admitted to the assessment unit of a state psychiatric hospital located in the southeast. It is estimated that approximately 30 clients with schizophrenia are admitted to the hospital each month (DeLeon, personal communication, February, 1997). The inclusion criteria consisted of:

1. A diagnosis of schizophrenia according to the criteria described in the Diagnostic and Statistical Manual of Mental Disorders-4th Edition ([DSM-IV], American Psychiatric Association, 1994, pp. 274-287). DSM-IV is the diagnostic manual utilized by psychiatrists at the hospital where the study will be conducted. The investigator assumed, for purposes of this study, that the diagnosis was correct. The DSM-IV criteria for the diagnosis of schizophrenia include:
   (a) two of the following symptoms present for at least one month: delusions, hallucinations, disorganized speech, disorganized behavior, negative symptoms

(i.e. poor hygiene and social isolation.

(b) dysfunction in one or more of the following: work, interpersonal relationships or self-care.

(c) continuous disturbance for at least six months.

(d) mood disorder with psychotic features must be ruled out, as it may cause symptoms similar to those exhibited in schizophrenia.

(e) symptoms not due to substance abuse (APA, 1994, pp. 274-287).

2. Able to give consent, that is, not legally declared incompetent according to the court system. Persons can be declared legally incompetent in two basic areas: financial management and daily affairs.

Declaring someone incompetent to handle their own finances or daily affairs is a legal process during which a severe degree of impairment must be proven. Persons exhibiting this severity of impairment and thus declared incompetent are unable to weigh the possible outcomes of study participation, and thus unable to make an informed choice regarding such participation. Therefore, for human subject protection, such persons were excluded from the study.

3. Returning to a known address after discharge, and into a living situation with telephone access. The study follow-up protocol required that telephone contact be made weekly with each experimental subject, and once each six weeks with each control subject, during the 3-month follow-up period.

4. Fluency in English.

Criteria for excluding subjects from the sample included dual diagnosis (e.g., schizophrenia and substance abuse, or schizophrenia and organic brain disease), and

leaving the hospital against medical advice. Clients leaving the hospital against medical advice do not receive discharge planning and so have no scheduled community follow-up, making the planned study comparisons impossible.

One hundred twenty four subjects were identified who met inclusion criteria for the study. Of these, 37 potential subjects were discharged before they could be approached regarding study participation. Eighty-eight subjects were asked to participate, 48 were enrolled and 39 declined. Forty of the 48 subjects recruited completed the 3-month follow-up. Of the eight subjects (16%) who did not complete the entire 3 month follow-up, five (10%) were lost to follow-up and three (6%) withdrew from the study voluntarily. See Figure 2.

Of the five subjects who were lost, two moved out of the state, one was noncompliant with scheduled follow-up (which prohibited updating telephone records through Community Care records), and two were lost because they were discharged to the local jail. Although these subjects received their prescribed medications while incarcerated (according to staff at the jail) they were not supplied with follow-up appointments when released, nor were their telephone records available to the investigator.

Only three (6%) subjects withdrew from the study. All three were experimental subjects and two were male. The withdrawals occurred between weeks one and six. The reasons given for withdrawals from the study were: "not interested anymore", "questions are too personal", "doing better now and don't need the telephone calls".

Study Site

The care routinely provided to persons with schizophrenia residing in the

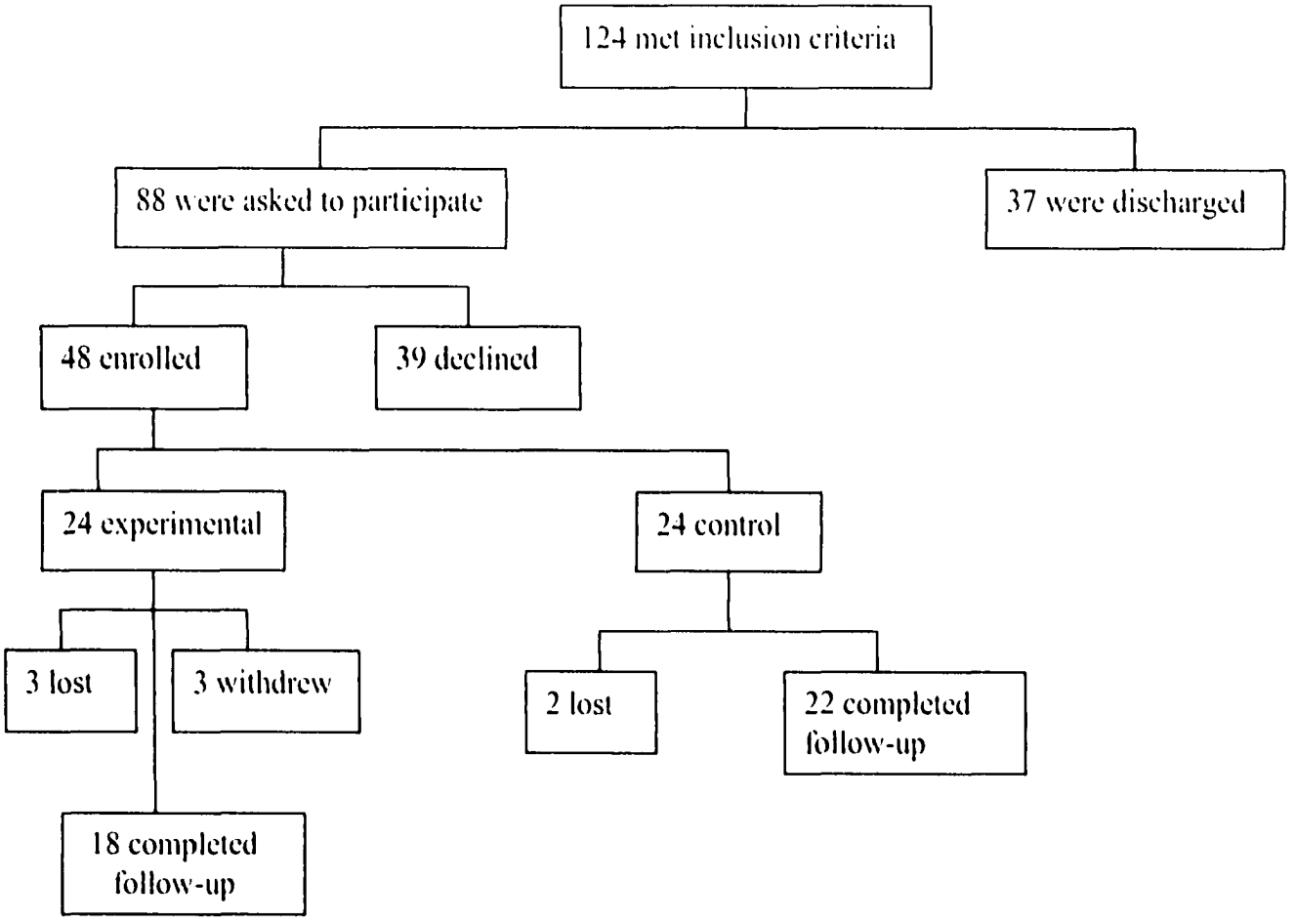


Figure 2. Recruitment and retention of persons with schizophrenia.

community is highly variable. Discharging psychiatrists at the hospital where the study was conducted refer each schizophrenic client to their local community mental health center for follow-up (DeLeon, personal communication, February, 1997). Thus, the inpatient psychiatrist does not see clients for follow up after they leave the hospital Community follow up depends upon services offered in the client's community of residence. There are several urban and rural community mental health centers within a 40-mile radius of the hospital.

The community mental health center in the city where the hospital is located serves approximately a four county area and offers the full range of mental health services to clients of all age and income levels. The mental health services offered include: prevention and education programs, outpatient counseling, a wide variety of programs for the seriously mentally ill, and residential treatment programs, as well a 24-hour crisis intervention program. Services are provided by trained professionals, including: psychologists, psychiatrists/physicians, social workers, and registered nurses.

The following services are available in the county in which the hospital is located: individual, family, and group outpatient counseling; community support programs for patients and significant others dealing with serious mental illness; case management to assist seriously mentally ill individuals with daily living; day treatment; therapeutic rehabilitation for seriously mentally ill individuals; residential facilities, as well as supervised apartments . In addition, each of the other three counties surrounding the county in which the hospital is located provides a full array of individual and group outpatient counseling for adults, children, and families. Each of these three counties also includes structured programs for adults with serious mental illness to assist in

independent living and interpersonal relationships. The sample was limited to subjects residing in the counties described.

Measures

The response variables for the study included community survival, number and length of rehospitalizations, sociodemographic characteristics and symptoms.

Dependent Variables

Survival in the community. This variable was measured in number of days spent in the community during the 3-month study period. Time entering the community was the clock time (in hours and minutes) of hospital discharge; time leaving the community was the clock time (in hours and minutes) of hospital admission. If the subject was not rehospitalized during the 3-month follow-up period, time entering the community was the time of discharge from the hospitalization when the subject entered the study; and continued to accrue until midnight 90 days from the date of hospital discharge.

Length of rehospitalization. The total number of days spent in the hospital during each readmission during the 3-month period was assessed via chart review. The number of days was counted from the time of admission (hour and minute) to the time of discharge (hour and minute) noted on the chart.

Frequency of rehospitalizations. In addition to the length of readmissions, the numbers of admissions to any inpatient psychiatric unit during the study period were counted. Rehospitalization was identified and counted by telephone contact at 6-week and 3-month follow-ups for the control group, and by weekly telephone contact for the experimental group. Record review and consultation with community caseworkers verified reported hospitalizations.

Other Variables

Sociodemographic characteristics. Data were collected on age, gender, employment status, marital status, education, income sources, and race. Data were obtained from record review when subjects entered the study. Correlations of these characteristics with the dependent variables of interest were examined.

Symptoms leading to hospitalization. Since the purpose of the study was to evaluate the effectiveness of community telephone intervention, symptoms leading to hospitalization were assessed as to their amenability to intervention by telephone. Each subject was questioned verbally upon entering the study regarding symptoms that led to hospitalization.

Brief Psychiatric Rating Scale Score. The BPRS was completed by the researcher when subjects entered the study, to facilitate examination of differential responses to intervention based upon level of symptomatology. The BPRS originally was developed to provide an efficient procedure for comprehensive description of major psychiatric symptoms (Overall & Gorham, 1962). It is conducted in a nondirective manner to elicit spontaneous content and behavior using such questions as "How may we be of help to you?" and "Tell me a little more about your illness." Direct probes are then used to invite elaboration over any of the 16 categories not covered by spontaneous speech. Examples of direct probes are: "Has there ever been a time...", or "Has _____ occurred recently?"

Five of the 16 ratings are based upon observation. These include tension, emotional withdrawal, mannerisms and posturing, motor retardation, and uncooperativeness. The remaining ratings are based upon verbalizations and consist of

conceptual disorganization, unusual thought content, anxiety, guilt, grandiosity, depression, hostility, somatic concerns, hallucinatory behavior, suspiciousness, and blunted affect. The interviewer assigns a value of 1 (least) to 7 (most) present for each category (Overall & Gorham, 1962). This provides a separate score for degree of pathology in each of the 16 symptom areas. The simple sum of ratings yields the total pathology score.

Alternatives attempted before hospitalization. The provision of community mental health services has been declining since the 1980's (Thompson, 1984), and psychiatric hospitalization is used due to lack of alternatives for community care. One purpose of this study was to describe the number and types of available community follow-ups for schizophrenic persons.

Length of illness. A more severe and relapsing course of illness is associated with earlier age at onset (Hafner, Maurer, Loffler, & Riecher-Rossler, 1993; Loranger, 1984; Mayer, Kelterborn, & Naber, 1993). McGlashan (1988) reviewed all long-term studies since 1963 whose follow-up period was at least 10 years and concluded that symptom deterioration in schizophrenia appears to plateau within five years after first diagnosis. The relationship of length of illness (in years) and outcome on the dependent variables could not be examined due to difficulty in obtaining this data.

Number and dates of prior psychiatric hospitalizations. Number of prior hospitalizations is significant in predicting rehospitalization in schizophrenic populations (Havassy & Hopkin, 1989; Setze & Bond, 1985). These data were obtained via record review or directly from subjects. The correlation between number of prior hospitalizations and frequency of rehospitalization during the study was examined, then

compared based upon subject group (experimental versus control).

Living arrangements. The living situation to which the subject returned after discharge was described (*alone, with parents, group home*) These data were used to analyze whether living situation was related to intervention response.

Type of scheduled follow-up visits. Follow-up visits may be scheduled for medication evaluation, individual psychotherapy, group psychotherapy, or rehabilitation. These data were obtained during weekly telephone contact with experimental subjects, and verified in community records. For control subjects, these data were obtained from community follow-up records. Number and nature of follow up visits may be related to the need for rehospitalization.

Ratio of follow-up visits scheduled to visits attended. The failure to appear for aftercare appointments is an influential variable in predicting rehospitalization in psychiatric populations (Aviram, 1990; Ford, Young, Perez, Obermeyer, & Rohner, 1992; Goodpastor & Hare, 1991; Schulberg & Bromet, 1982; Seeman, Littman, Plummer, Thornton, & Jeffries, 1982; Solomon, Davis, & Gordon, 1984; Winston, Perdes, Paperkik, & Breslin, 1977). These data were obtained by review of community follow up treatment records. The effect of failure to appear for appointments on the incidence of rehospitalization was explored.

Medication compliance. Medication noncompliance is a significant factor associated with rehospitalization in psychiatric populations (Buchanan et al., 1992; Carpenter, 1985; Goodpastor & Hare, 1991; Green, 1988; Havassy & Hopkin 1989; Miller, Beck, & Fraps, 1984; Setze & Bond, 1985; Ventura, 1992). These data were obtained via self-report so that the correlation between compliance and rehospitalization

could be examined.

Procedure

Subject Recruitment

The recruitment of subjects began in January 1999. Admissions to the hospital were monitored directly. The investigator visited the hospital at approximately 6 p.m. on Tuesdays and Thursdays each week for identification of newly admitted inpatients that met the inclusion criteria.

Human subjects protection. The study procedure was reviewed by the University Institutional Review Board (IRB), as well as the IRB at the recruitment site and the IRB at the community follow-up site. The human subject protection policy of the recruitment site was followed. This policy requires the signature of a qualified mental health professional (QMHP) who is involved in the daily care of the patient. In signing the consent, the QMHP is indicating that, in their opinion, the patient is capable of giving informed consent.

After potential subjects were identified, the investigator met with each individually in a private office on the unit approximately two days before the scheduled date of discharge. Scheduled date of discharge was determined via chart review or staff consultation. This allowed the major portion of hospitalization to be utilized for stabilization prior to recruitment into the study, so that potential subjects were more likely to be oriented, in touch with reality, and able to make informed and comprehending decisions regarding their participation in the study. Written informed consent was obtained from each subject (See form in Appendix C.)

Prerandomization was used to assign subjects into the experimental or control

group prior to their actual recruitment into the study. The randomization procedure began with selecting 50 digits from a table of random numbers. The 51st digit selected was an odd number, so the first 25 digits were assigned to the control condition and the 26th through 50th digits were assigned to the experimental condition. Next, the 50 digits were placed in order from smallest to largest. This order corresponded to the subject numbers 1 through 50. Thus, the subjects were preassigned at random to the experimental or control condition prior to recruitment.

The data collection phase of the study required 14 months to complete, largely due to difficulties in subject recruitment. Although approximately 30 clients with diagnoses of schizophrenia are admitted to the hospital each month (DeLeon, personal communication, February, 1997), 15% of these were ineligible to participate due to lack of telephone access. Another 30% were discharged before they could be approached regarding participation. Finally, 31% of those approached declined to participate.

Risks. The risks to subjects participating in the study were a minimal chance that they might experience discomfort during the weekly telephone intervention while discussing their symptoms and/or psychosocial concerns. With regard to this potential discomfort, Hutchinson, Wilson, and Wilson (1994) noted that interview participants reported the following benefits: catharsis, self-acknowledgement, sense of purpose, self-awareness, empowerment, and healing. Interviewing also provides a voice for the disenfranchised (Hutchinson, Wilson, &Wilson, 1994). Although plans were in place to contact physicians or caseworkers if severe distress was present, this did not occur during the investigation.

Confidentiality. No subject has been identified in any description or publication of this research. All data obtained were kept in locked file cabinets. A potential benefit to subjects participating in the proposed study was receiving a community based nursing intervention by telephone that was designed to reduce the number and length of rehospitalization episodes.

Experimental Condition

The investigator provided experimental subjects, randomly assigned to the intervention, with a private orientation to the intervention immediately after obtaining their written and informed consent. The private orientation served two purposes: beginning the relationship (Peplau, 1952) by building rapport and explaining potential benefits of participation in order to enhance retention, and to explain the intervention in detail. The investigator discussed the following potential benefits: reduction in number of hospitalizations, reduction in length of hospitalizations, and increased time spent in the community. Subject questions or concerns were addressed. Each subject was mailed a gift certificate to a local restaurant after his or her first six weeks in the study. At the conclusion of the 3-month follow-up period, subjects received a second, larger gift certificate and a personal letter of appreciation from the investigator.

Next, the investigator reviewed the intervention protocol with each subject and explained that the responses to the questions would be hand recorded by the investigator at each weekly telephone contact. Rationale for inclusion of items on the intervention protocol was explained. Subjects in the experimental group chose a convenient day and time for their weekly telephone intervention, which began within one week after discharge from the hospital. The investigator telephoned each experimental subject

weekly and provided approximately a 10-minute intervention, using the intervention protocol reproduced below.

Peplau's theory of interpersonal relations in nursing (1952) guided the design of the intervention protocol. Peplau (1952) provided guidance for psychiatric nursing intervention. A key concept of her theory was that, after establishing a relationship, the nurse assists clients to recognize and understand their needs. The nurse facilitates exploration of thoughts and feelings by using open-ended questions. Protocol Questions 1, 5, 6, and 7 are of this type.

The purpose of open-ended questions was to provide the subject with an opportunity to describe recent life events and their responses to these, in order to assess daily coping efforts (O'Connor, 1994), including executive function (McGrath, Scheldt, Welham, & Clair, 1997) and social support (Cresswell, Kuipers, & Power, 1992; Heller, Swindle, & Dusenbury, 1986).

Peplau (1952) conceptualized nursing intervention as proceeding from what clients know and responding to clients' needs. Protocol Questions 2, 3, and 4 were based upon this conceptualization as well as empirical documentation of the usefulness of this information in predicting rehospitalization in psychiatric populations (Aviram, 1990; Buchanan et al., 1992; Carpenter, 1985; Ford et al., 1992; Goodpastor & Hare, 1991; Green, 1988; Havassy & Hopkin, 1989; Miller et al., 1984; Schulberg & Bromet, 1982; Seemanet al., 1982; Setze & Bond, 1985; Solomon, Davis, & Gordon, 1984; Ventura, 1992; Winston et al., 1977).

Peplau emphasized the role of the nurse in keeping clients informed as to the nature of the therapeutic contract (Peplau, 1952). Protocol Statement 8 provided the

opportunity to reinforce this information with each subject. The protocol follows:

Intervention Protocol

1. How are you doing today? (Rationale: Open-ended questions allow the client to identify their most important concerns. This item is supported by *Client-Centered Therapy Theory* (Rogers, 1951) and *Interpersonal Relations Theory* (Peplau, 1952, 1989).

2. Did you have any follow-up appointments scheduled this week? How did that go? (Rationale: The failure to appear for aftercare appointments is an influential variable in predicting rehospitalization in psychiatric populations (Aviram, 1990; Ford et al., 1992; Goodpastor & Hare, 1991; Schulberg & Bromet, 1982; Seeman et al., 1982; Solomon, Davis, & Gordon, 1984; Winston, Perdes, Paperkik, & Breslin, 1977.)

3. Are you having any problems with your medication? What medications are ordered for you? What are the doses and when do you take your medications? (Rationale: Medication noncompliance is a significant factor associated with rehospitalization in psychiatric populations (Buchanan et al., 1992; Carpenter, 1985; Goodpastor & Hare, 1991; Green, 1988; Havassy & Hopkin, 1989; Miller, Beck, & Fraps, 1984; Setze & Bond, 1985; Ventura, 1992).

4. Inquire regarding specific symptoms of illness based upon chart review from hospitalization (may include hallucinations, delusions, insomnia, irritability or others). (Rationale: Care should be individualized to deal with client's specific symptoms and responses to these symptoms. This item is supported by *Interpersonal Relations Theory* (Peplau, 1952).

5. Did anything come up this week that you have questions about? (Rationale: Open-ended questions allow client to identify concerns, and information reduces anxiety. This item is supported by *Client-Centered Therapy Theory* (Rogers, 1951) and *Interpersonal Relations Theory* (Peplau, 1952).

6. Are you worried about anything this week? (Rationale: Open-ended questions allow clients to identify concerns. This item is supported by *Client-Centered Therapy Theory* (Rogers, 1951) and *Interpersonal Relations Theory* (Peplau, 1952).

7. Is there anything else you want or need to tell me today? (Rationale: Open-ended questions allow clients to identify concerns. This item is supported by *Client-Centered Therapy Theory* (Rogers, 1951) and *Interpersonal Relations Theory* (Peplau, 1952).

8. Thank you for your time. I will call you again on (date) _____ at _____ (time) _____. (Rationale: A therapeutic contract serves as a guide to the relationship. This item is supported by *Interpersonal Relations Theory* (Peplau, 1952).

Control Condition

The investigator provided the randomly assigned control subjects with a private orientation to the study immediately after obtaining informed consent. The private orientation served two purposes: to build the relationship (Peplau, 1952) in order to enhance subject retention by building rapport, and to explain the potential benefits of the findings from the study. The potential benefits involved knowledge of effective interventions to reduce the number and length of hospitalizations and increase length of

time spent in the community. Each subject was mailed a gift certificate to a local restaurant after his or her first six weeks in the study. At the conclusion of the 3-month follow-up period, subjects received a second, larger gift certificate and a personal letter of appreciation from the investigator.

Control subjects were contacted by telephone by the investigator approximately 6 weeks and 3 months after their discharge from the psychiatric hospital to obtain information on rehospitalizations and follow-up appointments. They were asked to list the date and institution of any psychiatric hospitalizations that had occurred since they entered the study. Those hospital records were reviewed and the following data collected: date of admission and length of stay in hours and minutes. Community treatment records also were reviewed.

Community treatment records included reports from community health center caseworkers, psychiatrists or therapists. The following data were collected from these records: frequency and nature of scheduled visits, and ratio of scheduled sessions to sessions attended.

Data Analysis

The research hypotheses to be tested were:

1. Subjects who received the telephone intervention would have longer survival in the community (prior to their first rehospitalization) during the 3-month follow up period than subjects in the control group.
2. Subjects who received the telephone intervention would have fewer psychiatric rehospitalizations during the 3-month study period compared to control subjects.
3. Subjects who received the telephone intervention and were rehospitalized for

psychiatric care during the 3-month study period would have shorter lengths of stay in the hospital than control subjects.

Data analysis began with data plots and basic descriptive statistics such as frequency distributions, means, and standard deviations, appropriate for the level of measurement of the variables. The Shapiro-Wilk test statistic for normality of distribution was computed for all relevant variables. To determine if the two groups met the assumption of homogeneity of variances, Levene's test for equality of variances was computed prior to each t-test. If the F test was nonsignificant, the t-test in which equal variances are assumed was used. If the F test was significant, the t-test in which unequal variances are assumed was used. The control and experimental groups were compared for pretreatment equivalence on demographics, length of illness, hospital length of stay, BPRS score, number of prior hospitalizations, and number and classification of medications when entering the study.

Survival analysis was used to test the null of research hypothesis 1. Survival analysis is recommended when subjects enter a study at different times (Wassertheil-Smoller, 1990). First, subjects were placed in order of the time of their readmission to the hospital. The cumulative proportion surviving was the proportion of subjects not rehospitalized through the third month of follow-up.

Subjects remained in the study and continued to be monitored for number and length (in days) of hospitalizations during the 3-month follow-up period, to test Hypotheses 2 and 3 (Sirkin, 1995). One-tailed t-tests for differences in group means were used to examine differences between the group means in the length of rehospitalization episodes to test the null of research hypothesis 2 (Sirkin, 1995). One-tailed t-tests for

differences in group means were used to examine differences between the mean number of rehospitalizations occurring in the two groups during the 3-month follow-up period to test the null of research hypothesis 3 (Sirkin, 1995).

Additional research analyses examined differential responses of subjects based upon various categorical variables. For example, t-tests were used to ascertain whether subject responses differed based upon gender, age category, employment status, and marital status Pearson correlation was used to test the existence strength and direction of relationships between number of hospitalizations during the follow-up period and age. To test correlations between number of hospitalizations and categorical variables, Spearman's rank order correlations were used.

Attrition

Given the nature of the disease schizophrenia, attrition was a potential problem due to the nature of the symptoms, which often include paranoia and lack of emotional involvement with others. Strategies for reducing attrition included a private orientation to the study for each subject immediately after obtaining informed consent. The private orientation was designed to facilitate the development of rapport to enhance retention. Consultation with Community Care Center staff was performed as needed to maintain current telephone numbers for subjects. Face-to face meetings were held one month prior to the start of data collection with staff at the hospital and the Community Care Center to explain the study and answer questions with the hope of securing the cooperation of staff at the agencies through which recruitment and follow-up took place. The above listed measures were quite successful in enhancing retention of subjects. Forty of the 48 subjects recruited completed the 3-month follow-up.

Summary

Recruitment barriers with this population included difficulty in establishing interpersonal relationships due to the nature of the symptoms, which often include paranoia and lack of emotional involvement with others. The anticipated benefits primarily derive from preliminary data (Hunter, personal communication, February, 1997) suggesting the efficacy of telephone support in averting rehospitalization in this population. The primary limitations of the study involved the recruitment of subjects and the nature of the disease schizophrenia. The nature of the disease under investigation results in difficulty establishing interpersonal relationships. The investigator attempted to establish rapport with subjects, drawing upon 15 years of experience in working with mentally ill persons. Attrition also was a potential problem, which was successfully addressed using the approaches discussed above. After their first six weeks in the study, subjects received a gift certificate to a local restaurant as an incentive. At the conclusion of the 3-month follow-up, each subject received a second, larger gift certificate, and a personal letter of appreciation from the investigator.

The sample characteristics, results of hypothesis testing and results of statistical analyses are presented in Chapter 4.

CHAPTER FOUR

Results

The focus of this study was evaluation of the effectiveness of a telephone nursing intervention for increasing the length of stay in the community of persons with schizophrenia. The experimental and control groups were compared in terms of number and length of hospital readmissions and community survival during the three-month follow-up period.

In this chapter, the results of the data analysis are presented as follows: description of sample, pretreatment comparisons of the experimental and control groups, results of hypothesis testing, and other findings. The chapter concludes with a summary of the findings.

Sample Description

A total of 124 patients were identified who met the inclusion criteria for the study. Of these, 37 were discharged from the hospital before they could be approached regarding study participation. Of the remaining 88 patients asked to participate in the study, 48 were enrolled and 39 declined. The majority (n = 32) of patients who declined to participate did not specify their reasons when asked. Of those persons specifying reasons for declining to participate, four said they did not agree with the diagnosis of schizophrenia, and three cited an aversion to contact after discharge. The remaining 48 participants were prerandomized into control (n = 24) and treatment (n = 24) groups.

Of the 48 participants, three experimental and two control (10%) subjects were lost to follow-up. Of the five subjects lost to follow-up, two (one experimental and one control) were incarcerated after hospitalization and received no community follow-up

appointments upon release, one control subject moved out of the catchment area of the local community care center, and two experimental subjects failed to comply with scheduled psychiatric follow-up within the catchment area.

Of the remaining 43 subjects, three withdrew during the course of the study. All three were experimental subjects and two were male. The reasons given for study withdrawal were: "not interested anymore," "questions are too personal," and "doing better now and don't need telephone calls." Chi-square tests of association and t-tests for differences in group means were performed to ascertain if significant differences existed between the completers ($\underline{n}$ = 40) and noncompleters ($\underline{n}$ = 8) of the study. Because at lease one cell of each chi-square test had an expected count of less than 5, Fisher's exact tests were computed. Fisher's exact test compares the cell distribution observed to all possible distributions and reports a significance level. There was no association between group membership (control versus experimental) and completion or noncompletion of the study ($\underline{p}$ = .245). No significant differences between the two groups were found on race ($\underline{p}$ = .63), gender ($\underline{p}$ = .63), employment status ($\underline{p}$ = .5), less than high school education versus greater than high school education, ($\underline{p}$ = .625), married versus other ($\underline{p}$ = .536), psychosis, noncompliance, or violence prior to hospitalization ($\chi^2_{(3)}$ = 1.91, $\underline{N}$ = 48, p = .384), living alone versus with others ($\underline{p}$ = .541), or prescription of typical versus atypical antipsychotic medication upon discharge ($\underline{p}$ = .18). Based upon t-tests for differences in group means, completers and noncompleters did not differ with respect to age, number of prior hospitalizations, BPRS score, number of discharge prescriptions, or length of stay for the admission during which the subject entered the study.

Sociodemographics

The random assignment of subjects to the experimental and control groups resulted in similar groups. The 48 study participants ranged in age from 18-68 years with a mean of 41 (SD = 11.5) years.

Females comprised 25% (n = 12) of the sample. There were six women in the experimental group and six in the control group. This distribution does not reflect the prevalence of the disease, but does reflect the prevalence of hospitalization: 26% of the females and 74% of the males. The prevalence of schizophrenia is similar in both genders (Castle & Murray, 1991), but males suffer higher relapse rates and longer hospital stays than females (Al-Issa, 1993; Meltzer et al., 1997; Salokangas, 1983; Test, Burks, & Wallisch, 1990), thus the higher proportion of males in the hospitalized population. The control and experimental groups did not differ on gender ($\chi^2_{(1)} = .007$, N = 48, p = .935).

Caucasians comprised the majority of the participants (n = 37, 75%), and African-Americans the remainder (n = 11), with five in the control group and six in the experimental group. Of the 48 subjects, 80% received Social Security or Social Security Disability. Ten percent of the sample (n = 5) was employed and worked an average of 30 hours per week. Sources of income for the remaining 43 subjects included family members (n = 3, 6%) and veteran's pensions (n = 2, 4%).

Forty-three percent of subjects were single (n = 21); 35% (n = 17) were divorced and 21% (n = 10) were married. Over one-third of the participants were living with family members at the time of the study (n = 18); 24% (n = 12) were living in group homes and 33% (n = 16) lived alone. Chi-square tests of association revealed that the

control and experimental groups did not differ on marital status ($\chi^2_{(4)}$, N = 48) = 4.17, p = .38) or living arrangement ($\chi^2_{(4)}$, N = 48) =1.66, p = .799).

Educational status was coded as a categorical variable. Although the investigator quantified education in years, nine subjects stated they attended college but were unable to give the number of years attended. The hospital records were nonspecific as to number of years of education. Rather then extrapolate a numerical value for years of education, subjects were grouped into two categories: those with less than a high school education (n = 24, 50%), and those with at least a high school education (n = 24, 50%). The control and experimental groups did not differ in the proportion of subjects with a high school education or beyond ($\chi^2_{(1)}$, N = 48) = 1.73, p = .188).

Psychiatric Background

The number of prior psychiatric hospitalizations for the sample ranged from 0-28 with a mean of 6.4 (SD = 4.6). Of the 48 subjects, 65% (n = 32) had fewer than 10 prior psychiatric admissions and 45% (n = 22) had fewer than 5. There were no significant differences in number of prior psychiatric hospitalizations between the experimental and control subjects.

The Brief Psychiatric Rating Scale (BPRS) scores for the total sample ranged from 20-54 with a mean of 32.85 (SD = 8.1). Control and experimental groups did not differ on mean BPRS score upon their entry into the study.

Symptoms necessitating the hospitalization during which subjects were admitted to the study included delusions (n = 12, 25%), medication noncompliance (n = 11, 23%), hallucinations (n = 9, 18%), paranoia (n = 7, 14%), violence (n = 7, 14%), and other (n = 3, 8%). To test the pretreatment equivalence of experimental and control groups

with respect to this variable, symptoms necessitating hospitalization were categorized into psychotic symptoms, noncompliant symptoms, and violent symptoms. There was no association between symptom type and group membership.

One purpose of this study was to describe the available community treatment alternatives for persons with schizophrenia. The community mental health center in the city where the hospital is located serves a five county area and offers the full range of mental health services to clients of all age and income levels. Thirty-three subjects (68%) resided in within a five-county area surrounding the hospital at which they were recruited. The majority of subjects (n = 43, 88%) did not use these services when the crises leading to their hospitalization occurred. Of those who sought community services prior to hospitalization (n = 5), three saw their psychiatrist, two had medication changes ordered, and two had outpatient appointments.

Of the research participants, 61% (n = 30) were escorted to the hospital by the police. Five subjects (10%) were brought to the hospital by family members, five (10%) by staff members of community programs, and four subjects (8%) came to the hospital alone.

The length of the hospital stay during which subjects entered the study ranged from 11.14 days to 81.86 days with a mean of 31.45 days. Half the subjects (n = 22) had stays less than one month and 43% (n = 18) had stays less than two months. The lengths of these stays were not normally distributed as evidenced by a Shapiro-Wilk statistic of .923, p = .01. A square root transformation of these data normalized the distribution somewhat. The Shapiro-Wilk statistic for the transformed data was .959, p = .212, so the transformed data were used in all the subsequent statistical tests. The experimental and

control groups did not differ on mean length of stay of the hospitalization during which subjects entered the study (t -, N = 48) = -.837, p = .407).

Subjects in the study were discharged with an average of three prescriptions: 58% (n = 28) were prescribed an atypical antipsychotic medication (e.g., Zyprexa), and 17% (n = 8) a typical antipsychotic (e.g., Haldol). Seventeen percent (n = 11) were prescribed both typical and atypical antipsychotic agents. There were no significant differences in the mean number of readmissions for subjects prescribed typical versus atypical antipsychotic agents upon discharge (t ,, n = 36)= -.286, p = .777). Other psychiatric medications prescribed upon discharge were mood stabilizers, antidepressants and antianxiety medications. Nonpsychiatric medications prescribed upon discharge included gastrointestinal medications, vitamin supplements, antihypertensives and antiinflammatory medications (Table 1).

Hypothesis Testing

Community Survival

The first hypothesis stated that subjects who received the telephone intervention would survive longer in the community prior to their first rehospitalization during the three-month follow-up period. Community survival was defined as number of days (after discharge from the hospitalization during which the subject entered the study) until rehospitalization occurred, the subject was lost, or the three-month follow-up period ended. The mean community survival of the experimental group was 69.3 days while the mean community survival of the control group was 78.3 days. The experimental and control groups did not differ in mean length of community survival (t ,, n = 40) = -.901, p = .37).

Table 1. Medications prescribed upon discharge for persons with schizophrenia (N = 48).

Psychiatric medications			Nonpsychiatric medications		
Category	n	%	Category	n	%
Antipsychotic			Gastrointestinal	7	18
Atypical only	28	58			
Typical only	8	17	Supplements	7	18
Typical & Atypical	11	17			
Mood stabilizer	14	33	Antihypertesives	7	18
Antidepressant	9	23	Antiinflammatory	6	15
Anti-Parkinsonian	8	21	Oral hormone	5	13
Antianxiety	3	8	Insulin	2	5

The data were examined further using survival analysis. Survival analysis is recommended when subjects do not enter the study at the same time, and when some observations are censored (Wassertheil-Smoller, 1990). Subjects in which the critical event is not observed are considered to have censored observations. In this study, there were two types of censored observations. Thirty subjects completed the 3-month follow-up without any *actual* rehospitalization and thus were censored. An additional eight subjects had censored observations (they completed the 3-month follow-up without any *observation* of rehospitalization) due to being lost from the study.

The two most common survival analysis methods are the Kaplan-Meier method and the actuarial, or life table, method (Elston & Johnson, 1987). Both methods allow for censoring of observations. The Kaplan-Meier method calculates survival each time the observed event occurs. The actuarial (life tables) method divides the follow-up period into intervals of months or years and calculates survival at each interval (Elston & Johnson, 1987). The Kaplan-Meier approach is recommended in studies involving small numbers of subjects (Dawson-Saunders & Trapp, 1994). An additional advantage of the Kaplan-Meier procedure is that it produces exact survival proportions because it uses exact survival times; while the actuarial method gives approximations because it groups survival time into intervals (Dawson-Saunders & Trapp, 1994). In this study the Kaplan-Meier approach was used to obtain cumulative survival rates and probability estimates for readmission (see Table 2).

Table 2. Actual community survival in days of persons with schizophrenia and estimated probability of hospital readmission (N = 40).

Experimental Group		Control Group	
Community Survival	Readmission Probability	Community Survival	Readmission Probability
7.16	.05	1.00	.04
7.29	.09	3.24	.09
13.18	.14	30.23	.14
21.27	.19	67.04	.17
29.06	.24		

Table 2 presents the number of days to readmission, and the probability of readmission at each of those times for the experimental and control subjects. This table indicates a 9% probability of readmission of experimental subjects after 7.29 days in the community. This probability remained constant until day 13.18, when it increased to 14%. This 14% probability of readmission in the experimental group continued until day 21.27, when it increased to 19%. The probability of readmission of experimental subjects remained at 19% until day 29.06, when it rose to 28%. Control subjects demonstrated a 4% probability of readmission after 1.00 days. This probability of readmission in the control group remained constant until day 3.24, at which time it increased to 9%. The probability of readmission in control subjects remained at 9% until day 30.23, when it reached 14%. The probability of readmission for subjects in the control group was constant at 14% until day 67.04, when it reached its final level of 18%.

The foregoing indicates that the probability of readmission for the experimental subjects was 9% for all subjects during their first eight days in the community. During the first month in the community, the probability of readmission was 24% for experimental subjects (29.06 days) and 14% for control subjects (30.23 days). However, no experimental subject was rehospitalized after the first month of follow-up. The control subjects continued to be rehospitalized during months two and three of the posthospitalization follow-up period.

While 100 % of the experimental subjects survived their first week without rehospitalization, only 91% of the control subjects did. Eighty-six percent of the experimental subjects and 91% of the control subjects survived for two weeks in the community without rehospitalization. In addition, 87% of the control subjects, but only

76% of the experimental subjects, survived their first month in the community.

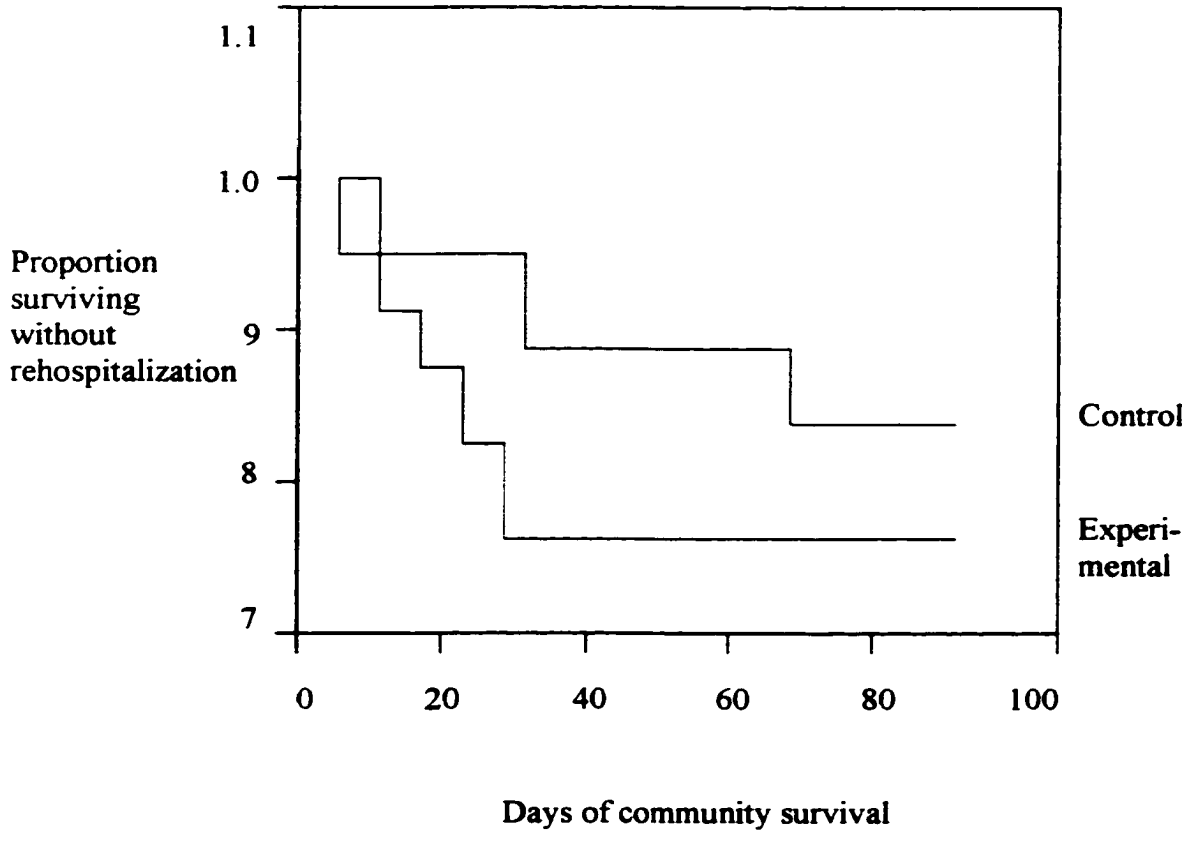
Brief hospitalization increases the risk of readmission during the first month after discharge (Appleby, Desai, Luchins, Gibbons, & Hedeker, 1993), however, there were no differences in the mean initial length of stay between of subjects readmitted during this period compared to those not readmitted ($t_{35,\ n = 40} = .171$, $p = .87$).

The survival curves of the two groups are presented in Figure 3. In a Kaplan-Meier graph, the curve is stepwise because the proportion of patients surviving in the community changes precisely at the point of each rehospitalization. The proportion of experimental subjects surviving in the community remained constant after the first 30 days, while the proportion of surviving control subjects continued to decrease. In the logrank test, the number of observed readmissions in each group is compared to the number that would be expected from the losses in the two groups combined; in other words, the number of expected readmissions if the groups did not differ. An approximate chi-square is then used to test the significance between observed and expected rehospitalizations (Dawson-Saunders & Trapp, 1994). The logrank test statistic of .2 with 1 degree of freedom ($p = .66$) indicated that the differences in these survival curves were not significant; however, these findings have clinical implications that will be discussed in Chapter 5.

Length of Hospital Readmission

The second hypothesis stated that experimental subjects readmitted to the hospital during the study would have a shorter mean length of stay than the control subjects. The mean length of stay of rehospitalized experimental subjects was 26.97 days, compared to 31.05 days for control subjects. The difference in the group means was not significant

Figure 3. Community survival in days of persons with schizophrenia following hospital discharge (N = 38).



(t -, n = 9) = .239, p = .818).

Number of Hospital Readmissions

Hypothesis Three stated that the experimental subjects would have fewer hospital readmissions during the study than the control subjects. During the three-month follow-up period, five experimental and four control subjects were readmitted to the hospital. Two of the nine subjects were readmitted twice during the three-month follow-up period (one experimental subject aged 25 years and one control subject aged 35 years, both males). Experimental and control groups did not differ on the mean number of rehospitalizations (t $_{38}$, n = 40) = .597, p = .55).

The 11 readmissions represent a readmission rate of 28% for this sample. In a review of the literature on readmission, Ram, Bromet, and Eaton (1992) noted that the proportion of readmission was between 40% and 60% for this population. Thus the readmissions among the subjects in the study were appreciably lower than expected. Of the 11 readmissions for both groups, nine (82%) occurred during the first month after discharge and five (45%) occurred during the first eight days after discharge. Of the five readmissions during the first eight days after discharge, three were experimental subjects. None of the three subjects received the telephone intervention prior to being rehospitalized.

Reasons for readmission during the three-month follow-up period included psychotic symptoms and noncompliance with treatment regime. In some cases psychotic symptoms were associated with social and environmental stressors. All of the readmissions for experimental subjects (n = 6) were preceded by psychotic symptoms.

Two-thirds (n = 4) of the readmitted experimental subjects reported difficulties

with prescribed medications. Two subjects indicated a persistence of psychotic symptoms in spite of medication compliance, and two subjects reported noncompliance with medication. One experimental subject was readmitted after experiencing psychotic symptoms associated with social and environmental stressors. This subject reported conflict with family members and was not seen by his community caseworker immediately after discharge due to the high demand for services in the county of residence. Finally, one experimental subject reported psychotic symptoms in the absence of known stressors. Of the five readmissions for control subjects, two (40%) were due to treatment noncompliance (failure to comply with court-ordered appointments), two (40%) were due to psychotic symptoms, and one (20%) was due to violence. Of control subjects readmitted for psychotic symptoms, one was noncompliant with prescribed medications and one reported no known stressors.

To more clearly ascertain the effects of the weekly telephone intervention, the data were examined excluding the three experimental subjects readmitted prior to receiving the intervention telephone call. After excluding these subjects, the mean community survival of the experimental subjects was 78.5 days. The mean community survival of the control group was 78.3 days.

Other Findings

To gather information to help explain the lack of support for the research hypotheses, relationships between selected study variables were examined. Pearson correlations were computed for the following variables, which were reported in the literature to be related to rehospitalizations in persons with schizophrenia: age (Green, 1988; Havassy & Hopkin, 1989), number of prior hospitalizations (Sullivan, Bulik,

Forman, & Mezzich, 1993), BPRS score (Lambert, Sherwood, & Fitzpatrick, 1983), number of discharge medications, number of readmissions (Havassy & Hopkin, 1989; Sullivan, Bulik, Forman, & Mezzich, 1993), length of readmission, and community survival (Kane, Testani, Crilly, Auberger, & Norton, 1992). The correlations are presented in Table 3.

The correlation between number of hospitalizations and age is well documented in the literature (Green, 1988; Havassy & Hopkin, 1989; Sullivan, Bulik, Forman, & Mezzich, 1993; Lambert, Sherwood, & Fitzpatrick, 1983) and supported in this sample. Length of readmission exhibited a small, but significant, negative correlation with age, indicating that a longer length of stay upon readmission was associated with a younger age. Early onset of the disease is more common in males and is associated with poor medication response and negative long-term outcomes (Meltzer et al., 1997). The mean age of subjects readmitted (n = 10) was 36 years, and the mean age of those not readmitted (n = 38) was 41 years (t_{38}, n = 40) = 1.15, p = .255). There were no gender-based differences in mean number of rehospitalizations (t_{38}, n = 40) = .49, p = .63)

A weak but significant correlation was noted between number of medications prescribed upon discharge and age (r = .36, p = .041). Approximately one-third of the discharge prescriptions were for nonpsychiatric medications. The most common nonpsychiatric prescriptions were for gastrointestinal medication, antihypertensives, and antiinflammatory drugs. Conditions such as hypertension and arthritic complaints occur more often in older populations, and could partly account for the relationship observed. In this sample, subjects over the age of 40 years were prescribed an average of 3.3

Table 3. Correlations among variables related to rehospitalization in persons with schizophrenia (N = 48).

Variables	Age	Prior Hospitalizations	Number of Readmissions	Discharge Prescriptions
Age	1.0			
Prior hospitalizations	.40**	1.0		
Number of readmissions	-.34*	-.09	1.0	
Discharge prescriptions	.36*	.07	-.21	1.0

* $p < .05$, ** $p < .01$

medications upon discharge, while subjects younger than 40 years were prescribed an average of 2.3 medications. This difference is significant (t_{33}, N = 48)= -2.23, p = .032). While no difference was noted in the average number of psychiatric medications prescribed upon discharge, more nonpsychiatric medications were prescribed to subjects over the age of 40 years compared to those age 40 and under (t_{31}, N = 48) = -2.14, p = .04).

Number of appointments with community case managers and psychiatrists were monitored for all subjects in the study. The mean appointment compliance was obtained by computing the ratio of appointments made to appointments attended. The number of appointments scheduled with a psychiatrist did not differ between the experimental and control groups (t_{20}, n = 22) = -.49, p = .63). Likewise, there were no significant differences in number of appointments scheduled with case managers for the two groups (t_{19}, n = 22) = 1.34, p = .196). The mean compliance with psychiatrist appointments was 77% for experimental subjects and 88% for control subjects ($t_{13.8}$, n = 21) = -.835, p = .418). The mean compliance with Case Manager appointments was 70% for experimental subjects and 75% for control subjects (t_{21}, n = 23) = -.252, p = .803).

Analysis of Telephone Contacts

Conduct

The 18 experimental subjects were telephoned an average of 14 times (range 1-29), and each one was spoken to an average of 5 times over the three-month follow-up period. While the intervention protocol limited the length of experimental calls to 15 minutes, the majority of calls to experimental subjects were approximately 5-8 minutes in

length. The investigator estimates that approximately four telephone calls to experimental subjects exceeded 10 minutes in length.

The 22 Control subjects were telephoned an average of 4.1 times (range 1-21) over the course of the follow-up period, and each one was spoken to an average of 1.7 times. The approximate length of contact was three minutes per call for control subjects.

Content

The weekly telephone intervention for experimental subjects included assessments of executive function, stressors, stress moderators, and psychiatric symptoms. Specific interventions by the investigator included establishing rapport, encouraging treatment compliance, and the provision of practical and emotional support.

Calls to the control subjects were informational only, and specific interventions were not provided. Control subjects were asked about compliance with discharge medications, attendance at follow-up appointments and whether or not they had been rehospitalized. These data were verified by review of hospital and community care records.

Summary

The total sample readmission rate for this study was 28% (n = 11). The low percentage of hospital readmissions for both the experimental and control groups necessitated performing hypothesis testing on a small number of individuals. Although the hypotheses were not supported, study findings highlight several areas for refining telephone intervention to support persons with schizophrenia living in the community. In particular the survival analysis indicates a high probability of hospital readmission during the first few days post hospital discharge. In addition, the low rate of hospital

readmission and the high rate of compliance with follow-up appointments in both groups of subjects indicate that the control group may have been receiving an alternative experimental intervention. Possible explanations and implications of findings and directions for future research will be explored in the next chapter.

CHAPTER FIVE

Discussion

After evaluating the effectiveness of a telephone nursing intervention for increasing length of stay in the community for persons with schizophrenia, the conclusion is that even a brief telephone intervention may offer potential benefits after hospital discharge. This conclusion is supported by the following findings: (a) the low rate of rehospitalization of all subjects in the study who received any telephone contact, (b) the number of hospitalizations occurring within eight days of hospital discharge and prior to any telephone contact, (c) the high rate of compliance with follow-up of all subjects in the study who received any telephone contact, and (d) no experimental subjects were rehospitalized after the first month of receiving the telephone contact.

Hunter (1997) reported five case studies of persons with schizophrenia who received weekly telephone nursing intervention for three months. The subjects were all women between the ages of 26 and 45. The intervention included nurse-initiated calls at least weekly, and 24-hour telephone access to the nurse during the three-month follow-up period. In all five cases rehospitalization was avoided compared to rehospitalization of 35% of the 14 control subjects. While the telephone protocol differed in the present study, the findings support Hunter's (1997) result of a reduction in rehospitalization among subjects receiving telephone contact.

Burgoyne, Acosta, and Yamamoto (1983) conducted a study ($\underline{N}$ = 617) of telephone prompts designed to increase attendance at psychiatric outpatient appointments. While they demonstrated 49% attendance after telephone calls compared to 29% attendance in subjects not receiving calls ($\chi^2_{(1)} = 11.01$, $p < .01$), these authors

concluded that the increased rates of attendance were likely associated with socioeconomic factors enabling those persons to afford telephones. While the same can be said for the inclusion criteria in this study, possibly the telephone contact also could have increased compliance with follow-up care.

In this chapter, the implications of and possible explanations for these findings will be presented. Limitations of the study will be addressed and recommendations for future research will be discussed.

Implications

The findings from this study have implications for the nursing care of clients with schizophrenia residing in the community. Discussion of implications will be organized according to the theoretical frameworks that guided the inquiry. The Vulnerability Model provided the framework for the study and rationale for the intervention. Biological and environmental models contributed to variable selection and intervention provided, and may help explain the study findings. Biological models include the neurotransmitter model and the executive function model. Environmental models of schizophrenia include stress coping and social support.

Vulnerability Model

The vulnerability hypothesis states that stressors trigger symptoms of disease in vulnerable populations (Rabkin, 1982). In schizophrenia, biochemical vulnerability combines with social and environmental conditions to produce symptoms, which result in decreased community survival. All subjects in the study possessed biologic vulnerability by virtue of the diagnosis of schizophrenia. The vulnerability model postulates that relapse occurs as a result of stressors that are not

successfully moderated. Stress moderating factors assessed during the weekly telephone contact with experimental subjects included biological and environmental factors, social network, social support, and adherence to the treatment regimen. The intervention functioned as a stress moderator, as an individualized intervention was provided to address specific subject concerns which varied from week to week. The most frequent stressors reported by readmitted subjects were biological, and included psychotic symptoms and poor medication response.

Biological Models

The neurotransmitter model focuses on chemical transmission in the brain, postulating that increased dopamine receptor activity results in disease symptoms (Turner, Fedtsova, & Jeste, 1997). Typical antipsychotic medications such as Haldol and Prolixin act primarily to block dopamine receptors and increase dopamine destruction (Cook & Fontaine, 1991), while atypical medications such as Clozaril and Risperdone act against dopamine as well as serotonin (Physicians Desk Reference, 1997). There is growing consensus in the literature that the atypical antipsychotic medication Clozaril is effective in reducing rehospitalizations in patients who do not respond favorably to typical agents (Essock, Hargreaves, Dohm, Goethe, & Hipshman, 1996; Honigfeld & Patin, 1990; Meltzer & Cola, 1994; Pollack, Woerner, Howard, Fireworker, & Kane, 1998). Although 58% (n = 28) of participants were prescribed atypical agents upon discharge, only one study participant was prescribed Clozaril. This 30-year-old female with one hospitalization prior to entry into the study was assigned to the control group and discharged to a personal care home. She was not rehospitalized during the three-month follow-up period.

The above findings underscore the importance of assessing medication response and compliance in schizophrenic persons residing in the community. Given the percentage of subjects who were readmitted due to medication noncompliance or poor medication response (50%), monitoring of these biological stressors may prove valuable in reducing rehospitalization in this group.

Executive Model

The executive model explains schizophrenic symptoms in terms of neurocognitive deficits associated with dysfunction in prefrontal brain systems (McGrath, Scheldt, Welham, & Clair, 1997). While no specific measures were used, executive functioning was evaluated during the weekly telephone intervention which was provided to experimental subjects. Sixty-three percent (n = 15) of the experimental subjects exhibited some difficulty with executive function. Assessments of executive functioning revealed that the experimental subjects had difficulty with the following supervisory executive functions: monitoring of behavior (e.g., marked differences between subject and family report of subject's condition), establishing goal-oriented plans (e.g., inability to generate alternatives for coping with feelings of isolation), and associating prior knowledge with required responses (e.g., reluctance to take medications or comply with follow-up appointments). Although executive ability has been shown to be a useful predictor of community functioning in persons with schizophrenia, in this sample no differences were noted in the readmission rates of subjects with executive function difficulties versus those without. The contact with control subjects did not include assessment of executive functioning.

Environmental Models

Social and environmental conditions were assessed by the collection of demographic data, as well as during weekly telephone contact with the experimental subjects. The contact provided to the control group did not include assessment of stressors or stress moderators.

Stress and coping. Assessments of stressors and stress moderators, and the provision of supportive functions to experimental subjects were based upon stress and coping theory (Lazarus & Holroyd, 1982). Stressors identified by the experimental subjects included psychiatric symptoms (e.g., anxiety, hallucinations, and delusions), financial concerns (e.g., loss of job), environmental stress (e.g., dissatisfaction with living arrangement or isolation), medication side effects (e.g., drowsiness and drooling), lack of knowledge relating to medications prescribed, and difficulties with treatment regime (e.g., missed appointments or difficulty obtaining medications). Only one of the readmitted experimental subjects experienced psychotic symptoms following social and environmental stress.

Assessment of stress moderators took place upon each telephone contact with the experimental subjects. Commonly identified stress moderators included social support in the form of family members or caregivers (n = 14), and medication benefits in the form of reduced symptoms (n = 7). An example of reduced symptoms reported in response to medication was a reduction in number of auditory hallucinations. Teaching clients how to identify and cope with stress is an important nursing intervention, which may have been beneficial to the subjects in this sample.

Social support. Fifty-eight percent (n = 14) of the experimental subjects had

social support consisting of family or caregiver contact. Social support was provided by the investigator during the weekly telephone contact with the experimental subjects in the following ways: identification of self and purpose of call to establish rapport, providing positive reinforcement and encouraging treatment compliance, and maintaining family support. The telephone contacts every six weeks may also have been perceived as supportive by control subjects.

Assistance in maintaining family support was provided when the investigator had an opportunity to talk with subjects' family members when subjects were not available. Information was shared with family members regarding symptoms and course of illness, community resources, and purpose of the study. Family members were given positive reinforcement and encouragement of their efforts to assist their loved ones to cope with their illness in the community. Support was provided in this way to the families of 9 experimental subjects during 29 telephone interventions. Lehman and Steinwachs (1998) suggested that when patients with schizophrenia have ongoing family contact, family members should be provided education and support.

Over two-thirds of the subjects lived with other persons in the home. Living with a spouse, family member, or caregiver provides opportunities for direct social support on a daily basis. These arrangements may have contributed to the subjects' ability to maintain themselves successfully in the community by enhancing their appraisals of illness and decisions about treatment (Heller, Swindle, & Dusenbury, 1986). Cresswell, Kuipers, and Powers (1992) reported a significant correlation between social isolation and frequency of hospital admission in a sample of schizophrenic persons.

Practical and emotional social support was provided subjects as part of the weekly

telephone intervention. Practical support included health teaching related to the nature of schizophrenia, medication side effects and expected effects, problem solving, and generating options regarding treatment, living arrangements, and vocational and social plans. Emotional support was provided via reflections of the subject's emotional state at the time of the telephone call, acceptance of the subject's emotions and verbalizations, and active interest which was conveyed through open-ended questions and specific responses to subject concerns and queries.

Control Condition

Calls to the control subjects were informational only and specific interventions were not planned. The control subjects were asked about compliance with discharge medications, attendance at follow-up appointments and whether or not they had been rehospitalized. Although self-reported mental health service use is generally quite accurate (Golding & Gongola, 1988), these data also were verified by review of hospital and community care records. Even this minimal contact may have been beneficial, as evidenced by the 23% readmission for control subjects, which is considerably lower than the 35-60% readmission noted in the literature for schizophrenic persons (Hunter, 1997; Ram, Bromet, & Eaton, 1992). Specific supportive interventions were not provided during the contact with control subjects, however the telephone contact in itself may have been interpreted as supportive by subjects in this group.

Readmissions of Experimental Subjects

Although differences in length of stay upon readmission failed to reach statistical significance, the telephone intervention may have reduced readmission length of stay for experimental subjects. This may have occurred as a result of investigator communication

with case managers in the community regarding these subjects' worsening symptoms, or because subject coping efforts were improved by the telephone intervention such that they stabilized more rapidly in the hospital environment.

Of the six readmissions occurring in experimental subjects, 50% occurred before the first weekly intervention call was made. Of the three experimental subjects readmitted before receiving the telephone intervention, one reported a poor medication response, one was noncompliant with prescribed medication, and one was unable to receive a follow-up appointment with his community caseworker. Biological models of schizophrenia may explain the first two occurrences, and environmental models the third. It could be that telephone intervention would be helpful in monitoring biological and environmental stressors immediately after hospital discharge, but greater numbers and/or frequencies of contacts may be necessary during the first week.

Community Survival of Experimental Subjects

Another result concerns the survival of the experimental group in the community after the first month. Among subjects receiving the weekly telephone intervention who survived the first month, none were rehospitalized during the remaining two months of follow-up. This indicates that the telephone intervention was more effective at preventing rehospitalization later in the follow-up period, possibly due to the establishment of rapport during the weekly telephone calls.

All intervention calls to experimental subjects and telephone contacts to control subjects were made by the investigator. Consistency of nursing contact was identified by Forchuk et al. (2000) as an important factor in the development of therapeutic rapport within the nurse-patient relationship.

Limitations

Failure to support the research hypotheses is related to sample size and rates of rehospitalization.

Power

The ratio of the difference in means to the standard deviation for the 9 subjects (4 control and 5 experimental) who were readmitted is approximately 0.5. This is considered by Cohen (1988) to constitute a medium effect size. The power of the two-sample t-test to detect a medium effect with a total sample size of 9 is approximately 10% (Cohen, 1988).

Further power analysis indicated that at least 29 readmissions per group would be needed to provide 80% power for detecting statistically significant differences in community survival at the .05 level of alpha (Cohen, 1992). This frequency of the critical event would require a total sample of 320, with 160 experimental and 160 control subjects. While the collection of a sample this large might be feasible, it was beyond the scope of this dissertation research. Data collection was terminated after 15 months, with a final sample of 20 subjects per group completing the three-month follow-up period.

The time period for data collection and small sample size reflect difficulty in subject recruitment, with 44% of those approached declining participation in the study. Possible explanations for this difficulty include the nature of the symptoms of schizophrenia, which often include paranoia and lack of emotional involvement with others. The possibility that paranoia may have led to refusal to participate is supported by the fact that, of the 39 (44%) persons approached who declined, 32 refused to specify their reason, even when directly questioned. This suggests that potential participants with

greater severity of illness (and perhaps higher rates of rehospitalization) may have self-selected out of the study.

The development of rapport with participants may have impacted the study findings. To participate and complete the follow-up, subjects needed some degree of relationship with the researcher and the person providing the telephone intervention and contact. Since the researcher did not function in a clinical role at the hospital where recruitment took place, opportunities to develop rapport were limited. Generally the potential participants were meeting the investigator for the first time when approached regarding study participation. The fact that all the readmissions of experimental subjects occurred during the first month of follow-up may be related to lack of rapport. It is possible that, after subjects became familiar with the investigator through receiving the weekly calls, the intervention began to effectively moderate their stress and resulted in successful community survival during Months 2 and 3 of the study. Control subjects were telephoned every six weeks and thus had no contact with the investigator during their first month in the community.

Attrition also affected the statistical power of this study. Five subjects were lost during the three-month follow-up period and three subjects withdrew from the study. While these numbers are small, subject loss resulted in a significant reduction (17%) in the original sample of 48 subjects.

Impact Upon Readmissions

The results of the study indicate that the control condition possibly was an intervention as well as the experimental condition. Although briefer in length and without focus on the identification of stressors and provision of individualized

intervention, the telephone contact with control subjects may have provided support after hospital discharge that led to greater compliance with follow-up care, and thus lowered rehospitalizations to 28% from the 35-60% of readmission reported in the literature (Hunter, 1997; Ram, Bromet, & Eaton, 1992). The lack of significant differences between the experimental and control groups in number and length of rehospitalizations also indicate that the telephone intervention was the experimental variable regardless of protocols for the experimental and control conditions.

The readmission of subjects in the study was 28%, considerably lower than percentages noted in the literature for this illness (Hunter, 1997; Olfson et al., 1999; Ram, Bromet, & Eaton, 1992). Other than the telephone contacts, possible explanations for the relatively low rate of readmission in the sample include community support, inclusion criteria, living arrangements, and aftercare compliance. The latter may well have been enhanced by the telephone contacts to the control as well as the experimental subjects.

Community Resources

Community support is of extreme importance in facilitating the stability of persons with schizophrenia. Over two-thirds of the subjects in the study resided in counties that provided identical support services. The telephone intervention for experimental subjects and telephone contact for control subjects were additions to the community support programs already in place. The mental health services offered include prevention and education programs, outpatient counseling, a wide variety of programs for the seriously mentally ill, and residential treatment programs, as well a 24-hour crisis intervention program. Services are provided by trained professionals, including psychologists, psychiatrists/physicians, social workers, and registered nurses.

Prevention and educational programs for adults with chronic mental illness include community support programs and case management, which are provided on an individual basis. In addition, the following outpatient groups are available: day treatment groups for those in acute distress, occupational training, and training in interpersonal and daily living skills.

Residential options include numerous personal care homes and supervised apartments in the five county area. A therapeutic rehabilitation program is available to provide support to clients residing in supervised apartments. In addition, the 24-hour crisis line provides continuously available assessment and disposition within the five county area.

Although these services were little used prior to the initial hospitalization during which subjects were admitted into the study ($\underline{n}$ = 5, 10%), they could have played a part in the low number of rehospitalizations of subjects during the three-month follow-up period. Unfortunately, data on the community services used prior to rehospitalization during the study were not collected.

The relatively low number of rehospitalizations in the sample may also be related to the study inclusion criteria. To participate, subjects were required to be discharged to a known address with telephone access. The inclusion criteria for this study eliminated a subset of potential participants who were either homeless, unable to afford a telephone, or whose living arrangements were unknown at time of discharge.

Compliance with community psychiatric care also may have contributed to the relatively low percentage of rehospitalizations in this sample. The greater numbers of follow-up contacts with community caregivers would provide opportunities for symptom

assessment and direct, face-to-face intervention, facilitating community stability. While the correlation between appointment compliance and readmissions was not significant, this finding suggests that telephone intervention or contact could lead to higher compliance with case management appointments for people with schizophrenia discharged to the community.

Experimental Conditions

In addition to sample size, the choice of dependent variables may partially account for the failure to support the hypotheses. The intervention may have had positive effects other than increased community survival. Perhaps the intervention enhanced some other aspect of daily functioning (e.g., self-esteem or decision-making), not quantified in the present inquiry.

Another possibility is that the design or application of the intervention was not sufficiently refined in this study. In this sample, 45% of the hospital readmissions (for the total sample) occurred during the first eight days after discharge, and 81% occurred within the first month. This finding seems to indicate that earlier, and perhaps more vigorous intervention is needed during the first month after hospital discharge. For example, calls may need to be made every other day during the first week after discharge, and gradually tapered as community survival increases.

Length of Follow-up

It is possible that the three-month follow-up period was insufficient to demonstrate the effect of the intervention. Notable is the fact that the experimental subjects had no readmissions after their first month in the community, while the control subjects (receiving only brief telephone contact) continued to experience readmissions.

While not statistically significant, the experimental subjects who were telephoned each week may have established trust and rapport with the investigator during the first four weeks, which promoted community survival after the first month.

Research Recommendations

In the present inquiry, the sample size was too small to demonstrate research effects with confidence. Future studies should focus on increasing the sample size as much as time and resource constraints allow. Measures need to be taken to increase the recruitment of subjects and maximize retention once subjects are enrolled. Recruitment should take place daily instead of twice a week to reduce the number of subjects discharged before being approached regarding study participation. Recruitment might also be increased if the investigator is familiar to potential subjects prior to their entering the study. Intervention effects would be more easily detected if the sample included only subjects at high risk for readmission, but such a condition may make subject recruitment more difficult. Perhaps schizophrenic persons with two or more admissions during the previous three-month period would be sufficiently high risk for readmission events and also amenable to study participation.

Determining community supports used by subjects during the study would help assess and compare the benefits of a brief telephone contact and a more intensive telephone intervention. The use of community services could then be compared between types of telephone contact and between subjects readmitted and those not readmitted.

Study findings suggest that several modifications of the telephone intervention need to be explored. A future study could compare brief, informational telephone contact to a more intensive, theory based telephone intervention. Based upon the high number of

rehospitalizations occurring during the first month after discharge, the telephone intervention could be increased during this time period and gradually calls could be reduced as community stability was achieved.

Another possibility would be to provide more frequent calls to subjects living alone and therefore lacking day-to-day contact with others. Social isolation has been correlated with increased risk of readmission in schizophrenic populations (Cresswell, Kuipers, & Powers, 1992).

Including items to address the most common complaints and concerns identified in this study could further refine the telephone intervention. Frequently reported stressors included psychiatric symptoms, financial concerns, environmental stress and medication side effects. Information about these common concerns could be incorporated into the intervention calls.

Finally, the findings seem to show that the three-month follow-up period was inadequate to demonstrate the effect of the intervention. Readmission studies use follow-up periods between three months and five years (Buchanan et.al., 1992; Sullivan, Bulik, Forman, & Mezzich, 1993; Ventura, 1992) for schizophrenia. Increasing the follow-up period to six months would provide more opportunity for readmissions to occur and permit long-term evaluation of the outcomes from the intervention.

Summary

The purpose of this study was to evaluate the effectiveness of a telephone nursing intervention in improving outcomes for persons with schizophrenia. The sample consisted of 48 persons hospitalized with a diagnosis of schizophrenia, and discharged into the community. Subjects were randomly assigned to the experimental group, which

received the telephone intervention weekly, or the control group, which received an informational follow-up call at 6 weeks and 12 weeks. Subjects were followed for three months, and community survival, as well as the number and length of readmissions were compared.

None of the hypotheses were supported. Control and experimental groups did not differ on length of community survival, number of hospital readmissions, or length of stay upon hospital readmission.

As reported in other studies, the first month after discharge is one of high risk for readmission in persons with schizophrenia. While these preliminary data suggest that the telephone intervention was successful in fostering community survival after the first month, replication with a larger sample is required. In addition, more research is needed to refine the intervention if it is to demonstrate effectiveness during the high-risk period immediately after hospital discharge.

Appendix A

Results and Discussion of

Measuring Length of Stay in Schizophrenic Populations

Lora Beebe

NUR 688

UNIVERSITY OF KENTUCKY

Research and Graduate Studies

Research Subjects Office
316 Kinkead Hall
Lexington, Kentucky 40506-0057
Medical IRB 606-257-8295
Non-Medical IRB 606-257-3138
IACUC 606-257-2934

EXEMPTION CERTIFICATE SIGNATURE PAGE

IRB # 97-22023 P.I.'s Last Name: Payne

Institutional Review Board: (X) Medical ( ) Non-Medical

Title of Protocol: Length of Hospital Stay for Persons with Schizophrenia

IRB Reviewer's Comments:

Exemption Status:

(X) Approved ( ) Additional Information Required

( ) Disapproved*

*The P.I. has the option of re-submitting the protocol for full review

[redacted]

IRB Representative

3-17-97

Date

ECSP/rso/peggy
(5/96)

INTRODUCTION

A retrospective review of 30 charts of patients treated for chronic schizophrenia in the Admission Unit of a Local State Psychiatric Hospital was conducted. Hourly length of stay was computed for each subject using the following methods:

(A) Absolute numbers of hours from time of admission to time of discharge; and

(B) Adjusted number of hours, counting 12 hours for admission and discharge days, and 24 hours for each day in between.

The research question was:

Are there statistically ($p<.05$) significant differences is the means of hourly measurements obtained by the two methods?

An additional objective was examination of data parameters for dissertation. The data collection form is reproduced below.

DAR+TA COLLECTION INSTRUMENT RETROSPECTIVE CHART REVIEW

LENGTH OF HOSPITAL STAY FOR PERSONS WITH SCHIZOPHRENIA

ID#_____

Length of stay in days _____ In hours _____

Length of time since first diagnosis of schizophrenia _____

Number of admissions for treatment of schizophrenia _____

Discharge disposition _____

Discharge orders _____

Follow-up type: Private Psychiatrist _____ Comprehensive Care _____ Other ____

RESULTS AND DISCUSSION

Table I shows the results of length of stay measurement, as well as the mean length of stay across the 30 subjects using the absolute and adjusted methods. Differences in the means were examined using a two-tailed paired difference t-test (Sirkin, 1995). Although originally a 2-tailed test was planned, visual examination of the data recommended a one-tailed test. The hypotheses were:

H0: The hourly means are equivalent regardless of measurement method.

H1: The absolute hourly means are greater than the adjusted hourly means.

With an obtained t of 13.7 we reject the null hypothesis and conclude that statistically significant ($p<.001$) differences exist between measures of length of stay using the two methods. The absolute hourly means are significantly greater than adjusted means.

Table 1. Absolute and Adjusted Length of Stay in Hours (* = missing data)

Subject	Absolute LOS	Adjusted LOS	Difference
1	1800	1176	24
2	*	168	*
3	404	384	20
4	227	192	35
5	32.5	24	8.5
6	694.5	672	22.5
7	89	72	17
8	566	552	14
9	857	840	17
10	1343	1320	23
11	405	384	21
12	1074	1032	42
13	1119	1104	15
14	*	1800	*
15	646	624	22
16	1868	1848	20
17	*	552	*
18	260.5	240	20.5
19	*	96	*
20	281	264	17
21	446.5	432	14.5
22	227.5	216	11.5
23	294.5	288	6.5
24	138.5	120	18.5
25	230	216	14
26	493	1176	178
27	474.5	456	18.5
28	236	216	20
29	501.5	480	21.5
30	497.5	480	17.5
mean	611.8	580.8	31

Table 2 lists the discharge disposition of all subjects. To ascertain if discharge disposition might have affected length of stay, one-way ANOVAs were computed. This method is preferable to a series of t-tests for comparison of the various discharge

destinations, because each time a t-test is done, the overall rate of Type I error (the rejection of a true null hypothesis) increases.

In each ANOVA, the model was absolute length of stay = discharge destination. The four missing absolute length of stay values were calculated by adding the mean difference to those subjects' adjusted lengths of stay. Thus, the calculated absolute lengths of stay were as follows for the missing values:

Subject	Calculated Absolute LOS(hours)
2	187.2
14	1819.2
17	571.2
18	115.2

Table 2. Discharge disposition of subjects.

Destination	Number of subjects	Percent
Home Alone	11	37
Home with family	8	27
Personal care home	5	17
Jail	3	10
Homeless shelter	1	3
Unknown	2	6
Total	30	100

Two ANOVAs were completed. In the first, discharge destination was assigned a number as follows:

1 = home alone
2 = home with family
3 = personal care home
4 = other (jail, homeless shelter, and unknown). This model was nonsignificant.

In the second Anova, discharge destination numbers were assigned as above, but only observations on subjects in the first three categories were utilized. This model was also nonsignificant.

While it is likely that these findings reflect actual equivalence in length of stay across various discharge destinations, other explanations are possible. The limited number of subjects in each category makes it more difficult to obtain a significant result. These results should be viewed with caution until supported by examination of a larger sample.

Additional Findings

After examination of data plots, means and standard deviations, simple correlations were computed for age, number of medications prescribed upon discharge, number of previous admissions to the facility, and adjusted length of stay. Adjusted length of stay was utilized since no values were missing. Only the correlation between length of stay and number of medications prescribed upon discharge (.42) was significant ($p = .020$).

In addition to the primary goal of answering a measurement question related to length of stay in schizophrenic populations, this chart review presented an opportunity to examine other data parameters relating to the planned dissertation. For each subject, the following data were gathered:

- Length of illness (schizophrenia). Although included on the data collection form, these data were not recorded on any of the records reviewed.
- Number of hospital admissions for the treatment of schizophrenia. Only the number of previous admissions to this particular facility was recorded. The reason for previous admissions was not noted. The number of previous admissions in the sample ranged from 1-24 with a mean of 6.8.
- Discharge disposition (home, personal care, or other facility). Sixty-four percent

of all subjects returned home, either alone or with family. Seventeen percent were discharged to personal care homes, and 10% to the local jail.

- Discharge orders. Of 30 subjects two were discharged with no medications ordered, one Absent Without Leave (AWOL) and one to home. Another subject who was discharged Against Medical Advice did have medication orders telephoned to a local pharmacy. Of those subjects leaving with discharge orders (n = 28) only three subjects were discharged with one medicine prescription. The range of prescriptions ordered was 1-5 with a mean of 2.5 prescriptions. The most commonly prescribed medications were Haldol (11 subjects; 7 po and 4 IM) and Cogentin (13 subjects) followed by IM Prolixin (8 subjects). See Table 3.
- Type of follow-up (Private physician versus Comprehensive Care Center). Follow-up type for each subject is listed in Table 4.

Table 3. Discharge Medication Orders

Medication Classification	Number of Subjects
PO Antipsychotic	17
Antiparkinsonian	14
IM Antipsychotic	12
Vitamin and Iron Supplements	6
Diuretic Antihypertensive	5
Antiepileptic	5
Antidepressant	3
Mood Stabilizer	3
Antiglaucoma Agent	1
Coronary Antiarrhythmic	1
Insulin	1
Antacid	1
Antianxiety Agent	1
Stool Softener	1

Table 4. Follow-up type.

Type of follow-up	Number of subjects	Percent
Comprehensive Care	27	90
None	2	7
VA	1	3
Total	30	100

Table 4 lists the type of follow-up ordered for each subject upon discharge, along with the number of subjects in each category. Since research subjects must have follow-up[ordered at the Comprehensive Care Center, this information provides the writer with an estimate of numbers of subjects who will be eligible to enter the study based upon this inclusion criteria. Aside from two AWOL discharges without follow-up, all 27 subjects (except one veteran) had follow-up ordered at Comprehensive Care. The dissertation plans involve possible reviews of community treatment records for experimental and control subjects. This requires the support and cooperation of community providers as well as additional consents by the subject. This is important information as the investigator begins to make linkages to the most commonly used community follow-up agencies and providers.

The collection of discharge orders is also of value for the intervention portion of he study. The semistructured format will guide the intervention, and includes the following item treated to the subjects' discharge medication orders:
"Item #3. Are you having any problems with your medication?" As Table 3 indicates, this item applies to over 90% of all subjects in the sample.

Based upon visual examination of the data and the significant correlation between

length of stay and medications prescribed at discharge the investigator hypothesized that subjects who were prescribed greater numbers of medications upon discharge would have a longer length of stay than subjects who were prescribed fewer numbers of medications. In order to test this hypothesis, the data set was divided into subjects prescribed 2 medications or less upon discharge (n = 18) and subjects prescribed 3 medications or more upon discharge (n = 12). See Table 5.

An independent one-tailed ttest was utilized to examine the differences between the two mean lengths of stay. The hypotheses were:

H0: The mean lengths of stay are equivalent regardless of number of medications prescribed upon discharge.

H1: The mean length of stay of those prescribed 3 or more medications upon discharge is greater than the mean length of stay of those prescribed 2 medications or less upon discharge.

With an obtained t of 2.01 we reject H0 ($p<.05$) and conclude that the mean length of stay is greater among those subjects who were prescribed 3 or more medications upon discharge from the hospital.

One possible explanation of this finding is greater severity of illness (either physical or psychological, or both) in those prescribed greater numbers of medications, resulting in an increased length of stay in this group of subjects. It seems reasonable to conclude that adjustment of e=several types of medications in combination would require more time in the hospital for monitoring of side effects and medication interactions. A t-test for differences in mean age between the groups receiving 2 or less and 3 or more medications upon discharge revealed no significant result. It appears that the effects of

number of prescribed medications on length of stay are independent of age and age related physical ailments, which would necessitate polypharmacy.

Table 5. Mean adjusted length of stay by number of medications prescribed upon discharge.

Number of meds	Number of subjects	Mean subject age	Mean LOS (hours)
2 or less	18	38.2	449.3
3 or more	12	43.1	828
		t=1.1(not significant	

LIMITATIONS

The primary limitations of this report involve the small sample size and retrospective nature of data collection. It is possible that statistical errors occurred due to the inadequate sample size. Cohen (1992) recommended an N of 393 to detect a small effect size at Alpha=05 and Power=80. Power is the probability of rejecting a false null hypothesis (Cohen, 1992). Unfortunately, time and resource constraints prohibited examination of such a large sample.

Research reviews of existing data present data collection as well as reliability issues. Often existing data rare missing or incomplete as was the case with absolute length of stay (4 subjects), number of facility admissions (4 subjects), discharge disposition (2 subjects), discharge orders (1 subject) and follow-up orders (1 subject). In addition, charts as data sources include wide variability based upon the staff members recording the information. To deal with this limitation, the investigator followed identical chart review procedures for each subject, and made note of missing observations where necessary.

CONCLUSIONS

Based upon this sample, the investigator concludes that the use of adjusted length of stay would significantly underestimate this value, and thus, plans to calculate absolute length of stay during pilot and dissertation data collection. The information gleaned regarding the relationship between length of stay and number of medications prescribed upon discharge will also be useful in examination of future data. It appears from this chart review that the majority of clients discharged from the facility with a diagnosis of schizophrenia will meet the study inclusion criteria of Comprehensive Care follow up (90%). The mean age of this sample was greater than expected (40.2), and only 575 of the subjects were below 40 years of age (Original inclusion criteria was age between 18 and 40 years). The investigator will explore the option of including subjects up to the age of 51 in order to facilitate recruitment.

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APPENDIX B

TELEPHONE INTERVENTION PROTOCOL AND RATIONALE

Telephone calls will be made by the investigator from her residence. Each experimental subject will schedule the date and time for their weekly telephone call. Each call will last not longer than 15 minutes. The call will begin with the investigator identifying herself and her research role. The following questions will be asked each time the subject is called, and the responses will be recorded by hand.

1. How are you doing today? (Rationale: Open-ended questions allow the client to identify their most important concerns. This item is supported by widely accepted Client-Centered Therapy Theory (Rogers, 1951) and Interpersonal Relations Theory (Peplau, 1952).
2. Did you have any follow-up appointments scheduled this week? How did that go? (Rationale: The failure to appear for aftercare appointments is an influential variable in predicting rehospitalization in psychiatric populations (Aviram, 1990; Ford, et.al., 1992; Goodpastor & Hare, 1991; Schulberg & Bromet, 1982; Seeman, et. al., 1982; Solomon, Davis & Gordon, 1984).
3. What medications are ordered for you? What are the doses and when do you take your medications? Are you having any problems with taking your medicine? (Rationale: Medication noncompliance is a significant factor associated with rehospitalization in psychiatric populations (Buchanan, et.al., 1992; Carpenter, 1985; Goodpastor & Hare, 1991; Green, 1988; Havassy & Hopkin, 1989; Miller, Beck & Fraps, 1984; Setze & Bond, 1985; Ventura, 1992).
4. Inquire regarding specific symptoms of illness based upon chart review from hospitalization (may include hallucinations, delusions, insomnia, irritability or others). (Rationale: Care should be individualized to deal with client's specific symptoms and responses to those symptoms. This item is supported by Client Centered Therapy Theory (Rogers, 1951) and Interpersonal Relations Theory (Peplau, 1952).
5. Did anything come up this week that you have questions about:? (Rationale: Open-ended questions allow client to identify concerns, information reduces anxiety. This item is supported by Client Centered Therapy Theory (Rogers, 1951) and Interpersonal Relations Theory (Peplau, 1952).
6. Are you worried about anything this week? (Rationale: Open-ended questions allow client to identify concerns. This item is supported by Client Centered Therapy Theory (Rogers, 1951) and Interpersonal Relations Theory (Peplau, 1952).
7. Is there anything else you want or need to tell me today? (Rationale: Open-ended questions allow client to identify concerns. This item is supported by Client Centered Therapy Theory (Rogers, 1951) and Interpersonal Relations Theory (Peplau, 1952).
8. Thank you for your time. I will call you again on___ (day) ___at ___ (time) _____. (Rationale: A therapeutic contract serves as a guide to the relationship. This item is supported by Interpersonal Relations Theory (Peplau, 1952).

APPENDIX C

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Bluegrass Mental Health/Mental Retardation Board, Eastern State Hospital, University of Kentucky, College of Nursing

TITLE OF STUDY: Community Nursing Support for Schizophrenic Clients

INVESTIGATOR INFORMATION: Lora Beebe, MSN, RN ([redacted]

I, _____, have been asked to participate in the research conducted by Ms. Lora Beebe, MSN, RN, under the direction of Dr. Margaret Grier and Dr. Ann Peden, faculty members in the University of Kentucky College of Nursing. Other project staff who work with them as study staff may assist or act for them.

PURPOSE:

I understand that I have schizophrenia. The purpose of this study is to see if a nurse talking to me over the telephone will be helpful to me after I am discharged from the hospital. The researchers will compare the usual follow-up appointments, treatments, and care I receive plus a nurse talking to me over the telephone to my usual follow-up appointments, treatments, and care.

DURATION AND LOCATION:

I understand that about 60 people who have schizophrenia will participate in this study. My participation in this study will last for about three months after I leave the hospital. If I agree to take part, I have an equal chance of being assigned to Group 1 or Group 2. Both groups will receive the usual follow-up appointments, treatments, and care, and both groups will be contacted by telephone at different times for three months after hospital discharge. The telephone calls will not last longer than 15 minutes each. Should I wish to talk longer than 15 minutes, I will be referred to my case manager, therapist, or other staff at Bluegrass Mental Health/Mental Retardation Board. Information also will be collected from my Eastern State Hospital and Bluegrass Mental Health/Mental Retardation Board records. I understand that if I consent to participate, the researcher may contact my doctor, therapist, or other staff at Bluegrass Mental Health/Mental Retardation Board for about three months after I leave the hospital.

PROCEDURE:

About 30 people will be assigned to Group 1. If I am in Group 1, I will receive the usual follow-up appointments, treatments, and care. In addition, I also will be contacted by

telephone in 6 weeks and 12 weeks after my hospital discharge. When I am called I will be asked if I have been hospitalized for psychiatric treatment since I entered the study. If so, I will be asked the date and location of the hospital. I may also be asked about my follow-up clinic and doctor appointments, and if I kept them; and about my medications and if I took them. Ms. Beebe will write down my answers to these questions.

About 30 people will be assigned to Group 2. If I am in this Group, I will receive the usual follow-up appointments, treatments, and care. In addition, I will be contacted by phone by Ms. Beebe once a week on a day and time I choose. Each phone call will last 15 minutes or less. We will talk about my medications, my follow-up clinic and doctor appointments, and anything else I need to discuss or questions I need to ask about my illness and how I'm doing. Ms. Beebe will take notes during the conversation.

EXCLUSIONS:

I should not participate in this study if I have a second psychiatric diagnosis along with schizophrenia, have others legally making decisions for me, or have no telephone. I will not be able to participate if I leave the hospital against the advice of my doctors.

RISKS/DISCOMFORTS:

There are no physical risks to those participating in this study. I may experience strong emotions as a result of talking to the nurse over the telephone about how I am doing. Ms. Beebe may refer me to my doctor, case manager, or therapist at Bluegrass Mental Health/Mental Retardation Board if during the study I experience strong emotions and want additional help.

ALTERNATIVES:

If I choose not to participate I will receive the usual follow-up appointments, treatments, and care. My decision whether or not I choose to participate in the study will not affect my care. Study participation involves a nurse talking to me over the telephone in addition to my usual follow-up appointments, treatments, and care.

BENEFITS:

I understand that there may be no personal benefit to me from my participation in this study. The purpose of the study is to see if a nurse talking to me over the telephone in addition to the usual follow-up appointments, treatments, and care will help in my treatment for schizophrenia.

CONFIDENTIALITY:

My conversations and any information I provide will not be shared with anyone unless I need additional treatment. The researcher and her supervisors will be allowed to inspect sections of my medical and research records related to this study. All study records will

be placed in a locked cabinet accessible only to the researcher. The information from the study may be published, but I will not be identified by name. My identity as a research subject will remain unknown unless I am threatening to harm myself or someone else.

PAYMENT TO PARTICIPANTS:

I will receive no money for being in this study.

RIGHT TO REFUSE OR WITHDRAW:

I understand that I do not have to take part in this study. If I decide not to participate I will not be penalized and I will not lose any rights to which I am entitled. I may withdraw from this study at any time and it will not affect the care I receive.

I understand that the researcher has the right to withdraw me from the study at any time. I understand that my withdrawal from the study may be for reasons related to me (e.g., symptoms worsening) or because the entire study has been terminated.

OFFER TO ANSWER QUESTIONS:

I have had a chance to ask questions and my questions have been answered. If I have any further questions about my rights as a research subject, I may call the UK Research Subjects Office at [redacted]. If I have further questions about the study, I may call Lora Beebe at [redacted]. If I become upset as a result of talking to the nurse on the telephone I may call Dr. Ann Peden at [redacted].

SIGNATURES:

I understand my rights as a research participant and I voluntarily consent to participate in this study. I understand what the study is about and why it is being done. I will receive a copy of this consent form.

_____ _____

Signature of research participant Date

_____ _____

Signature of witness Date

As a Qualified Mental Health Care Professional (QMHP) closely involved in the long term care of this patient, I understand what this study is about and how and why it is being done. In my opinion this patient is capable of giving informed consent for this study.

_____ _____

Signature of QMHP Date

_____ _____

Signature of researcher Date

UNIVERSITY OF KENTUCKY
Research and Graduate Studies

Office of Research Integrity
315 Kinkead Hall
Lexington, KY 40506-0057
www.rgs.uky.edu/rso/homepg.htm
Nonmedical IRB: (606) 257-3138
Medical IRB: (606) 257-9315
FAX: (606) 257-2934

Continuation Review	Approval Ends	Project Ends	IRB Number
Extension Approved	October 24, 2000	June 1, 2000	97-30333

TO: Lora Payne, M.S.N.
Nursing
315 College of Nursing
0232

FROM: Chairperson/Vice Chairperson
Medical Institutional Review Board (IRB)

SUBJECT: Approval of Protocol Number 97-30333

DATE: October 25, 1999

On October 25, 1999, the Medical Institutional Review Board approved your protocol entitled:

Community Nursing Support for Schizophrenic Clients

This approval extends to any consent/assent document unless the IRB has waived the requirement for documentation of informed consent.

Approval is effective from October 25, 1999 until October 24, 2000. If applicable, attached is the IRB approved consent/assent document(s) to be used when enrolling subjects. [Note, subjects can only be enrolled using consent/assent forms which have a valid "IRB Approval" stamp unless special waiver has been obtained from the IRB.] Prior to the end of this period, you will be sent a Continuation Review Report Form which must be completed and returned to the Office of Research Integrity so that the protocol can be reviewed and approved for the next period.

In implementing the research activities, you are responsible for complying with IRB decisions, conditions and requirements. The research procedures should be implemented as approved in the IRB protocol.

Attached for your review is a booklet describing investigator responsibilities after IRB approval has been obtained. Please read the information carefully and retain a copy for your files. If you have questions or need additional information, contact the Office of Research Integrity at [redacted] (Medical) and [redacted] (Nonmedical).

[redacted] 10/18/99

Chairperson/Vice Chairperson

An Equal Opportunity University

DEC-01-99 WED 10:18 OFF SPON PRGM DEVELOPMNT FAX NO. 8086278353 P.01

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VITA

NAME: Lora Humphrey-Beebe

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EDUCATION:

1987	BS, Nursing, Marshall University, Huntington, WV
1989	MS, Nursing, University of Kentucky, Lexington

PROFESSIONAL EXPERIENCE:

1983-1987	Staff/Charge nurse, St. Mary's Hospital, Huntington, WV
1987-1989	Crisis Stabilization Unit Coordinator, Ashland, KY
1989-1990	Psychiatric Nurse Clinician, VAMC, Huntington, WV
1990-1993	Assistant Professor, University of Kentucky, Lexington
1994	Adult Psychiatric Coordinator, Charter of Lexington, KY
1994-1995	Assistant Professor, EKU, Richmond, KY
1995-1997	Psychotherapist, St. Joseph Network, Lexington, KY
1997-1999	Research Assistant, University of Kentucky, Lexington

HONORS:

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1997-2000	National Research Service Award

PUBLICATIONS:

Beebe, L. (1989). Reframe your outlook on recidivism. Journal of Psychosocial Nursing and Mental Health Services, (9), 39-42.

Peden, A.R., Hall, L.A., Rayens, M.K., & Beebe, L.L. (in press). Negative thinking mediates the effect of self-esteem on depressive symptoms in college women. Nursing Research.

Peden, A.R., Hall, L.A., Rayens, M.K., & Beebe, L.L. (in press). Reducing negative thinking decreases risk of depressive symptoms in college women. Journal of Nursing Scholarship.

SIGNATURE: [redacted]
Lora Humphrey-Beebe