Abstract:
This study is an attempt to determine the physical and psychosocial health care needs of head-injured clients and clients' families residing in rural areas of Montana. The study identifies health care needs as they were expressed to the researcher by primary care providers within the family homes.

This descriptive study uses a semi-structured interview format to collect data from fifteen primary care providers.

The interview tool includes questions pertinent to: type and severity of head injuries; length of time since the head injuries occurred; physical, cognitive, and general behavioral impairments observed since the head injury; and a needs assessment index whereby the primary care providers identify how they are managing and what type of supportive services they desire.

The data are summarized and qualitatively analyzed. Findings reveal that primary care providers for newly head-injured family members identify needs for supportive measures, whereas, care providers for long-term head-injured family members identify needs specific to physical care. Findings from this study emphasize the difficulties rural families have in meeting health care needs. Further research into the feasibility of educational programs for rural health care providers, community representatives, and family members, is recommended.
IDENTIFICATION OF THE PHYSICAL AND PSYCHOSOCIAL NEEDS OF
HEAD-INJURED INDIVIDUALS RESIDING IN RURAL MONTANA

by

MICHELLE HILL

A thesis submitted in partial fulfillment
of the requirements for the degree
of
Master of Nursing

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ABSTRACT

This study is an attempt to determine the physical and psychosocial health care needs of head-injured clients and clients' families residing in rural areas of Montana. The study identifies health care needs as they were expressed to the researcher by primary care providers within the family homes.

This descriptive study uses a semi-structured interview format to collect data from fifteen primary care providers. The interview tool includes questions pertinent to: type and severity of head injuries; length of time since the head injuries occurred; physical, cognitive, and general behavioral impairments observed since the head injury; and a needs assessment index whereby the primary care providers identify how they are managing and what type of supportive services they desire.

The data are summarized and qualitatively analyzed. Findings reveal that primary care providers for newly head-injured family members identify needs for supportive measures, whereas, care providers for long-term head-injured family members identify needs specific to physical care. Findings from this study emphasize the difficulties rural families have in meeting health care needs. Further research into the feasibility of educational programs for rural health care providers, community representatives, and family members is recommended.
Chapter 1

INTRODUCTION

The incidence of traumatic head injuries is increasing at an alarming rate. People are being forced to cope in new situations with major long-term sequelae. They are looking to local health care professionals for assistance and support; they may have special problems in meeting these needs if they reside in rural areas.

This author is interested in what happens to rural families who have a family member experiencing extreme physical and psychosocial changes resulting from a head injury. Where do these families go for help and how do they adapt to the forced changes they must live with following this type of traumatic injury?

Problem Statement

Each year, according to the National Head Injury Foundation, as many as 100,000 Americans die from head injuries. Another 50,000 Americans who survive with a serious head injury are left with intellectual and physical impairments of such a degree as to preclude their return to normal life (National Head Injury Foundation, 1980).
The majority of head injuries are caused by motor vehicle and industrial accidents whereas drug abuse, bullets, assaults, falls, and sports-related incidents constitute other leading causes (Jennett & Teasdale, 1981; Lasden, 1982; and Rudy, 1984). The resulting nervous system trauma, including mechanical injury to the brain, spinal cord, or peripheral nerves, is a major cause of death and disability (Rudy, 1984). In fact, it is estimated that 90% of all nervous system trauma results from injury to the brain (p. 115).

Serious head injuries may result in prolonged loss of consciousness or coma. This loss of consciousness may be brief, lasting only a few minutes, or it may extend to days or weeks. Recovery is directly related to the length of coma, the longer the coma period, the less satisfactory the prognosis, and coma of more than 13 weeks indicates either death or a vegetative state (Stover & Zeigler, 1976). Thus, as time in coma lengthens, time required for emergence to a fully alert state also lengthens. Following many head injuries, the individual and his/her family face a prolonged period of rehabilitation and often life-long readjustment.

Males sixteen to twenty-four years of age incur more head injuries than any other age group. In fact, the literature states that head-injured males outnumber such females by more than two to one (Jennett & Teasdale, 1981; Greif & Matarazzo, 1982; and Rudy, 1984). Additionally, the National Head
Injury Foundation (1980) states that motor vehicle accidents cause nearly one-half of all head injuries. They also state that the more severe the injury, the greater the likelihood that it was caused by a motor vehicle accident (National Head Injury Foundation, 1980).

Symptoms of head injury can vary depending upon the extent and location of the brain injury. Usually some communication, judgment, and perception problems occur regardless of which side of the brain is injured (Jennett & Teasdale, 1981; Rudy, 1984; and National Head Injury Foundation, 1980). However, damage to the brain may not be confined to the point of injury. In fact, in severe cases of head injury, the brain violently hits against the skull causing diverse symptoms unrelated to the functions associated with the specific part of the brain suffering acute injury (National Head Injury Foundation, 1980). People working with head-injured clients often report that their clients suffer from varying degrees of memory loss, impaired learning ability, personality change, lack of emotional control, and seizure disorder (Rudy, 1984; and National Head Injury Foundation, 1980). The impact of these disabilities has far reaching ramifications for health care interventions.

The nurse has a vital role in assessing the health care needs of head-injured clients. Nurses must be able to identify actual and potential neurological problems through assessment of responses to treatment and evaluation of signs
of complications (Rudy, 1984). They must monitor the provision of health, rehabilitative, and long-term nursing care. Nurses are expected to communicate with family members to provide information and give emotional support.

The ability to identify the physical and psychosocial needs of head-injured clients is particularly important for nurses working in rural areas. Most head-injured clients from rural areas eventually return to their rural homes (Morstad, 1984). These clients and their families rely on local services for health care interventions.

Within the rural communities where head-injured clients reside, primary health care providers may not be available or accessible. Rosenblatt and Moscovice (1982) stress the scarcity of health care providers in discussing rural health issues. They state that professionals able to meet the health care needs of rural populace are scarce. Therefore, it is important that the few available nurses in rural areas know the special needs associated with the care of head-injured clients and clients' families. Rural nurses are needed to work closely with these families, assisting them in identifying the physical and psychosocial needs related to the injury. These nurses may be called upon to assist families to assume greater responsibility in caring for their head-injured family member.
Purpose

The purpose of this descriptive study is to determine the health care needs of severely disabled head-injured clients residing in rural areas of Montana. The study will concentrate on the physical and psychosocial needs of these clients and the clients' families as perceived by the primary care provider within the family.

The study should contribute to a better understanding of the overall health care needs of head-injured clients and their families residing in rural Montana. Study results will provide a data base for improving nursing interventions for these clients as well as for others with long-term chronic disabilities residing in rural areas.

The specific objectives of this study are to: (1) identify the health care needs of head-injured clients and their families, (2) to determine how these needs are or are not being met for clients residing in rural areas. Thus a data base upon which to develop nursing interventions for such clients will be gathered.

This study will focus on the severe disability or, "conscious but dependent" category of head-injured clients in the rural communities of Montana. Physical and psychosocial needs related to the client's disability and the impact of that disability on the family will be assessed.
Conceptual Framework

This study is based on the conceptual model of nursing as described by Sister Callista Roy (1970). The assumptions underlying this study are based on the Roy model's approach to the concept of the person and to the process of adaptation. The person in this study, then, is a biopsychosocial entity severely traumatized by a head injury. Also, the person is viewed as an open, adaptive system.

The Roy Adaptation Model is a systems model which views the person as a patient with parts or elements linked together in such a way that force on the linkages can be increased or decreased (Roy, 1970). Roy goes on to explain that the increased force, or tension, comes from strains within the system or from the environment that impinges on the system. These systems of the person and his/her interaction with the environment are then the units of analysis for nursing assessment. Manipulation of the parts of the system or environment are the modes of nursing intervention (Roy, 1970). The intervention mode is the major means of preventing or treating the problems identified. Roy (1970) identifies this intervention as that which can be used to change the course of events toward the desired end product of adaptation.

There are eight underlying basic assumptions associated with Roy's Adaptation Model which identify the model's
approach to the concept of the person and to the process of adaptation. The first four assumptions are basic to all people and are as follows:

1. The person is a biopsychosocial being.

2. The person is in constant interaction with a changing environment.

3. To cope with a changing world, the person uses both innate and acquired mechanisms, which are biologic, psychologic, and social in origin.

4. Health and illness are one inevitable dimension of the person's life.

The last four are identified as they specifically relate to head-injured clients, the focus of this study. These are:

5. To respond positively to environmental changes, the person must adapt.

A head-injured client and the client's family are required to adapt to sudden, unexpected changes brought about by a traumatic injury.

6. The person's adaptation is a function of the stimulus he is exposed to and his/her adaptation level.

With a severe head injury, the client may have difficulty adapting because of the severity of the injury. The client's family members will adapt according to their individual adaptation levels. Adaptation may be a life-long process due to the sudden, severe changes within the family as a result of the trauma and the difficulties associated with the adaptation of some family members.
7. The person's adaptation level is such that it comprises a zone indicating the range of stimulation that will lead to a positive response.

The head-injured individual's ability to adapt may be severely altered due to the injury. The client's family members' zone or range of stimulation leading to a positive response varies greatly. Reasons for these differences in response include: the level of stress experienced by individual family members; the role changes experienced by each family member; the many changes associated with independence, affection, security, and fear experienced by each family member; and the established personality traits of individual family members. These differences may or may not contribute to a positive adaptive response by the family unit.

8. The person is conceptualized as having four modes of adaptation: physiologic needs, self-concept, role function, and interdependence relations.

These modes of adaptation are closely related to the areas assessed within this study. The physiologic mode encompasses needs such as exercise, sleep, nutrition, and elimination. The self-concept mode is a composite of the beliefs and feelings one holds about oneself at a given time such as egocentricity, lack of self-esteem, or depression over the disabilities from the head injury. The role function mode is the regulation of performance of duties according to expected behaviors in order to maintain a level of equilibrium. The interdependence mode is the achievement
of harmony and balance with others by a mutual exchange of recognition, praise, and approval. These adaptive modes are patterns of responses comprising the person's coping mechanisms, which parallel the demands that person experiences.

The nursing process associated with these assumptions can be modified to apply the model to the setting in which the nurse is providing nursing interventions. For this study, the nursing process is associated with the care of head-injured clients and the clients' families as they adapt to the changes in their lives within rural areas.

Application of Roy's (1970) model to the study of head-injured clients and clients' families is outlined in Figure 1. Roy's (1970) basic assumption of man in constant interaction with a changing environment is related to the extreme change involved when a head injury occurs. The client as well as family members must undergo a process of adaptation. Adaptation as it is viewed in this study, then, is the process of coping with the external stimuli within the environment associated with the head injury.

There are three classes of stimuli: focal, contextual, and residual. Focal stimuli are those which immediately confront the person causing an adaptive response. Contextual, or background, stimuli are those which contribute to the behavior resulting from the focal stimuli. In other words, the person's state at the time of the head injury.
Residual stimuli arise from the person's beliefs, attitudes, and past experiences (Roy, 1970). In this study the stimuli immediately confronting the person constitute the focal stimuli. These include the head injury itself with the sudden physiological changes experienced by the head-injured individual and witnessed by family members. Other immediate changes would result from the extreme stress associated with these stimuli and the adaptive responses they elicit. The circumstances surrounding the head injury are viewed as contextual stimuli. These may include: whether the head injury was accidental or purposeful; whether or not alcohol or drugs were involved; and whether there were extreme changes in the victim's physical or psychological environment at the time of injury. Also, the physical and psychosocial states of those individuals involved with a head-injured person prior to the traumatic experience contribute to the contextual stimuli. The beliefs, attitudes, and past experiences of the head-injured client, as well as those of the client's family members, make up the residual stimuli which lead to the adaptation process.

In Roy's (1970) model, the adaptation process has two main subsystems, the regulator and the cognator. The regulator subsystem handles neural and endocrine body responses to stimuli and are most directly related to the
physiological aspects of a head injury. Thus, the regulator subsystems responses play a significant role in identifying the degree and type of impairments a head-injured client may experience. Due to these impairments, the head-injured client's ability to adapt physiologically may be altered. Additionally, the extent of the physical impairments associated with the traumatic experience has a direct influence on the head-injured client's family members and, in turn, may alter their ability to adapt.

The cognator subsystem handles information processing, learning, and decision making which are altered in varying degrees when a head injury occurs. Any alteration within the cognator subsystem alters the adaptation process. Therefore, if a client experiences deficits or impairments associated with their ability to process information, learn, and make decisions, that client will be unable to fully adapt to the change in his/her environment. The client's family members may have difficulty adapting to the client's cognator impairments and may not progress through their own adaptation process.

This study will seek information related to the identified impairments in both subsystems, as well as to how families cope with these.

When problems arise with adaptation, the nursing process is used to assist the individual in one or several of the adaptive modes (Roy, 1970). These modes include the
physiological mode which involves needs such as circulation, temperature, activity, sleep, and nutrition; the self-concept mode which is a composite of beliefs and feelings one holds about oneself formed from the reactions of significant others; the role-function mode which regulates activities according to expected behaviors; and the interdependence mode which is the manner chosen by persons to seek help, attention, and affection. An assessment and diagnosis within these adaptive modes and a nursing intervention directed at relevant stimuli would constitute the nursing action. Assessment of focal, contextual and residual stimuli would determine the needed interventions. The client and family must do the adapting while the nurse supports and promotes the adaptation.

According to Roy's model, a positive response to these adaptation modes would lead the head-injured client and/or the client's family members into a healthy state. They would continue to use similar adaptive strategies as stimuli occur. If they respond negatively to any of the types of stimuli, there must be a reassessment and restructuring of their adaptation process via nursing interventions. For example, a negative reaction to one of the stimuli could be denial of the impairments incurred as a result of the head injury.

With Roy's (1970) approach, both positive and negative responses enable the nurse to establish a data base regarding
the care of head-injured; the nurse focuses on observing behavior in each of the adaptive modes. The nurse's use of assessment, planning, intervention, and reassessment is used to monitor progress in adapting to the changes caused by the head trauma.

The environment specific to this study is rural and, as such, has a direct influence on the head-injured individual and his family. Within Roy's conceptual model of adaptation, the rural issues of isolation and distance from health services, the scarcity of health care professionals, the sparseness of rural populations, and the self-sufficiency attitude of rural dwellers play an important part in the adaptation process. Roy's model emphasizes that background and residual factors within the environment modify the responses made by individuals.

Due to the universality of adaptation, and Roy's (Riehl & Roy, 1980) efforts to develop a nursing model based on it, adaptation can be used as a conceptual framework to study a rural population's perceptions, attitudes, and behaviors specific to the care and needs of their head-injured family members. It is anticipated that the results of this study will identify specific areas of need within the rural health delivery system related to long-term chronic care.
Operational Definitions

1. Head-Injured Client - a dependent but conscious client who is three months to five years post head trauma and is living in rural Montana. The client will have been served by New Hope Regional Rehabilitation Center, St. Vincent's Hospital, Billings, Montana.

2. Severe disability - for this study, a severe disability constitutes the dependent but conscious category for a head-injured client according to the Glasgow Coma Scale.

3. Rural areas of Montana - for the purpose of this study, rural includes all Montana. The residence of the head-injured client and the client's family can be farm, ranch, town, or city.

4. Primary care provider - the family member who becomes the primary care giver for a head-injured client within the family. He/she is not a health care professional.

5. Physical needs - the biological/physiologic needs of the head-injured client and the client's family as identified by the primary care provider in response to specific interview questions.

6. Psychosocial needs - needs of the head-injured client and client's family pertaining to cognitive, behavioral, and emotional and interpersonal aspects of the head trauma as designated by the primary care provider in response to specific interview questions.

7. Health care needs - needs related to head-injured clients and their families who reside in rural areas of Montana as identified through this study's interview schedule.

8. Family - a group of biologically or socially related individuals living in one dwelling.
RURAL ENVIRONMENT

Isolation and Distance from Health Services

Spariness of Population

Scarcity of Health Care Professionals

Figure 1. Conceptual Framework
Chapter 2
LITERATURE REVIEW

Head Injury

There are no absolute criteria that will define a head injury. This is because the scalp, skull, and brain can each be injured, without involvement of the other. Brain damage, resulting from blows to the head, is the key interest of this study.

Head injury occurs when there is direct damage or threat of damage to the brain (Marshall, Sadler, and Bowers, 1981). Direct damage could be caused, for example, by a gunshot wound, whereas, a threat of damage could result from a severe contusion with a hematoma or increased intracranial pressure.

The frequency of head injuries is staggering. Cartlidge and Shaw (1981) estimate that of the 50 million accidental injuries that occur annually in the United States, three million are head injuries. The National Head Injury Foundation (1980) estimates that the prevalence of head injuries in the United States is 1,000,000 – 1,800,000. 100,000 people or 10% die annually from these head injuries and over 700,000 have injuries severe enough to require hospitalization. This represents a significantly high case
fatality rate. Of this latter group, between 50,000 and 90,000 people a year are left with intellectual or behavioral deficits of such a degree as to preclude their return to normal life (National Head Injury Foundation, 1980).

McKinlay and Brooks (1984) describe several characteristics common among head-injured clients. They identify the typical head-injured individual as being from an "at risk" population. They include young males with a lower than average intellectual ability, of lower socio-economic class, and with poorer social and emotional adjustment than average as comprising this population. Rudy (1984) further states that the majority of head-injured victims are less than 35 years old and that males outnumber females two to one. The National Head Injury Foundation (1980) is even more specific in identifying the usual (most common) head-injured victim. They state that head injury occurs in males sixteen to twenty-four years of age. Additionally, they stress that motor vehicle accidents cause nearly one-half of all head injuries and that these head injuries occur most frequently on weekends.

The causes of head injuries vary. Chance plays a major part in most accidents but in some there are recognizable predisposing factors (Cartlidge and Shaw, 1981). Such factors may be inherent in the individual as a reflection of his or her physical or psychological make-up. They may, on the other hand, be environmental and beyond the control of
the individual (Cartlidge and Shaw, 1981). According to Jennett and Teasdale (1981), Lasden (1982), and Rudy (1984) the majority of head injuries are caused by motor and industrial accidents whereas drug abuse, bullets, assaults, falls, and sports related incidents constitute other leading causes.

Several types of head injury have been described in the literature. The first and most frequently associated with head trauma is a concussion. This is an injury to the brain resulting in loss of consciousness. Other injuries include a brainstem injury, a closed head injury or one without a fractured skull, a depressed skull fracture where fragments of the skull may compress, bruise, or tear brain structure, and an injury as a result of a foreign object such as a bullet wound to the head. These are the most common injuries to the head, however, cerebral hemorrhage including a stroke or ruptured blood vessels within the brain constitute additional causes of brain damage. This study focuses predominately on the brain injuries associated with known trauma.

The most common, immediate and obvious consequence of a head injury is an alteration in the level of consciousness (Cartlidge & Shaw, 1981). This may vary from being dazed for a moment or two to a state of irrecoverable coma. Severity of injury is often gauged by the client's level of
consciousness, judgments on immediate chances of survival, and brain activity (Cartlidge & Shaw, 1981).

Stover and Zeigler (1976) report that serious head injuries may result in prolonged loss of consciousness or coma. This loss of consciousness may be brief, lasting only a few minutes, or it may extend to days or weeks. Recovery is directly related to the length of coma, the longer the coma period, the less satisfactory the prognosis. Coma of more than 13 weeks indicates either death or a vegetative state (Stover & Zeigler, 1976).

There is a positive relationship between the severity of deficit and the amount of brain tissue damaged (Fowler, 1981; and National Head Injury Foundation, 1980). The more tissue lost, the higher probability of significant deficits. Fowler (1981) stresses that there is a relationship between the length of coma and prognosis. The longer the period of coma, the greater the probability of permanent deficits and the greater the severity of impairments. He further states that prognosis following a brain injury is also largely affected by the client's previous abilities, personality, milieu, and life style.

Cognitive deficits, emotional disturbances, and personality changes have always been recognized as salient and sometimes permanent sequelae to the acute phase of a head injury (Benton, 1979). Grief and Matarazzo (1982) identify the kinds of cognitive and behavioral changes resulting from
cerebral dysfunction as determined by the interaction of several variables: etiology; site(s) of damage; the diffuse (global, nonlocalized) or focal (localized) nature of deficits; the acuteness of onset; and the client's age, handedness and cerebral organization, and premorbid intellectual, social and emotional functioning. The multiplicity of the cognitive changes experienced by the head-injured client is frequently mentioned in the literature (Benton, 1979; and Grief & Matarazzo, 1982).

Lezack (1978) in her work with families in which one member suffered a severe head injury, found that when the client's characterological change is extensive, such as when it renders him/her dependent, demanding, irresponsible, foolish, ill-mannered, or dangerous, all close family members are likely to suffer emotionally. Lezack (1978) continues by stating that the problems endured by the family are usually experienced most poignantly by the family member who undertakes or falls heir to the care of the client.

Grief and Matarazzo (1982) found that during crises, family members frequently show symptoms of moderate to severe stress with associated symptoms of depression and anxiety. Some of the identified symptoms include difficulty in concentrating, sleep disturbances, increased emotionality, and decreased efficiency at work. Greif and Matarazzo (1982) attribute this stress to the tremendous life changes associated with one family member's disability as well as
from feelings of sadness and frustration in response to a loved one's unfortunate condition. These authors identify several conditions contributing to a family's emotional stress such as empathy for the injured family member, role changes within the family, assumption of additional responsibilities by each family member, loss of independence, loss of support, affection, and security, and fear of the future. The authors state that relationships among all family members are affected as well.

The work by McKinlay and Brooks (1984) with families affected by the severe trauma of a family member reveals that the personality of informants influences the accounts they give both of certain changes in the client and the amount of stress they themselves are under. Each family member, then, is affected differently by the sudden changes within the family.

There are few studies involving physical and psychosocial recovery following a severe head injury. Weddell, Oddy, & Jenkins (1980) did a two-year follow-up study of forty-four young head-injured adults. Their results show marked changes in work, leisure activities, and contact with friends and relatives expressed by the head-injured clients. These changes, as well as changes in neurophysical status, personality, and memory loss all affected work capacity and social interactions experienced before the accident occurred. Other researchers (O'Shaughnessy, Fowler, & Reid,
1984) in their work on the sequelae of mild closed head injuries supported these results. They found that even minimally head-injured clients suffer measurable cognitive deficits including occupational and behavioral changes.

Jellinek, Torkelson, and Harvey (1982) reported that head-injured adults do have some control over the distress levels caused by their deficits. They found that the more head-injured individuals could do for themselves, the less distressed they were.

McKinlay and all (1981) interviewed close relatives of 55 severely head-injured adults at 3, 6, and 12 month intervals after the injury to obtain information about psychosocial changes in the clients. The problems most frequently reported were emotional disturbances, poor memory, and subjective symptoms. Physical disability affecting the close relatives was much less commonly reported. In another study by McKinlay and Brooks (1984), the methodological problems in assessing the psychosocial recovery following severe head injury were reported. They determined that head-injured clients may lack insight and that relatives, who are under considerable stress, may give distorted accounts.

### Classification of Head Injury

Jennett and Teasdale (1981) state that the level of consciousness is an important index in assessing the
severity of brain damage. Additionally, they stress how repeated measures of the state of responsiveness form the basis of monitoring the recently head-injured client.

Change in the degree of impairment of consciousness is usually the best indicator of either improvement in the overall function of the brain or development of intracranial complications (Jennett & Teasdale, 1981). Since continuous monitoring is essential in order to determine change, a consistent means of measurement was developed by Jennett and Teasdale (1981) called the Glasgow Coma Scale (see Appendix A). This outcome scale facilitates the categorizing of head-injured clients as:

1. In the vegetative state (having no cerebral cortical function).
2. In the severe disability state (being conscious but dependent).
3. In the moderate disability state (independent but disabled).
4. In the good recovery state (most normal functions are restored).

The Glasgow Coma Scale itself enables degrees and types of coma to be defined in descriptive terms. The three features independently observed are: eye opening, motor response, and verbal response.
The present study is concerned with head-injured clients and client's families residing in rural areas. The United States Census Bureau's (1978) definition of rural is a population residing in places under 2,500 population and in the open country. Additionally, rural populations are subdivided into those residing on farms and others.

There are certain socio-economic factors associated with a rural population. According to Massinger (1982) the major categories characterizing a rural population are age, income, occupation, and minorities. He states that the age factor is not significant since the median age of nonmetropolitan and rural populations are similar to the median age in metropolitan areas. He states that rural areas have a higher rate of poverty than urban areas and that farming is the prominent occupation in rural areas. Massinger (1982) also stresses that Native Americans constitute the major rural minority group.

There are many characteristics associated with rural health care such as distance and isolation from a health care facility, sparseness of population, and relative lack of human resources. Rosenblatt and Moscovice (1982) see the actual utilization of health services in relation to these characteristics as being a function of expressed need within the rural community, of available resources as
measured by the supply of health providers and facilities, and of financial ability to purchase services.

Rural dwellers tend to see physicians and dentists less frequently than do people who live in urban areas (Rosenblatt & Moscovice, 1982). However, Rosenblatt and Moscovice stress that rural dwellers are more likely to have a hospitalization during the course of the year. They explain that rural dwellers are often sicker when they present themselves to physicians and are, thus, more likely to be hospitalized.

According to Kane (1977), people in rural areas have a higher incidence of chronic disease and less acute illness than people in urban areas. He goes on to state that there is a greater sense of self-sufficiency found among rural people. They seem to be less readily disabled by illness and less prone to seek health care for many conditions. Taulbee (1980) adds that people in rural areas generally place a high value on self-reliance. An attitude which may also account for the differences in types and reported incidences of diseases.

These factors and characteristics related to rural health care are major issues in a rural setting and have an impact on the health care a head-injured client and the client’s family can expect to receive. Rosenblatt and Moscovice (1982) identify another factor influencing the care of such clients as being the scarcity of health care
providers. They state that professionals able to meet the health care needs of the rural populace are scarce. Therefore, it is important for the few available health care providers in rural areas to know the special needs associated with the care of individual patients.

Goddard (1980), in her thesis work related to preventive health behaviors and attitudes in a rural population, also found a scarcity of health care professionals in rural areas. She stressed that rural Montana is unique with its spatial isolation and low census and its "scanty numbers" of health professionals in the more remote areas. Goddard (1980) found that outside help was necessary to assist the health care delivery system in these areas.

According to Wiles (1984), health care professionals are being assisted in some areas by an increase in family involvement. Family members may shift their responsibilities, roles, and functions to accommodate the needs of an ill family member. This trend is reflected in the fact that approximately 70% of long-term care is provided by family members and friends (Addis, 1984).
Chapter 3

METHODOLOGY

Design

This descriptive study used a semi-structured interview format to collect data. The nurse researcher personally interviewed eligible primary care providers within families of head-injured clients. These head-injured clients were served by the New Hope Regional Rehabilitation Center at St. Vincent's Hospital, Billings, Montana. The primary care providers were contacted by a letter (see Appendix C, the Consent Form) sent from St. Vincent's Hospital. Responses to the letter determined which care providers consented to participate in the study. Those providers who returned a signed consent form to St. Vincent's Hospital were contacted by the nurse researcher and an interview time was arranged with them. The interview focused on the physical and psychosocial needs of the head-injured client and his/her family.

Sample

The sample for this study consists of primary care providers for head-injured clients who have been served by
the New Hope Regional Rehabilitation Center. A convenience (nonprobability) sample was used. The sample included the 15 care providers who returned the consent form to the investigator and who met the stated criteria for this study. These study informants were limited to caretakers of head-injured clients who are from three months to five years post injury.

There were no age or sex limitations for the inclusion of clients in this study. Head-injured clients may or may not have been receiving home health care provided by rural community health nurses at the time of the interview with the study informants. The head-injured clients were classified by the Glasgow Coma Scale as being in the severe disability state or as being "conscious but dependent". They had a definite history of a blow to the head, altered consciousness at the time of injury and resulting impairments which may include physical, psychological, and/or behavioral manifestations. Excluded from this study were caretakers of clients who have suffered facial lacerations, fractures of the lower jaw, foreign bodies in the eye, nose, or ear and epistaxis unless there were clearly associated with a head injury with resultant brain damage.

The group of informants for this study were directly involved with the daily care of a head-injured individual. Additionally, informants consented to participate in this
study and were willing to take the time to share their perceptions of needs specific to the traumatized family members.

Each of the structured interviews were conducted by the same researcher. This process eliminated differences in data collection which might have occurred as a result of multiple interviewers.

A significant weakness associated with the use of a non-random, purposive sample is lack of external, objective methods for assessing the typicalness of the selected subjects (Polit & Hungler, 1983). For example, in this study, only those respondents who consented to participate could be contacted by the researcher and thus, self-selection bias is present.

The sample is non-probability. Since not every element in the population of primary care providers had an equal chance of being included, the sample cannot be considered representative of the underlying population. This study is an initial descriptive study and as such results are not generalizable to all situations involving the home care of head-injured individuals.

**Instrument**

The semi-structured interview tool (see Appendix B, Interview Tool) includes questions pertinent to the type
and severity of the head injury. It identifies the length of time since the head injury as well as how the head injury occurred. There are questions related to physical, cognitive, and general behavioral impairments observed since the head injury. Additionally, there are some forced choice questions related to the rating of general health care. The last section includes a needs assessment index that the primary care provider was asked to consider. These providers were asked to answer this last section while considering how they were managing - with or without outside help - and what type of help or service they would like to have if it were made available to them.

This interview tool was developed after a review of the literature in which the major characteristics of head-injured clients were identified. These characteristics are: frequency of head injuries, causes, consequences, types and classifications of head injuries as well as physical impairments, cognitive impairments, and effects of a head injury on family members. Face and content validity of the interview tool have been addressed by a review of recent literature pertaining to recovery of the client and the close family from a head injury. Also, the interview tool was reviewed by Dr. A. Suzanne Morstad, the medical director of New Hope Regional Rehabilitation Center, St. Vincent's Hospital, Billings, Montana and by Ms. Carolyn Hamlin, a clinical specialist in Community Health Nursing.
and a faculty member at Montana State University, College of Nursing. The categories within the interview tool were deemed relevant and comprehensive to the study of health care needs of head-injured clients and clients' families by these two experienced practitioners. There are structured questions for the sake of consistency and unstructured questions to allow for the generation of data that was not anticipated.

This study was a beginning effort to gather descriptive data. This interview tool has no demonstrated reliability. No tool for acquiring these data was available when the instrument was developed.

Protection of Human Subjects

Human rights were protected throughout this study. The individuals who consented to participate were not exposed to any undue physical, psychological, and/or social stress or harm. The only potential risk or stress involved for the participants included recall of unpleasant memories they may have had concerning the incidents related to the head injury and/or a sense of discomfort speaking about the head-injured family member in his/her absence. All participation was voluntary and individual responses were confidential.
The Human Subjects Committee of Montana State University, College of Nursing reviewed the proposal for this study and granted approval for the study to be conducted. The Medical Director of the New Hope Regional Rehabilitation Center and the Director of Nursing at St. Vincent's Hospital and Health Center also received a copy of the Human Subjects Research Proposal for this study. They gave their permission for this researcher to conduct the study. Copies of the letters of permission are in Appendix D.

Each informant received an explanation of the purpose of the study. They were assured of voluntary participation as well as individual confidentiality. Signed consent forms for the study are stored in a locked file on the Billings Extended Campus of Montana State University College of Nursing and will be destroyed in three years. Copies of the letter of consent, the consent form, and the reminder letter are in Appendix C.
Chapter 4

DATA ANALYSIS

The purpose of this study was to determine the health care needs of severely disabled head-injured clients residing in rural areas of Montana. The study concentrated on the physical and psychosocial needs of these clients and the clients' families as perceived by the primary care provider within the family.

Information gathered for this study was obtained through semi-structured interviews with primary care providers for head-injured family members. Originally, fifty-seven letters of consent were mailed by the New Hope Regional Rehabilitation Center at St. Vincent's Hospital and Health Center. Of these, there were eighteen total responses, however, only fifteen interviews were conducted because three persons were identified immediately as not meeting the criteria for inclusion.

Of those responding, nine met all the study criteria and nine did not. Of the nine who did not meet the study requirements, six were interviewed without this researcher knowing beforehand the status of the head-injured family members. The nine responses in the latter group included: one who stated he had recovered from his head injury and
did not meet the criteria of the study; one who would like to be a part of the study but had recently moved to Colorado; one family who stated that they did not want to be included "in any research project"; one who identified his son's brain injury as being caused by a ruptured aneurysm; one living in a semi-independent group home in the Billings, Montana area; three who identified the head-injured family members as residing in nursing homes; and one who stated that her son had had a head injury fifteen years ago.

There were nine participants that met all study criteria; and six that met partial study criteria. For each group the collected data will be presented as follows: demographic data; types of brain injury; ways in which the head injury occurred; length of time since the head injury; physical impairments noted since the head injury; cognitive impairments noted since the head injury; additional impairments since the head injury; a rating of provided health care; and the identification of needs specific to the home care of a head-injured family member.

**Demographic Data**

The demographic data for this study is presented in Table I. It is divided into two groups of informants - those who met all criteria for this study and those who met
TABLE 1. Demographic Data of Informants.

<table>
<thead>
<tr>
<th>Number of Respondents</th>
<th>County</th>
<th>Closest Town</th>
<th>Farm or Ranch Within 10 Miles of Town</th>
<th>Population (U.S. Bureau of the Census, 1980)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>More Than 10 Miles From Town</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>---------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Yellowstone</td>
<td>Billings</td>
<td>4 XXX</td>
<td>66,842</td>
</tr>
<tr>
<td>4</td>
<td>Gallatin</td>
<td>Belgrade</td>
<td>1 X</td>
<td>2,336</td>
</tr>
<tr>
<td>1</td>
<td>Park, Wyoming</td>
<td>Cody</td>
<td>0</td>
<td>6,790</td>
</tr>
<tr>
<td>1</td>
<td>Big Horn</td>
<td>Hardin</td>
<td>1 X</td>
<td>3,300</td>
</tr>
<tr>
<td>1</td>
<td>Roosevelt</td>
<td>Wolf Point</td>
<td>1 X</td>
<td>3,074</td>
</tr>
<tr>
<td>1</td>
<td>Blaine</td>
<td>Harlem</td>
<td>1</td>
<td>1,023</td>
</tr>
</tbody>
</table>

Total: 9

<table>
<thead>
<tr>
<th>Number of Respondents</th>
<th>County</th>
<th>Closest Town</th>
<th>Farm or Ranch Within 10 Miles of Town</th>
<th>Population (U.S. Bureau of the Census, 1980)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>More Than 10 Miles From Town</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------</td>
<td>--------------</td>
<td>---------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yellowstone</td>
<td>Billings</td>
<td>1 X</td>
<td>66,842</td>
</tr>
<tr>
<td>1</td>
<td>Daniels</td>
<td>Scoibey</td>
<td>1 X</td>
<td>1,382</td>
</tr>
<tr>
<td>2</td>
<td>Rosebud</td>
<td>Lame Deer</td>
<td>1</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ingomar</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>1</td>
<td>Powder River</td>
<td>Broadus</td>
<td>1</td>
<td>712</td>
</tr>
<tr>
<td>1</td>
<td>Big Horn</td>
<td>Crow Agency</td>
<td>1</td>
<td>750</td>
</tr>
</tbody>
</table>

Total: 6

X = Resides in town
partial study criteria. Of these two groups, seven of the interviews in the first group were conducted in the informants homes, whereas, two interviews were conducted over the telephone. Within the second group, four personal interviews were conducted in the informants' homes and two interviews were completed over the telephone. Additionally, in the second group, four respondents were family members, whereas, two respondents were professional care providers.

**Type of Brain Injury**

The following sections present the interview data (see Appendix B) as reported by the group meeting all study criteria. Selected data from the group meeting partial study criteria will be identified in a special section at the end of the data analysis chapter.

The types of brain injuries listed in the Interview Schedule included: concussion - an injury to the brain resulting in loss of consciousness; brainstem injury - injury to the middle and lower back portion of the brain; closed head injury - head injury without a skull fracture; cerebral hemorrhage - a stroke or ruptured blood vessel within the brain; depressed skull fracture - where fragments of the skull may compress, bruise, or tear brain
structures; and foreign object - such as a bullet wound to the head.

All nine of the respondents stated that their head-injured family members experienced a concussion. The reported length of unconsciousness varied from 2 - 3 days to 8 weeks with a reported average of 2 - 3 weeks in a coma.

Five of the respondents identified a brainstem injury as a major type of brain injury. The remaining four respondents denied brainstem injury as being a part of their family members' diagnoses.

Five of the respondents stated that their brain-injured family members sustained closed head injuries without depressed skull fractures. The remaining four respondents stated that their injured family members did have depressed skull fractures and not closed head injuries. Two respondents stated that cerebral hemorrhaging occurred as a result of the brain injuries.

When asked if a foreign object had anything to do with the brain injury of their family member, only one respondent admitted that this was part of the traumatic experience. Foreign object involvement was not the main cause of brain injury.
Causes of Head Injuries

The causes associated with each of the head injuries varied. Four of the brain injuries were caused by motorcycle accidents in which none of the victims was wearing a helmet. In one of these accidents, the motorcycle rider hit the side of a car that suddenly turned in front of him. Another accident entailed the rear-ending of a motorcycle by a police officer during a high-speed chase. One accident was caused when a motorcycle hit a tractor on a rural dirt road. Finally, the fourth accident occurred late at night when the motorcycle rider hit a deer that jumped in front of his motorcycle on a rural highway. Only one motorcycle accident had alcohol confirmed as a causative factor.

Of the remaining five accidents, four of them were associated with automobiles. Two of the victims were involved in separate car accidents in which alcohol was the leading cause of reckless driving. A third individual sustained a head injury by being struck by a car while walking to his own car parked on a rural highway. The fourth victim jumped from a moving truck onto the interstate highway, thus sustaining a severe head injury.

The last person in the study group sustained his brain injury when he was thrown from a horse while team roping cattle at a friend's ranch.
Length of Time Since the Head Injury

Study criteria specified that the time since the head injury should be from three months to five years. Nine study subjects had their head injuries within this time frame (see Table 2) and all were at different stages of recovery at the time of the interviews. Each of these head-injured victims had a primary care provider within their family who answered the questions pertaining to this study.

The length of time since the head injuries occurred prior to this study were from six months to five years. Four of the victims had been injured six months before the interviews; two were injured one year prior to this study; one was injured two years ago; one was injured three years ago; and one was injured five years ago.

The primary care provider in each instance was female and was either the mother or the wife of the head-injured client. Three fathers of head-injured clients were present at the time of the interviews, however, for this study the informants were all females. Seven of the nine head-injured victims were males, therefore, for clarity in presenting the study results, all of the head-injured clients will be identified as males.
TABLE 2. Dates of head injuries and recovery stages at the time of the interviews in years and months post injuries.

<table>
<thead>
<tr>
<th>Head Injured Client</th>
<th>Date of Head Injury</th>
<th>*Recovery Stage at Time of Interview In Years and Months Post Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Meeting All Study Criteria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1</td>
<td>December 13, 1979</td>
<td>5 years 0 months</td>
</tr>
<tr>
<td>#2</td>
<td>September 4, 1981</td>
<td>3 years 4 months</td>
</tr>
<tr>
<td>#3</td>
<td>April 29, 1982</td>
<td>2 years 8 months</td>
</tr>
<tr>
<td>#4</td>
<td>January, 1983</td>
<td>2 years 0 months</td>
</tr>
<tr>
<td>#5</td>
<td>September, 1983</td>
<td>1 year 4 months</td>
</tr>
<tr>
<td>#6</td>
<td>June 25, 1984</td>
<td>0 years 6 months</td>
</tr>
<tr>
<td>#7</td>
<td>July 14, 1984</td>
<td>0 years 6 months</td>
</tr>
<tr>
<td>#8</td>
<td>July 21, 1984</td>
<td>0 years 6 months</td>
</tr>
<tr>
<td>#9</td>
<td>July 28, 1984</td>
<td>0 years 6 months</td>
</tr>
<tr>
<td>Group Meeting Partial Study Criteria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#1</td>
<td>1969</td>
<td>15 years 0 months</td>
</tr>
<tr>
<td>#2</td>
<td>January 10, 1979</td>
<td>6 years 0 months</td>
</tr>
<tr>
<td>#3</td>
<td>February, 1981</td>
<td>3 years 5 months</td>
</tr>
<tr>
<td>#4</td>
<td>1981</td>
<td>4 years 0 months</td>
</tr>
<tr>
<td>#5</td>
<td>September, 1982</td>
<td>2 years 4 months</td>
</tr>
<tr>
<td>#6</td>
<td>April, 1984</td>
<td>0 years 9 months</td>
</tr>
</tbody>
</table>

*Interviews were conducted in December, 1984, and January, 1985.

Physical Impairments Since the Head Injury

Physical impairments identified in this study pertained to aphasia, visual and hearing problems, and difficulties with bowel and bladder control. Orthopedic impairments included spasticity, hemiparesis, paraplegia, and
seizures. See Table 3 for a summary of the impairments and the number of head-injured clients identified as having them.

Five respondents stated that aphasia was a problem with their head-injured family members. Of these, three stated aphasia was temporary early in the recovery period but was no longer a problem. Four respondents did not feel that aphasia was ever a problem resulting from the head trauma.

Six respondents described visual impairments occurring as a result of the traumatic experiences of their family members. One respondent stated that her injured family member suffered from "double vision" for a short time after regaining consciousness. Three respondents detailed a limitation of visual ability experienced after their head-injured family members and described how the visual impairments were located on the same side as the victims' paralysis or muscle weaknesses. Three respondents denied visual impairments resulting from their head-injured family members' accidents.

The reported incidence of hearing impairments resulting from the head trauma was exactly opposite to the reported visual impairments. Only three respondents stated that there were hearing impairments following the traumatic incidents. One stated that her injured family member lost all hearing in his right ear and experienced muscle weakness on the left side of his body. Another respondent
**TABLE 3. Summary of impairments of group meeting all study criteria.**

<table>
<thead>
<tr>
<th>Impairments</th>
<th>Number with Impairment Present at Time of Study</th>
<th>Number with Past History of Impairment</th>
<th>Number with Neither History of nor Present Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory Deficit</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fatigueability</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Euphoria</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Restlessness</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Lack of Foresight</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Sequencing</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Lack of Self-Esteem</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Depression</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Anxiety</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Visual Impairment</td>
<td>5</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Hemiparesis</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>One Sided Weakness</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Egocentricity</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Sexual Dysfunction</td>
<td>5</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Perseveration</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Inability to Cope</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Concentration</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Attention</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Judgment</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Disinhibition</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Emotional Lability</td>
<td>4</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Denial</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Decrease in Generalization</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Agitation</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Aphasia</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Hearing Impairment</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Seizures</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Perception</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Problems with bowel control</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Problems with bladder control</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Spasticity</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Paraplegia</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
stated that her injured family member had "...continuous ringing in his ears" since the accident occurred. The third respondent stated that all hearing problems incurred by her injured family member were temporary and no hearing problems were noted at this time. Six respondents stressed that their injured family members had no identifiable hearing problems.

Difficulties in controlling bowel and bladder functions appeared to be a universal problem. All of the respondents identified elimination problems of their head-injured family members during the coma and for varying lengths of time after the injured clients regained consciousness.

Orthopedic problems were also more frequently identified as a result of the traumatic experiences. Only one respondent stated that there were no orthopedic problems with her head-injured family member. Of the remaining eight respondents, all described either right or left sided weaknesses experienced by their head-injured family members. Of these, five respondents stated that their head-injured family members had hemiparesis and three described one-sided muscle weakness.

Only one respondent stated that her head-injured family member had a form of seizure activity. This respondent described "frightening seizure-like" episodes. According to the primary care provider, the traumatized individual "...stops breathing, has cyanosis, and tachycardia lasting
one to two minutes." The respondent stated that the affected family member "...asks to be held to feel safe because he says he is frightened of dying."

Cognitive Impairments Since the Head Injury

The types of cognitive impairments identified in this study were short and/or long term memory deficits, difficulties with perception, concentration, attention, foresight, sequencing, and judgment. All of the nine respondents detailed problems that their head-injured family members were having with cognition. For example, all nine respondents stated that their traumatized family members had short and long-term memory deficits. One respondent stated that her head-injured family member "...repeatedly asked the same questions over and over again as though each question was the first time it had been asked." Another respondent stated that their head-injured family member remembers some details of the past but few details from the present (since the head injury).

When asked about any difficulties the head-injured family member was having with perception regarding consciousness or awareness of surroundings, one respondent felt her traumatized family member was "...very aware of his surroundings at times and not aware at other times." Two respondents stated that their head-injured family
members did have perception problems initially after regaining consciousness but that there were no problems with perception at this time. Six respondents denied that difficulties with perception were ever a problem following their head-injured family members' accidents.

Problems with concentration were more commonly reported by the study group. Seven respondents discussed specific problems that their head-injured family members were having or did have immediately after regaining consciousness. Three of these respondents stated that problems with concentration were temporary and were no longer a problem. One respondent stated that her head-injured family member had difficulty with abstract reasoning as well as concentration. For example, the respondent stated that the head-injured family member would put a cup on the edge of a table, not realizing where he put it or that the cup would fall and break. Another respondent stressed that her head-injured family member worried constantly about becoming dirty or covered with dog hair. According to the respondent, this head-injured individual can only think about this one subject. Two respondents stated that problems with concentration did not occur with their head-injured family members. However, one of these respondents did admit that if her head-injured family member was not interested in the topic of conversation, he would have problems concentrating on it.
The respondents were more evenly divided on whether or not their head-injured family members had problems with attention or difficulties with thinking about one subject at a time. Four respondents stated that their head-injured family members did have attention problems, whereas, five respondents denied having this problem with their head-injured family members.

Lack of foresight or not looking ahead at what may happen as a result of present thoughts or actions was another frequently stated problem. Six respondents felt that their head-injured family members had some difficulties with foresight. One respondent stressed that her head-injured family member "...had problems with foresight before the injury and that this difficulty probably helped cause the accident." Another respondent stated that her head-injured family member attempted to look ahead but was unable to figure out what would happen as a result of his actions since the head injury occurred (such as the incident with the coffee cup). Three respondents felt that their head-injured family members did not have difficulties with foresight.

Six respondents identified sequencing as a problem with their head-injured family members. One respondent stated that her head-injured family member was "...unable to connect his thoughts. He had no ability to follow through on commands and seemed to be functioning at a seven or
eight year old level even though he was nineteen at the present time." Three respondents stated that sequencing was not a problem with their head-injured family members. In fact, one respondent stated that her head-injured family member enjoyed cooking and reading recipes.

Four respondents stated that difficulties with judgment or the inability to form an opinion through understanding and comparisons of the facts was a problem with their head-injured family members. One respondent stated that her family member "...was able to make judgments - he just always made bad ones." Five respondents stated that their head-injured family members did not have judgment difficulties.

Additional Impairments Since the Head Injury

The additional impairments identified in this study included fatigueability, denial, euphoria, egocentricity, lack of self-esteem, disinhibition, depression, sexual dysfunction, anxiety, restlessness, decrease in generalization, perseveration, emotional lability, inability to cope and agitation.

All nine respondents identified fatigueability as a problem with their head-injured family members since the accident occurred. One respondent said her head-injured family member tires very easily, while another respondent
said her head-injured family member had to have a daily nap. One respondent stated that her head-injured family member "...preferred to sleep during the day as he became very frightened at night. If he did sleep during the night, he had to have the lights on in the room."

When asked if their head-injured family members denied impairments resulting from the head injuries, only three respondents felt this was a problem. One respondent stated that her head-injured family member did not remember the accident and did not believe he had one. Another respondent stressed that no one in the family - including the head-injured family member - believed that the identified impairments were permanent even though it had been three years since the head trauma occurred. Finally, the third respondent stated that her head-injured family member denied his impairments initially but has come to accept them as a result of his accident three and one-half years ago. Six respondents stated that their head-injured family members did not deny impairments resulting from the head injury.

Eight respondents stated that euphoria was not a problem with their head-injured family members. One respondent did state that her head-injured family member was unrealistically euphoric most of the time since the head trauma occurred.
Problems with egocentricity of the head-injured family member were identified by five respondents. One respondent commented on this difficulty by stating that her head-injured family member "...was egotistic before the accident and did not alter this attitude after the accident." Four respondents did not identify egocentricity as a problem with their head-injured family members.

Three respondents stated that their head-injured family members did not have a lack of self-esteem, whereas, six respondents identified problems in the family homes resulting from low self-esteem feelings of the head-injured family members. One respondent stated that her head-injured family member not only had low self-esteem, but he exhibited a self-pitying attitude regarding his traumatic injury and resultant impairments. This respondent stated, "He blames me for allowing him to go out and drink thus causing the accident. He has had such a personality change since the accident and is hardly ever happy." Another respondent stressed that her head-injured family member "...has become very self-conscious. He thinks others think he is nuts and it make him feel really bad." A third respondent stated that her head-injured family member "...blames his accident for his problems with girls." Finally, one respondent stated that her head-injured family member was "...constantly afraid of doing something wrong so he asked permission to do everything since the accident."
Four respondents stated that disinhibition was a problem with their head-injured family members. One respondent stressed how her head-injured family member always said what he thought no matter where he was (after the head trauma). Another respondent stated that her head-injured family member has a "...tremendous problem with disinhibition. In fact, we noticed mental and physical regression in this area this past year and it has been five years since his injury."

Six respondents stated that depression was a common problem for their head-injured family members. One respondent identified how her head-injured family member was "...constantly depressed over his disabilities." She likened his depressive behavior as "...a roller coaster. Sometimes he was okay, but most of the time he stayed depressed." Another respondent stated that her head-injured family member was "...especially depressed about his blind left eye, his large nose, and the muscle weakness in his left arm that forces him to keep his left hand in his pocket all of the time." One respondent stated that her head-injured family member was very depressed and felt he was no longer accepted by his peers. She stated, "He smokes a lot of pot now because it helps him forget he is different." Another respondent stated that her head-injured family member "...cries a lot over especially
painful situations like not seeing his children at Christmas. He just can't handle unpleasant circumstances."

The question regarding sexual dysfunction brought out varied responses. Three respondents did not state that there was a problem with the sexual functioning of their head-injured family members. A fourth respondent refused to comment on the topic and five respondents identified varying areas of sexual dysfunctioning with their head-injured family members. One respondent stated that her head-injured family member did not like to see his parents touching each other as it made him very jealous. One respondent stressed how her head-injured family member was concerned about his ability to become a father since the accident. Another respondent stated how her head-injured family member "...talked to his mother in a very suggestive way just as though she was his girlfriend." One respondent stated that her head-injured family member was "...having increasing problems with inappropriate sexual behavior."

Six respondents identified anxiety as a problem with their head-injured family members. One respondent stated that her head-injured family member was very anxious about his fiance' and their potential future problems. One respondent detailed how her head-injured family member "...was anxious over the exact time he was to be picked up at school. He seems so afraid that he will be left
somewhere alone." Another respondent revealed that her head-injured family member "...was anxious over his bills. Also, he worries about how far he will come back to normal." Three respondents stated that anxiety was not a problem with their head-injured family members.

Eight respondents stated that their family members were restless. Of these, four respondents stressed how their family members could not sit or stay in one place for a very long time. Only one respondent stated that her head-injured family member was not restless.

Three respondents stated how their head-injured family members had a decrease in generalization but did not comment on how it affected their behavior. Six respondents stated that a decrease in generalization was not a problem for their head-injured family members.

Five respondents stated that problems with perseveration were observed in their head-injured family members. One respondent stated that perseveration was a problem with her head-injured family member's talking but not with his physical activity. Four respondents denied problems with perseveration with their head-injured family members.

Four respondents stated that their head-injured family members had problems with emotional lability. One respondent stated, "He cries for no apparent reason." Another respondent said, "He goes from laughing to anger
for no reason." And, another respondent stated, "If you talk about something that bothers him, he will cry. The problem is - you never know what is going to bother him." Five respondents stated that emotional lability was not a problem with their head-injured family members.

Five respondents stated that their head-injured family members were unable to cope with any change in routine. For example, one respondent stated, "If he knows ahead of time that there is going to be a change there is no problem, but, sudden changes upset him." Four respondents stated that their head-injured family members did not have a problem coping with changes in routine.

Four respondents identified agitation or excessive restlessness with increased mental and physical activity as a problem with their head-injured family members. One respondent stated that "agitation was a problem with her head-injured family member at first and was caused by too much activity around him." Five respondents stated that agitation was not a problem for their head-injured family members.

**Rating of Health Care**

Rating of the health care that each head-injured family member received was positive according to the respondents.
Six respondents rated the health care as excellent with comments:

"The staff at New Hope did an excellent job."

"All problems were taken care of immediately. The nursing staff was super. They are very caring - not phony."

"If it were not for New Hope, our son would not have made the improvements. In fact, he would have been put in a nursing home and died."

"New Hope did more for our son in five weeks than other hospitals in California could do in a couple months."

"There is such a caring attitude at New Hope. They are one big happy family and my husband felt protected in that kind of environment."

"She progressed so well with the care at New Hope."

Three respondents rated the health care that their head-injured family members received as being good. Some of their comments included:

"The care was good, but they (New Hope) let him out of the hospital too soon."

"When our daughter had her head injury, there just was not enough known about head injuries. They worked more with physical problems than with the brain injury."

The third respondent refused to comment on her rating of "good" regarding the health care received.

**Identification of Needs**

The following section dealt with the identification of needs with which the respondents felt they would like help (see Table 4). The respondents were instructed to state
TABLE 4. Summary of the needs of head-injured clients with which care providers indicated they did or did not need help.

<table>
<thead>
<tr>
<th>Needs</th>
<th>Need Help</th>
<th>Do Not Need Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support Group</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Vocational Programs</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Short-Term Respite Care</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Remedial Classes</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Temporary Residential Placement</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Extended Respite Care</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Assessment/Help with Mental Health</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Family Counseling</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Physical or Occupational Therapy</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Diet</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Exercise</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Assessment/Help with Social Adjust</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Hygiene</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Body Alignment</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Bowel Management</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Bladder Management</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

whether or not they needed help; how they were managing — alone or with help (see Table 5); and the type of help or service (or additional help or service) they would like to have.

The first section was concerned with home care assistance with actual physical health care needs such as hygiene, diet, exercise, body alignment, bowel management, bladder management, assessment/help with mental health, and assessment/help with social adjustment. Of the nine respondents, five stated that they did not need help with
TABLE 5. Summary of how care providers are managing to meet the identified needs of head-injured clients - alone or with help.

<table>
<thead>
<tr>
<th>Needs</th>
<th>How Managing</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alone</td>
<td>With Help</td>
</tr>
<tr>
<td>Vocational Programs</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Exercise</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Physical or Occupational Therapy</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Assessment/Help with Mental Health</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Family Counseling</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Remedial Classes</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Short-Term Respite Care</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Extended Respite Care</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Hygiene</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Diet</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Body Alignment</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Bowel Management</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Bladder Management</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Assessment/Help with Social Adjustment</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Support Group</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Temporary Residential Placement</td>
<td>9</td>
<td>0</td>
</tr>
</tbody>
</table>

any of their physical health care needs. They stated that they were taking care of these needs alone. However, one respondent did state that she would like someone to come to her rural home once per month to make sure she was doing everything correctly. Another respondent stated that she only needed help with her son’s diet. She stated that his appetite was good but that "he did not cook like he used to before the accident."

Four respondents stressed that they needed help with some of their head-injured family members’ physical health care needs. One respondent stated that she would like help with a proper diet but added, "...food is the only thing he
(the head-injured client) has. He has no friends. He has no ability to taste or smell, but he enjoys eating. Also, I would like someone to work with him, but exercise hurts. He is going to start physical therapy again four days a week starting next week." Another area of concern for this respondent regarded assistance with mental health. She did state that her head-injured family member was seeing a psychologist once per week. As far as help with social adjustment, this respondent stated, "I do not know what anyone could do."

Another respondent stated that she needed help for her head-injured family member in the areas of exercise and mental health. She explained that her head-injured family member did exercise in the gymnasium at the local high school but did not have a set exercise routine. "He would go to the health club, but he cannot afford it. There just are no therapists available in our rural area." She also stated, "He was seeing a therapist at the county mental health clinic twice a week and this type of counseling was helping him to cope."

The third respondent indicated a need for help, stressing diet, exercise, and help with mental health and social adjustment as definite needs. She stated that her head-injured family member "...has gained twenty-five pounds since the accident and loves to eat." She also stated that a physical therapist comes to the house one
hour every day to assist with established exercises. As for mental health assistance, the respondent stated, "If it would help, I would go along with it. The same is true with social adjustment. If someone could help us, it would be great."

The fourth respondent stated that help with mental health and social adjustment were her greatest concerns. She stressed that her head-injured family member was seeing a psychologist once every two months and that the psychologist indicated that the client really did not need to come see him. The psychologist stated, "He is doing so well." The respondent's main concern was with her head-injured family member's social adjustment. She stated, "Since his accident, he is not going out. His friends have left him because they think you need a six-pack of beer to have fun. He had a problem learning that drinking is a problem. He can't drive and must make new friends. This is a problem because he is very shy - even more shy than he was before the accident."

Home care assistance by a physical or occupational therapist was viewed as a need by three respondents. Of these, one was receiving therapy services, one had made arrangements to start therapy, and one had no therapy services available to them. Six respondents did not stress the need for these therapy services.
Questions about the need for family counseling to assist family members better understand the specific impairments of head-injured clients met with varied responses. Four respondents stated that their families would benefit from family counseling. One respondent stated, "His (the head-injured client's) brothers would better understand the head injury and behavior associated with it." This respondent also stated that she was going to weekly counseling sessions at her local mental health center. Another respondent stated, "Our family is shot to hell since the accident. The four brothers think he (the head-injured client) is stupid and don't understand his injury. Counseling would help but they would never go." The third respondent stated, "Counseling would be good for the entire family including family members who see him as a spoiled brat." The fourth respondent had no additional comments regarding family counseling.

Five respondents stated that family counseling was not needed by stating:

"There is no time. I can do it myself."

"We got enough information at the hospital."

"We received enough literature from the hospital to cover our questions."

"We attended meetings and understand the problems."

"We all went through it with him. The whole family has always been involved with his care. Plus we had support from ministers."
Seven of the respondents stated that there was a definite need for a support group with family members of other head-injured clients. Comments included:

"I do not know of any such group in my home area."

"It is too far to travel to Billings to that group, but it really would be a great help."

"It would be good but it is too hard to get to the group in Billings. We need one here but no one wants to start it up."

"What a fantastic idea."

"We would be happy to help but Billings is too far away."

"We enjoy the head injury group meetings when we can go."

Two respondents stated that they did not see a need for a support group.

Seven respondents stated that vocational programs to assist the head-injured client return to work or learn new skills for employment were needed. Three of these respondents stated that their head-injured family members were working at the Sheltered Workshop in Billings. One respondent stated that this type of program would benefit others but was not a need for her head-injured family member. Another respondent stated that a counselor assisted her head-injured family member learn new skills to secure a job. One respondent stated that her head-injured family member was receiving vocational training through the special education department at school. Two respondents
stated that vocational training was not necessary as their head-injured family members had returned to their previous jobs.

Five respondents indicated a need for remedial classes or special education classes designed to specifically assist head-injured clients achieve their highest academic level. Respondents' comments included:

"It would be a real benefit but not with mentally retarded."

"Classes would be great for people with new injuries but it doesn't work for everyone. I would prefer he have social skills rather than just be able to read and write."

"We have been lucky. A drafting teacher from a local high school is taking extra time and is willing to work with him (the head-injured client)."

Three respondents stated that remedial classes were not a need for them. One respondent stated, "We are not interested in schooling for him. He had to relearn too many things already like how to eat, walk, everything all over again."

Seven respondents stated a need for someone trained in the care of people with special problems to come into the home while the family members are gone for a few hours each day or week. One respondent stated, "We do have some friends that come in for a short time but they are not trained." Another respondent stated, "This is one of the most important needs. I feel guilty having fun when I go out without him (head-injured client)." Two respondents
stated that they did not need someone trained in the care of special people to come into their homes.

When asked about the need for a residential placement program where head-injured clients could live for a short time after leaving the acute care hospital and before returning to the family home, five respondents indicated that this was a need. Their comments included:

"It would be fantastic as long as it is close."

"It would be great but there is nothing like that in our rural area."

"If this type of transitional home had been available, maybe he (the head-injured client) would have had more motivation to learn about being home."

Four respondents did not express a need for this type of residential placement program for their head-injured family members.

Five respondents stated that having periodic respite care where the family members could leave the head-injured client with a specially trained person over weekends and/or during vacations was a need. One respondent did state that the Special Care Center in Billings filled this need for families in the area. Another respondent stated that there was no place with this kind of trained staff in her rural area. Four respondents did not state a need for respite care.
Additional Comments

At the conclusion of the interviews, this researcher asked each respondent if she had anything additional to discuss regarding the care of her head-injured family member that had not been previously discussed. The following includes these additional comments:

"His equilibrium was so terrible that he had to relearn to walk. He still has some problems. He has had terrible dreams after the wreck."

"He is not himself yet - at least not like he was before. He can't seem to adjust to his problems."

"We were told by the doctors that we should put him in a rest home because he was a vegetable. We would not accept that diagnosis and he is 85% - 95% recovered today. In fact, he plans on getting married in August."

"We needed a list of agencies for assistance instead of verbally discussing them at the time of injury when the family is so upset about everything else."

"He looks normal but he calls things by the wrong name."

"He picks up things he knew but new information does not seem to sink in. There is something different about a head-injured person."

"You are pulled apart by so many needs by so many people - family, head-injured person, etc. Rural areas just do not have the needed assistance in cases like this."

"People are afraid of him and don't trust him. Even I am afraid of him. If only I had support where people are not afraid."

"Your life becomes that (head-injured) person."
Select Data From Group Meeting Partial Study Criteria

This section dealt with select data gathered from six respondents whose head-injured family members met partial study criteria. Information gathered from these respondents was pertinent to this study since it contributes to the data base regarding the health care needs of chronically impaired. This researcher contacted each of these respondents in the same manner as the previous nine respondents. The fact that this group met partial study criteria was not known by this researcher until the interviews were begun.

Types of Brain Injury

All six of the respondents stated that the head-injured people under their care had experienced concussions. The reported length of unconsciousness varied from one week to five months with a reported average of two months in a coma.

One respondent identified a brainstem injury as a major type of brain injury. Three respondents stated that the head-injured individuals had closed head injuries and three respondents stated that the head injuries were depressed skull fractures. One respondent stated that the head injury was closed and was a result of a ruptured aneurysm. All six respondents denied the presence of a foreign object in relation to the incurred head injuries.
Causes of Head Injuries

One respondent stated that the brain injury was caused by a ruptured aneurysm with no previous warning signs. Three respondents identified automobile accidents as the causative factors and two respondents detailed falls as causing the head injuries. Of the injuries caused by falls, one head-injured individual fell 92 feet off of a cliff while he was intoxicated and the other one fell off of a horse at the age of five years.

Length of Time Since the Head Injury

The length of time since the head injuries occurred prior to this study were from nine months to fifteen years. One victim was injured nine months before the interview; one was injured two and one-half years ago; two were injured four years ago; and one was injured fifteen years ago.

Select Responses

The head-injured clients in the group meeting partial study criteria were more severely impaired than those in the group meeting all study criteria. One was considered in the "vegetative" state; two were non-verbal as a result of their injuries; one was paraplegic as well as
head-injured as a result of the traumatic experience and demonstrated assaultive, uncontrolled behaviors; one lived in a group home and totally denied any impairments resulting from his accident; and one had been injured years ago and had experienced every available rehabilitation program.

All of the head-injured victims in this group had multiple physical problems including problems with bowel and bladder control as well as orthopedic impairments. Additionally, this group exhibited cognitive impairments of varying degrees. One respondent stated, "I don't know what he (the head-injured client) thinks because he can't express himself."

The following are pertinent statements given by the six respondents which typify the head-injured individuals' present condition.

"At times he is too disinhibited. He justifies what he does by stating, 'I can't do this so I'll do that instead.' You can't reason with him. What he wants to do, he does. He seems more demanding at times and seems to be trying to compensate for his feelings. Sometimes he expects his parents to do for him."

"He is so angry. He blames himself for the accident and how he is today. He is also mean. He hits and is verbally abusive to people around him. He does not learn things new. He will do something in therapy - like brush his teeth - then not know how to do it when he is alone. I want to know if he really thinks (now) or if the head injury prevents it."

"He shows no emotions. He is depressed about his disabilities but not overly sensitive. He is in a nursing home because we cannot care for him. We feel so isolated here in this small town. We are in an area
so sparsely populated that you have to travel a long distance to get together with other people. One thing we could have used at the time of the accident is a legal aide. There were so many troubles with lawyers and settlement problems."

"He could benefit from so many programs - swimming, exercise, counseling. He is not getting any help, but he needs it. He does not like to be classified as mentally ill or retarded. He does have limitations from his head injury. He needs programs specific for them (head-injured)."

"I'm a problem solver by profession. Moral support doesn't help us. We are not joiners. We do things on our own. We do not like to go to a group meeting and have the people sit around and tell how awful their situation is - it's awful for everybody."

"He shows only love emotions and hides his real feelings. He has had tears once in three years. His mother visits him for about five minutes every month. She says she has a hard time coming in. His brother was here twice in three years. He is in a nursing home and will never leave here. He has no need or motivation to improve."

Summary of Data Analysis

The respondents from both the group meeting all study criteria and the group meeting partial study criteria identified similar as well as different problem areas and needs. Both groups stressed that their head-injured family members were changed physically, psychologically, and socially as a result of the trauma they had experienced. Informants varied in their desire for help in managing the head-injured family members within their homes. Some of the major areas where assistance was desired were: assessment/help with mental health; family counseling;
support groups in their own communities; vocational programs; remedial classes; respite care—both short and long-term; and temporary residential placement.

The greatest difference between the two groups was associated with physical care needs. The group meeting all study criteria identified minimal needs for assistance in this area, whereas, the group meeting partial study criteria stressed a definite need for help. This was due to the severity of the physical impairments within the latter group. It should be noted that within the group meeting partial study criteria, three head-injured clients were in nursing homes and one was in the family home in a "semi-bedridden condition."

The interview itself brought out similar emotional responses by both groups. The questions required recall of painful incidents surrounding traumatic experiences as well as discussion of present difficulties associated with caring for such traumatized members.
Conclusions

In conclusion, this study looked at what happens to rural families who have a family member experiencing extreme physical and psychosocial changes resulting from a head injury. The study focused on responses by the primary care providers of head-injured family members and how these providers perceived their present situations and needs specific to the care they are giving.

All of the respondents discussed problems related to living in rural areas after such a traumatic experience occurs. They stated that the head injuries of their family members magnified the problems associated with medical care in rural areas such as scarcity of health care providers and isolation and distance from health services. Even the respondents from the Billings, Montana area - where New Hope Rehabilitation Unit is located - expressed feelings of isolation as well as separation from health care services. These feelings were identified as a sense of loss of their primary support system (the rehabilitation unit) even
though they were encouraged to maintain contact with this unit upon their return home.

The majority of respondents expressed a need for some type of counseling or support groups to assist them in adapting to the sudden changes in their lives and the lives of the head-injured family members. Even those respondents stating that they did not see a need for counseling or support groups found the psychosocial changes in their head-injured family members difficult to understand.

The attitude of self-sufficiency was prominent in both the group meeting all study criteria and the group meeting partial study criteria. Certain respondents from each group stated how this changed situation within their families was something they would "...handle on their own." Additional comments included: "It's our problem. No one else need bother with it" and "We can take care of our own."

A review of which providers agreed to participate in this study showed that four of the nine respondents in the group meeting all study criteria were from families where the head injury had occurred six months ago. Whereas, in the group meeting partial study criteria, only one respondent out of six stated that the head injury occurred within the past year. The remaining six respondents in this group stated that the head injury had occurred over two years ago. Thus, primary care providers for newly
traumatized clients appeared to need to discuss the needs of their head-injured family members more than those providers of head-injured clients from previous years. Additionally, providers of newly traumatized family members identified needs specific to support measures, whereas, providers of long-term care for head-injured family members identified needs specific to physical care.

It is difficult to draw absolute conclusions from this study. With only eighteen total responses out of fifty-seven contacts, it appears that many primary care providers for head-injured family members prefer not to participate in studies. A reason for non-participation in this study could be the emotional difficulties associated with the recall of incidents at the time of the head injury; this was an obvious problem for many who did not participate in this study. Relocation to another area could also be a cause of limited response. Despite the small number of primary care providers who agreed to participate in this study, the results did identify specific needs of the study population as well as difficulties involved in meeting those needs in a rural area.
Implications

Implications for Nursing in Rural Settings

This study identifies unique challenges for rural nurses who work directly with the special needs of head-injured clients and their families in the home setting. These rural nurses play a vital role in assessing the health care needs of head-injured clients. They must monitor the provision of rehabilitative and long-term nursing care, as well as, communicate with family members to provide information and give emotional support. Due to the limited resources available, nurses in rural areas must know the special needs associated with the care of head-injured clients and clients' families.

A major nursing implication from this study is that supportive measure for the head-injured client, the primary care provider, and other family members in rural areas are crucial. Nursing roles are those of providing specialized care, education, support, and referrals specific to expressed needs.

Due to the rural setting, nurses may have difficulty meeting the identified needs of such clients and assisting them to adapt. Examples include the following: clients may be personal friends or relatives of the rural nurses; the nurse, lacking specialized preparation related to neurological problems, may not fully understand the unique
needs of head-injured clients and their families; there may be only one or two nurses to attend to the needs of a large geographic area; or the primary care provider may resist offers of assistance by the rural nurse. Only through continued research efforts can nurses be able to better understand the unique challenges associated with the care of head-injured clients and the impact of this type of trauma on the entire family.

**Implications for Rural Health Care Delivery Services**

Findings from this study reveal that primary care providers for head-injured family members have difficulties in meeting health care needs. Health care delivery services need to be initiated or improved in rural areas. Since they have fewer resources than larger metropolitan areas, rural health care services must be well coordinated with local resources to provide the needed services to assist in the care of families with a head-injured family member.

Health care providers need to consider research findings, such as those presented in this study, to assist in determining what health care services they can and cannot provide. They must understand the attitudes and health practices of the rural populace which they endeavor to serve. Cooperative educational programs may facilitate the
development of health care delivery systems which address the needs of rural people.

Implications for Future Studies in Rural Areas

Through the process of identifying needs specific to the health care of head-injured family members, this study indicated the need for future studies in rural areas. Such studies may include:

1. Longitudinal studies of head-injured clients and their family members with data collected at one, two, and/or three year intervals. By studying the same group of head-injured individuals at specified time intervals, a researcher could better understand the recovery process following head injuries.

2. Studies in which rural nurses are surveyed to determine their perceptions of the care needs of head-injured clients and clients' families residing in rural areas. These could include nurses' perceptions of long-term chronic care patients as well. Study results could identify a data base for providing nursing care within the rural setting.

3. Studies of the special education services presently being offered to head-injured clients in metropolitan areas compared to rural areas. These could include the feasibility of future services as well as the fiscal reality of instituting such services.

4. Studies in which recovered head-injured individuals are surveyed to determine their perceptions of changes in their lives since the accident occurred. Study results could identify major areas of met and/or unmet needs for this group.

5. A feasibility study of the benefits of school-based preventive programs regarding head injuries. This study could be geared specifically to rural areas and their unique environmental influences.
6. Studies of the social support systems within rural communities and their responses to head injuries as well as other long-term chronic conditions affecting community members.

7. A feasibility study regarding educational programs for rural communities related to the hiring of head-injured individuals. This study could concentrate on assisting community members and employers to understand the effects of head trauma on employees.

There are few studies about head-injured individuals regardless of where such individuals reside. Only through continued research will information be relayed to health care professionals and the public regarding the special care needs of this group.

**Personal Growth**

A study of this nature has implications for the personal growth and development of the professional nurse researcher. A genuine empathetic sense of the needs of head-injured clients and their families was acquired in the course of data collection. Each interview was a stressful ordeal for both the primary care provider and the researcher. The interviews touched on painful memories of incidents at the time of initial injury as well as the many difficulties each family had in meeting their needs. Care providers' frustrations were apparent from the outset of the interviews and escalated as questions were answered. On several occasions, the interview had to be delayed a few minutes to allow respondents time to compose themselves. Future researchers
in this area should be aware of the feelings they will encounter and experience in gathering data from individuals directly involved with severe traumatic incidents.
BIBLIOGRAPHY
BIBLIOGRAPHY


APPENDICES
APPENDIX A

GLASGOW COMA SCALE
## GLASGOW "COMA" SCALE

**EYE OPENING**
- spontaneous: E 4
- to speech: 3
- to pain: 2
- none: 1

**BEST MOTOR RESPONSE**
- obeys: M 6
- localizes: 5
- withdraws: 4
- abnormal flexion: 3
- extensor response: 2
- none: 1

**VERBAL RESPONSE**
- orientated: V 5
- confused conversation: 4
- inappropriate words: 3
- incomprehensive sounds: 2
- none: 1

Coma score \((E + M + V) = 3\) to 15
APPENDIX B

INTERVIEW SCHEDULE
Interview Schedule

1. Location of the home of the person interviewed.
   a. County of residence
   b. Farm or Ranch
      Within 10 miles of nearest town.
      More than 10 miles to nearest town (how many miles?)
   c. Town - approximate population.

2. Can you tell me what type of brain injury your family member had? (Check all that apply). (Read list).
   - concussion - an injury to the brain resulting in loss of consciousness.
   - brainstem injury - injury to the middle and lower back portion of the brain (may result in substantial loss of functioning).
   - closed head injury - head injury without a skull fracture (the bones of the skull are not broken or dented by the blow).
   - cerebral hemorrhage - a stroke or ruptured blood vessels within the brain.
   - depressed skull fracture - where fragments of the skull (bone) may compress, bruise, or tear brain structures.
   - foreign object - such as a bullet wound to the head.

3. How did the head injury occur?

4. How long ago was the head injury?
5. Which of the following physical impairments have you noticed since the head injury?
READ LIST
(Check all that apply)
aphasia - speech impairment
visual impairment
hearing impairment
problems with bowel control
bladder control
Physical disabilities - Orthopedic
Spasticity - involuntary sudden movement or muscular tightening and relaxing.
Hemiparesis - paralysis affecting only one side of the body.
Paraplegia - paralysis of lower portion of the body and of both legs.
Seizures - convulsions (fits).

6. Have you noticed impairments of any of the following cognitive (thinking) functions since the head injury? READ LIST (Check all that apply).
Memory deficit - short or long term.
Perception - consciousness or awareness of surroundings.
Concentration - ability to fix mind on one subject.
Attention - thinking about one object at a time.
### Question/Symptom

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<tr>
<th>Question/Symptom</th>
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<th>comments</th>
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<td>Lack of foresight - not looking ahead at what may happen as a result of present thoughts or actions.</td>
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<td>Sequencing - planning and thinking in a continuous connected way.</td>
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<td>Judgment - ability to form an opinion through understanding and comparisons of the facts.</td>
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<td><strong>7. Have you noticed any of the following impairments since the head injury?</strong> READ LIST. (Check all that apply)</td>
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<td>Fatigueability - increased ease with which the head-injured client becomes tired.</td>
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<td>Denial - denies impairments which are result of the head injury.</td>
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<td>Euphoria - unrealistic feeling of well being most of the time.</td>
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<td>Egocentricity - self-centered attitude.</td>
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<td>Lack of self-esteem - negative feelings about self.</td>
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<td>Disinhibition - lacking restraint of impulses and desires.</td>
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<td>Example: A thought comes into the head and is acted upon or verbalized without restraint.</td>
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<td>Depression - overly sensitive about disabilities.</td>
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<td>Sexual dysfunction</td>
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<td>Restlessness</td>
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<td>Decrease in generalization - the inability to apply what has been learned in one setting to another setting.</td>
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<td>Perseveration - the head-injured client becomes &quot;stuck&quot; in a pattern of repeated responses.</td>
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<td>Emotional lability - loss of emotional control where the head-injured client may switch from laughing to crying for no apparent reason.</td>
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<td>Inability to cope - shows frustration with any change in routine.</td>
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<td>Agitation - excessive restlessness with increased mental and physical activity.</td>
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</table>

8. In your opinion, how would you rate the health care that your head-injured family member has received?

Please note that your rating will not be reported to the New Hope Regional Rehabilitation Center or to any health care facility. READ LIST.

   Excellent - Good - Fair - Poor - Not Applicable

   (please explain why)
9. Of the following needs, which do you feel you would like help with?
   
1. How are you managing - is anyone helping with this now?
2. What type of help or service (or additional help or service) would you like to have?
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<th>Needs</th>
<th>Need Help</th>
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<td>Assessment/ help with social and adjustment</td>
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<td>Home care assistance by a physical or occupational therapist</td>
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<td>Mental health counseling for the head-injured family member.</td>
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<td>Family counseling to assist family members to better understand the specific impairments of head-injured clients.</td>
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<td>A support group with family members of other head-injured clients.</td>
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<td>Vocational programs to assist the head-injured client return to work or learn a new skill for employment.</td>
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<td>g. Remedial classes or special education classes designed to specifically assist head-injured clients achieve their highest academic level.</td>
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<td>h. Someone trained in the care of people with special problems to come into the home while the family members are gone for a few hours each day or week.</td>
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<td>Need Help</td>
<td>Do Not Need Help</td>
<td>How Managing</td>
<td>Services Desired</td>
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<td>i. A residential placement program where head-injured clients can</td>
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<td>live for a short time after leaving the acute care hospital and</td>
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<td>before returning to the family home.</td>
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<td>j. Periodic respite care where the family members can leave the</td>
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<td>head-injured client with a specially trained person over weekends</td>
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<td>and/or during vacation.</td>
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</table>
10. Is there anything that you feel is important to discuss that I have not asked or that you have not shared with me?

11. Feel free to contact me if you have additional comments or questions concerning this study. Thank you for your time and interest related to this difficult topic.
APPENDIX C

LETTER OF CONSENT
THE CONSENT FORM
REMINDER LETTER
Dear Family and/or Attendant,

You are being asked to participate in a research project involving head-injured clients. Information is being gathered from persons who have the major responsibility in caring for a head-injured person in their family or home. This study is concerned with the physical and psychosocial health care needs of head-injured clients and clients' families residing in rural areas of Montana. This study is being conducted by a registered nurse attending graduate school at Montana State University, College of Nursing. In order to participate in this study, it is not necessary that the head-injured member of your family be receiving nursing care at this time.

St. Vincent Hospital's New Hope Regional Rehabilitation Center encourages research projects directed toward improving present as well as long term patient care. You are being contacted because a member of your family has received specialized care at St. Vincent Hospital in relation to a head injury. You should understand that your right to privacy is being maintained by the hospital and your name will not be released to the researcher unless you choose to participate in this study. You are under no obligation to participate in this study. St. Vincent Hospital does not promote research projects for any financial benefits nor do they financially support such projects. The benefits of such research may be better understanding of client care needs both in and out of the hospital setting.

Should you choose to participate in this study, you will be contacted by the nurse researcher - Michelle Hill, R.N. - who will conduct an interview of approximately 1½ hours with the primary care provider of the head-injured client. The researcher will contact you to arrange an interview at your home (or other preferred place) at a time that is convenient for you. Arrangements will be made so that the interview will not be conducted in the presence of the head-injured client. Your participation will involve the answering of pertinent questions related to the physical and emotional and social health needs you believe the head-injured client now has. It may be unpleasant remembering the incidents related to the head injury or speaking about the head-injured client in his/her absence. You will be free not to answer certain questions if you prefer, and you will be free to end the interview at any time without affecting your present or future health care. The researcher will answer any questions you may have concerning the study.

The information you provide will be considered confidential. Neither your name nor the name of any family members including the head-injured client will be identified with the study. Information that you provide will be identified by means of a study number. Only the researcher will have access to the list of study participant names and numbers and this will be destroyed at the conclusion of the study. If you sign a consent form to participate in this study, the consent form will be kept in a locked file at the Billings extended campus of Montana State University, College of Nursing for three years, then it will be destroyed.

... subscribing to the philosophy and policies of the Sisters of Charity of Leavenworth
Your input is important to the study. Your ideas and experiences can be important in helping health care providers identify the needs of head-injured clients and their families. Your input can help provide information for outreach programs and follow-up care for rural areas.

Thank you for your time and consideration.

Sincerely yours,

A. Suzanne Morstad, M.D.

ASM:pag
Consent Form

Identification of the Physical and Psychosocial Needs of Head-Injured Individuals Residing in Rural Montana

I have read and understand the informational letter from St. Vincent's Hospital New Hope Regional Rehabilitation Center regarding the study concerning the identification of the physical and psychosocial needs of head-injured individuals residing in rural Montana.

By signing this attached consent form and returning it in the self-addressed stamped envelope, I - the primary care provider for a head-injured client - am agreeing to participate in this study.

I understand that should I choose not to participate in this study, my decision will be considered final and no further contacts will be made concerning this matter.

Signature of Participant Date
Identification of the physical and psychosocial needs of head-injured individuals residing in rural Montana

Title of Project

Investigator

Date 11-1-84

Approval of a follow-up letter which was not a part of the original Human Subjects Review (see attached letter).

This material was reviewed and approved by:

Signature of Education Director

Date 11-1-84

Signature of Thesis Chairperson

Date 11-1-84

Verbal approval was given by:

Carolyn M. Hamlin, R.N., MSN (committee member)

Elia S. Nicholoff, Ed.D., CRC (committee member)

Consent was also given by Dr. Suzanne Morstad, Director, New Hope Regional Rehabilitation Center, St. Vincent's Hospital, Billings, Montana
Dear Family Member/ Attendant,

Three weeks ago you received a letter pertaining to a research project concerning the physical and psychosocial needs of head-injured clients. Should you wish to participate in this study your response must be received by November 15, 1984. If you have questions or would like additional information concerning this study, please feel free to contact Dr. Morstad at New Hope Regional Rehabilitation Center, Saint Vincent Hospital at (406) 657-7949, or the Registered nurse conducting the research project - Michelle Hill at 259-5316.

Thank you for your consideration and time in this matter.

Sincerely,

A. Suzanne Morstad, M.D.

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APPENDIX D

RELATIVE CORRESPONDENCE
Title of Project: Identification of the physical and psychosocial needs of head injured individuals residing in rural Montana

Investigator: Michelle Hill

Thesis Committee:
- Kathleen Ann Long (Chairperson, signed)
- Edith J. Nichols, Ed.D., FRC, Committee member (signed)
- [Committee member signature]

Does the project involve the administration of personality tests, inventories or questionnaires? If YES, provide the name of the tests, if standard, or a complete copy if not standard.

For studies to be conducted at hospitals and clinics do the proposed studies involve the use, methods, techniques or apparatus other than those used routinely at these facilities.

Human subjects would be involved in the proposed activity as either: [ ] none of the following, or including: [ ] minors, [ ] fetuses, [ ] abortuses, [ ] pregnant women, [ ] prisoners, [ ] mentally retarded, [ ] mentally disabled.

Signature of Principal Investigator: Michelle Hill

Approval (If disapproval, do not sign and append comments):

Date: 8/8/84

Signature of Education Director: [Signature]

Date: 9/10/84

Committee Member: [Signature]

Date: [Signature]

Committee Member: [Signature, Committee Chairperson]

Date: 8-22-84

[Another Committee Member Signature]

Date: 8-28-84
September 12, 1984

Sister Therese Zimmerman
Director of Nursing
St. Vincent's Hospital and Health Center
1233 North 30th Street
Billings, Montana 59101

Dear Sister Therese:

I am a registered nurse attending graduate school at Montana State University, College of Nursing. I am conducting a research project involving the identification of the physical and psychosocial needs of head-injured individuals residing in rural Montana. The population for this study is comprised of primary care providers for head-injured clients who have been served by the New Hope Regional Rehabilitation Center.

This letter is to apprise you of the project. Enclosed you will find a copy of the Human Subjects Research Proposal, a copy of the signatures of approval, and a copy of Dr. Morstad's consent letter.

Please send a letter back to me regarding your position toward this research project. Should you have additional comments that require a telephone conversation, you may reach me at home - 252-5316 - or through Marjorie Siring - the MSU Extended Campus Administrative Assistant - 657-2912.

Thank you for your time in this matter.

Sincerely,

Michelle, R.N.
1156 Ponderosa
Billings, Montana 59102
September 26, 1984

Michelle Hill, R.N.
1156 Ponderosa
Billings, MT 59102

Dear Michelle:

I am pleased that you have chosen to do your research project regarding head-injured individuals that utilized New Hope Regional Rehabilitation Center. I think the results will be helpful to all concerned.

If we can be of further assistance in your project do not hesitate to let us know.

Sincerely,

Donna J. Schramm, R.N. M.N.
Assistant Director Nursing – Towers

DJS:1m

... subscribing to the philosophy and policies of the Sisters of Charity of Leavenworth
12 September 1984

Montana State University
College of Nursing
Billings Extended Campus
Eastern Montana College
Billings, MT 59101

Re: Michelle Hill

Dear Sirs:

I have reviewed the proposal for the research project presented by Michelle Hill including the cover letter sent by St. Vincent Hospital to find willing subjects and the actual interview material itself. I approve of this study and the way it is organized. I see no problems either in confidentiality or in the quality of clinical material.

If you have any questions, please feel free to contact me at (406) 657-7949.

Sincerely,

A. Suzanne Morstad, M.D.

ASM:pag

... subscribing to the philosophy and policies of the Sisters of Charity of Leavenworth