



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
Montana State University
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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.

IDENTIFICATION OF THE PHYSICAL AND PSYCHOSOCIAL NEEDS OF
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by
MICHELLE HILL

A thesis submitted in partial fulfillment
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VITA

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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.

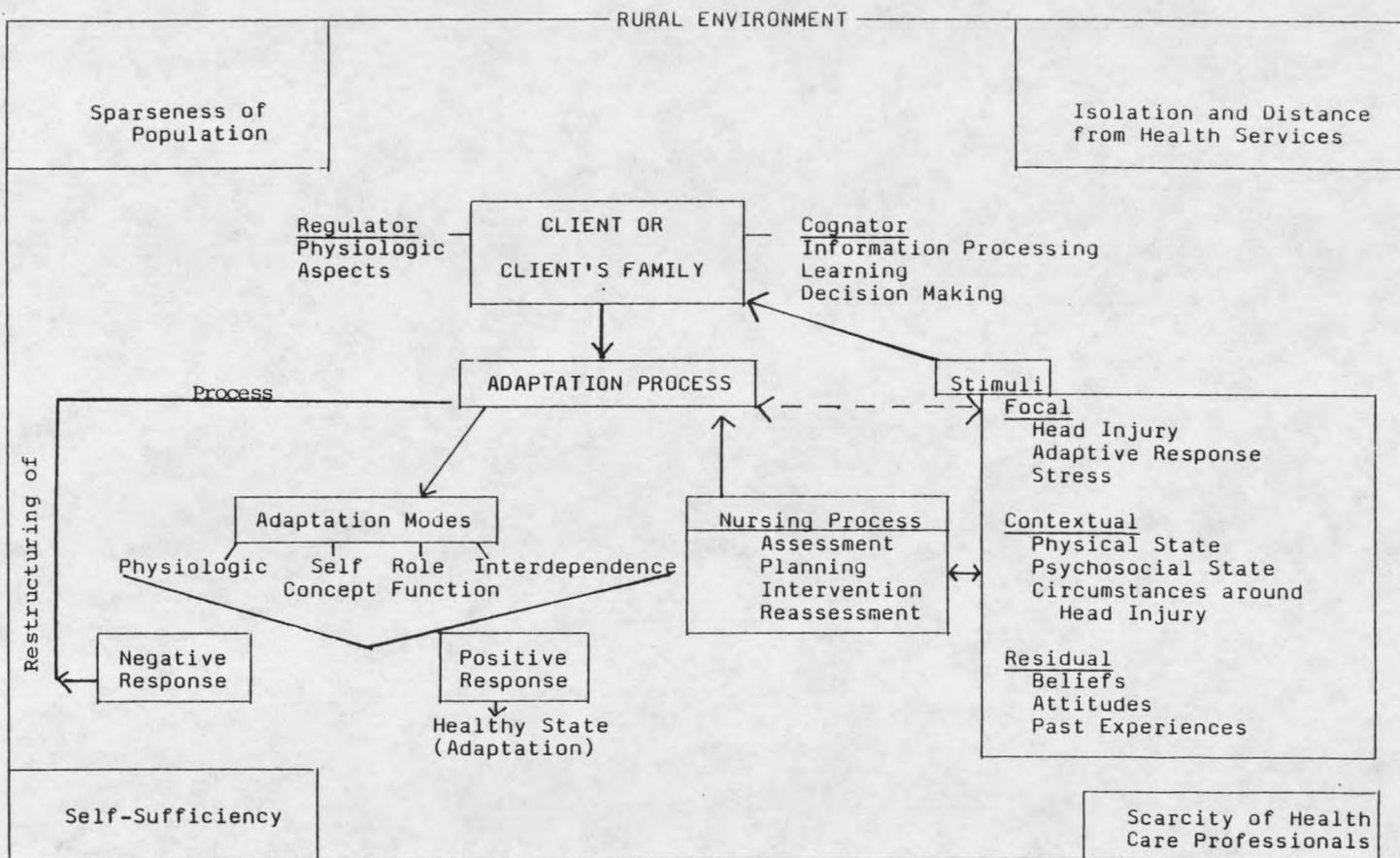


Figure 1. Conceptual Framework

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. Cartledge 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.

Rural Health Care

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 Hassinger (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. Hassinger (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, rôles, 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 1. 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.

	Number of Respondents	County	Closest Town	Farm or Ranch		Population (U.S. Bureau of the Census, 1980)
				Within 10 Miles of Town	More Than 10 Miles From Town	
Group Meeting All Study Criteria	4	Yellowstone	Billings	4 XXX	0	66,842
	1	Gallatin	Belgrade	1 X	0	2,336
	1	Park, Wyoming	Cody	0	1	6,790
	1	Big Horn	Hardin	1 X	0	3,300
	1	Roosevelt	Wolf Point	1 X	0	3,074
	1	Blaine	Harlem	1	0	1,023
	<hr/>					
Total	9					
Group Meeting Partial Study Criteria	1	Yellowstone	Billings	1 X	0	66,842
	1	Daniels	Scobey	1 X	0	1,382
	2	Rosebud	Lame Deer	1	0	600
			Ingomar	0	1	60
	1	Powder River	Broadus	1	0	712
	1	Big Horn	Crow Agency	1	0	750
<hr/>						
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.

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

*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.

Impairments	Number with Impairment Present at Time of Study	Number with Past History of Impairment	Number with Neither History of nor Present Impairment
Memory Deficit	9	0	0
Fatigueability	9	0	0
Euphoria	8	0	1
Restlessness	8	0	1
Lack of Foresight	6	0	3
Sequencing	6	0	3
Lack of Self-Esteem	6	0	3
Depression	6	0	3
Anxiety	6	0	3
Visual Impairment	5	1	3
Hemiparesis	5	0	1
One Sided Weakness	3	-	-
Egocentricity	5	0	4
Sexual Dysfunction	5	0	3
			No Comment 1
Perseveration	5	1	4
Inability to Cope	5	0	4
Concentration	4	3	2
Attention	4	0	5
Judgment	4	0	5
Disinhibition	4	0	5
Emotional Lability	4	0	5
Denial	3	0	6
Decrease in Generalization	3	0	6
Agitation	3	1	5
Aphasia	2	3	4
Hearing Impairment	2	1	6
Seizures	1	0	8
Perception	1	2	6
Problems with bowel control	0	9	0
Problems with bladder control	0	9	0
Spasticity	0	0	0
Paraplegia	0	0	0

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."

