Characteristics and Perceptions of Trauma Recidivists and Non-Recidivists

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LOYOLA UNIVERSITY CHICAGO

CHARACTERISTICS AND PERCEPTIONS OF
TRAUMA RECIDIVISTS AND NON-RECIDIVISTS

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

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BY

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CHAPTER I

INTRODUCTION

Problem: Trauma Recidivism

Throughout 20 years of nursing, I have been directly involved in caring for trauma patients and their families. Witnessing the initial devastation that occurs as a result of trauma and the subsequent resolution or integration that follows has spurred my interest in the concept of trauma. I have observed many faces of trauma and witnessed how it permeates all aspects of the person, one's interrelationships and one's environment.

Trauma recidivism (i.e., trauma patients who suffer subsequent traumatic injuries) is a subconcept of trauma that represents a major problem to the American society in terms of loss of life, permanent disabilities, use of health resources, and economic cost. In 1994 alone, 91,000 people died as a result of traumatic injuries (National Safety Council, 1997) and billions of dollars are spent on health care costs to treat trauma recidivists (Sims et al., 1989;
Morrissey, Byrd & Deitch, 1991; Cesare, Morgan, Felice, & Edge, 1990; Poole, Griswold, Thaggard & Rhodes, 1993; Reiner, Pastena, Swan, Lindenthal, & Tischler, 1990; Smith, Fry, Morabito, & Organ, 1992; Hedges, Dimsdale, Hoyt, Berry, & Letiz, 1995; Buss & Abdu, 1995). Two studies even went so far as to call trauma recidivism a chronic disease among urban trauma centers (Morrissey et al., 1991; Sims et al., 1989).

In 1989 the issue of trauma recidivism was addressed in a paper presented by Sims at a conference of the American College of Surgeons(Sims et al., 1989). Sims stated, "...the emergency room seems to have a revolving door for some victims of urban violence. Trauma victims during resuscitation are often found to have multiple celiotomy or thoracotomy scars, etc., as a consequence of treatment for previous traumatic injuries" (Sims et al., p. 940). If this is true, how common is this phenomenon among trauma victims? Are there some traits or identifiable characteristics (e.g. environmental, social) peculiar to individuals who experience traumatic injuries more than once? Are there certain variables such as genetic predisposition, social class, race, gender, age, cultural
or socioeconomic condition that are common to the repeat trauma victims? These were some of the questions addressed by this study.

While there have been many studies on trauma patients thus far, no study has used a prospective design to compare and contrast both characteristics and perspectives of first time trauma patients (non-recidivists at the time of the study) and those patients who have had a previous traumatic injury within the last 5 years (trauma recidivists). Therefore a research study is needed to address these issues.

**Significance**

The intention of this research project was to obtain a clear picture of the characteristics of the trauma population, using an evolutionary approach to trauma research. The information obtained from this study will allow health care professionals to better understand the trauma patient and the trauma recidivist. As a result, prevention strategies could be designed based on the information obtained that will reduce the number of traumatic injuries, thus alleviating the burden to society
in terms of pain, suffering, loss of life and economic costs. Future research could then concentrate on prevention strategies addressing characteristics discovered through the above research.

**Research Questions**

The research questions for this study were:

1. What are the characteristics of the trauma recidivists?
2. What are the similarities and differences between the two groups?
3. What are the trauma patients' perceptions of the traumatic event (both recidivists and non-recidivists)?
4. What strategies do trauma patients suggest to prevent a reoccurrence of trauma in the future?

In order to understand the problem of trauma recidivism, a clear understanding of the concept of trauma and trauma recidivism must be established. Thus, a critical review of the concept of trauma and trauma recidivism is presented.
Concept of Trauma

There is a glaring lack of a clear description of the concept of trauma in the literature. The concept of trauma does not have a simple definition; it is a very complicated concept that calls for further examination.

Although the word "trauma" has been in existence since the 2nd century BC, the medical literature has only recently given the concept of trauma the attention it deserves. The conceptualization of trauma as a disease, as an entity within itself, has only been discussed in a scholarly fashion since the early 1900's. As war became a way of life for ancient and modern society, the study of the care and treatment of wounds and injuries was isolated to war strategists. Hippocrates believed war to be the proper school for surgeons. Mobile Army Surgical Hospitals (MASH), developed and widely used during World War II, increased in sophistication during the Vietnam war. MASH units demonstrated the importance of providing timely, organized, emergency care to the wounded. The military boasted that no soldier would be more than 30 minutes away from a MASH unit, equipped to perform emergency life-saving surgeries and
provide medical treatment. Patients were kept at a MASH unit until stabilized and then were transferred to a military hospital. As the treatment of war injuries became highly sophisticated and soldiers began returning home to recover from their war wounds, it was evident that soldiers received better care for their traumatic injuries than civilians at home. For example, in the early 1960's it was not unusual for a victim of an industrial casualty or motor vehicle crash to wait from hours to days before definitive care was delivered. These patients would often die of their injuries before a surgeon or critical care specialist became involved in their care. Hence, as a result of these observations, the United States (U.S.) Government commissioned a study to evaluate the care and treatment of wounds and injuries in the U.S. The results of this study were shocking. The findings and recommendations for change have been widely reported in the trauma literature and are considered responsible for many of the advances in trauma care in America. The study report is known as the "1966 White Paper" (National Academy of Science, 1966). As a result of this "1966 White Paper" the U.S. has taken
aggressive actions to treat traumatic injuries in a systematic and organized manner. Although this "White Paper" is over thirty years old, trauma care in the U.S. still lacks standardization. While many of the larger cities have trauma standards and plans, many rural areas and even some large cities continue to have no standardized approach to trauma care. Trauma remains one of the most devastating diseases facing the U.S. In fact a report from the National Academy of Sciences (1980) stated that "Injury is the nation's leading public health problem".

The most common definition of trauma is described in the medical and laymen's dictionaries as an injury, physical or psychological (Stedman's Medical Dictionary, 1995; Dorland's Illustrated Medical Dictionary, 1988; Webster's 3rd New International Dictionary, 1986). The word injury is often used as a synonym for trauma. In fact when "trauma" is indexed in the Index Medicus, the listing "Wounds and Injuries" is displayed. The infliction of injury from an external source seems to be inherent in the definition. Scott and Stradling (1994), however, note that one can experience mental trauma without physical injury.
The definition of trauma takes a curious turn when scanning the psychology literature. In psychology, trauma is usually described as an "event" that threatens the homeostasis of man, which can be the result of an internal or external stressor (Freyd & Hobfoll, 1995; Russell, 1995; Norris, 1992; Blake, Ablano, & Keane, 1992; Resnick, Kilpatrick, Dansky, Saunders & Best, 1993; Neff & Kidd, 1993). Freud was the first psychiatrist to relate "hysteria" to an earlier frightful experience (Freud, 1920). Thus began the search for the link between traumatic experiences and psychological dysfunction. Freedy and Hobfoll (1995) examined the range of psychic trauma from 1942 through 1993 and published a concise list of pertinent references found during their search (Appendix A).

Trauma once was described as "the neglected disease of modern society" (National Academy of Science, 1966). This definition expanded the use of the concept of trauma beyond the individual realm into the social world. World-wide reports of human beings inflicting violence and injury on others supports the idea of trauma being a social phenomenon. Eastman (1992) stated, "until the violence of
our roadways and streets is extinguished, there will be blood in our streets and the need for regionalized trauma care" (p. 681). Thus trauma is a concept which must also be considered in a social and political world context.

It is inadequate to limit discussion of the concept of trauma to the simple term "injury". Trauma must be considered within a context of the individual in constant interaction with the world that surrounds him (Newman, 1994).

Theoretical Framework

The theoretical framework that was used to guide this study was Newman’s theory of Health as Expanding Consciousness (Newman, 1994). According to Newman’s theory, a person is described as a "unique pattern of consciousness within a field of absolute consciousness" (Newman, 1986, p.31). Patterns represent the composition of the person. Each person has their own unique pattern that constitutes their being. Health and illness are simply expressions of the life process and explications of individual patterns. Man is one with the universe and in constant interaction with the world around him.
As human beings progress through life, there is constant interaction with the world and expansion of consciousness. This expansion is always an upward spiral as experiences and interactions with the world are expanding. When an individual begins interacting with the world, the spirals are large, representing a large fluctuation between individual and his/her universe; however, as the individual’s experiences expand through interactions, the separation between a person and his/her world becomes smaller and smaller, until death, when the person becomes one within the universe and achieves ultimate consciousness.

Newman feels that "the meaning of life and health are found in the evolving process of expanding consciousness" (Newman, 1986, p.4). Trauma is often the "disorganizing process" that interferes with the normal spiral of evolution, propelling the person through periods of disorganization and ultimately toward a higher level of consciousness.

Definition: Trauma

For this study, trauma is defined as follows: Trauma is a concept that exists within a framework of man in constant interaction within the universe. Trauma encompasses a
variety of individual antecedents (i.e., risk-taking behavior, environmental factors, modifiers, and lack of support), in the presence of internal/external stressors, which produce a physical or psychological insult resulting in many possible consequences including death/destruction, changes (i.e., physiologic, psychologic and social), setting new goals and revitalization).

This definition fits well within Newman's theory of Health as Expanding Consciousness, which is the theoretical framework used to guide this study.

**Attributes of Trauma**

A concept analysis of trauma, using Roger's (1993) evolutionary method, led to the identification of eight attributes: 1) response to a stressor or stressors resulting in distress and/or injury, 2) multifactorial, 3) temporal, 4) idiopathic response, 5) dynamic, 6) pervasive, 7) normative process, and 8) hierarchal.

**Response to a Stressor(s)**

There was general agreement in the literature that a stressful event, either physical and/or psychological, always occurred within the framework of trauma; therefore
trauma includes a response to a stressor (Baker, O'Neill, Ginsburg, & Li, 1992; Flemming et al., 1992; Moore & Schwartz, 1993; Niederland, 1989; Norris, 1992; Breslau, Davis, Andreski & Peterson, 1991; Neville, 1989; VanDongen, Veltman, Bostrom, Buechler, & Blostein, 1991; Mitchell, Shurpin & Gallo, 1989; Bailey, Richmond, Noroian, & Allen, 1994; Oakes, 1979). The stressor may be accidental or intentional.

Multi-Factorial

Many factors have been identified which contribute to the trauma and the response to the trauma. Some of the factors that may influence the trauma include the context such as: the social milieu in which the trauma occurred, cultural beliefs and practices, community response, extent of injuries and availability of health personnel, previous health of the injured and supportive network. Trauma is not a single entity, but a multi-factorial concept that can be extremely complex (Cardona, Hurn, Mason, Scanlon, & Veise-Berry, 1994; Leske, 1992; DeKeyser, 1994; Oakes, 1979, Coolican, Vassar, & Grogan, 1989; Moore, Mattox, & Feliciano, 1991; Flemming, et al., 1992; Baker et al., 1992;

**Temporal**

Trauma is often referred to in a temporal context, such as "an irretrievable moment in time" (anonymous). The medical literature notes the "Golden Hour" philosophy of trauma resuscitation (Moore et al., 1991; Fondiller, 1991) as the hour in which one may have an opportunity to save a life. Often individuals report feeling "suspended in time" (Leske, 1992).

The traumatic event or stressor could be sudden, unexpected or a continuing process (Niederland, 1989; Leske, 1992, Freedy & Hobfoll, 1995). The trauma could be acute and occur only once or become chronic. The timing of the event may contribute to the intensity or severity of the trauma.

**Idiopathic Response**

Intensity or severity of the response varies with the strengths and limitations of the individual, family, community, or nation. One could experience a traumatic event
without physical injury and still suffer traumatic psychiatric consequences (Freedy & Hobfoll, 1995; Baker et al., 1992; Mitchell et al., 1989). It was discovered that while some people faced similar or even the exact physical or emotional insult, post traumatic stress or injury did not occur in all (Lyons, 1991; Norris, 1992). No two individuals will respond the same when faced with a similar stressful event (Leske, 1992).

Dynamic

Trauma is a dynamic occurrence that involves individuals, communities, society, and every nation (Freeark, 1983; Eastes, 1994).

The traumatic response is dynamic and always changing. As the person evolves, their response to trauma evolves. One may respond very differently to a trauma today than ten years ago, or even a week ago (Leske, 1992).

Pervasive

The traumatic event can have such strong, long-lasting effects that it pervades every aspect of human life. Often victims reveal their inability to get the event out of their mind. There are constant reminders of the trauma (Freedy &
Normative Process of Recovery

Scientists have described a predictable process of trauma recovery that occurs after a traumatic event is experienced. After the initial shock, one often experiences anger, disbelief, denial, fear and sometimes resolution (Aguillera, 1990, Craig, Copes, & Champion, 1988; Hopkins, 1994). Theories of crisis intervention and trauma recovery focus on phases of acute identification of traumatic shock and initial intervention, rehabilitation and recovery/reintegration (Aguillera, 1990; Burgess & Baldwin, 1981; Craig et al., 1988; Freedy & Hobfoll, 1995, Hoff, 1984; Hopkins, 1994, Leske, 1986; Moliter, 1979; Slourish, 1990; Bailey et al., 1994; Niederland, 1989; Lyons, 1991; Neville, 1989). It has been suggested that, while one will never forget the trauma, one is often able to return to a "normal" lifestyle (Rhodes et al., 1988; Cardona et al., 1994; Leske, 1992). This attribute is contradicted by other authors, including Newman, who suggest that one never fully returns to a "normal" lifestyle, but continues to evolve as
a result of interactions within the universe.

Hierarchal

Trauma has a hierarchal characteristic. Trauma can occur to a single cell, tissue, an individual, a system, family, community, society, or culture (Foss, 1989; Oakes, 1979).

Antecedents to Trauma

The sudden and unpredictable nature of trauma could lead one to assume that there are no antecedents to the event. Research, however, indicates that the belief that trauma is solely an accidental occurrence may be a myth. A set of characteristics that may be predictive of trauma has been identified (Sims et al., 1989; Poole et al., 1993; Hedges et al., 1995). While there are still unexplainable, accidental events, very often trauma can be avoided (Moore et al., 1991; National Academy of Science, 1966, 1980; Committee on Trauma Research, 1985; Eastman, 1992). Five antecedents associated with an increased risk of trauma have been identified: (1) internal/external source of stressor, (2) modifying factors, (3) risk-taking behavior, (4) lack of support, and (5) environmental factors.
Internal/External Source of Stressor

The source of a stressor can be self, another person, an inanimate object, or nature. Some common sources of trauma include exposure to energy such as heat, electricity or the kinetic energy of a crash, fall or bullet. Trauma may also be caused by the sudden absence of essentials such as heat or oxygen (Committee on Trauma Research, 1985).

One can experience trauma without physical injury. Trauma may be caused by witnessing events that jar the mind such as disasters, war, and violence. Trauma may occur through the death of a loved one, loss of a pet, or by a significant event in life such as loss of a job, career, or promotion.

Modifying Factors

Several factors may modify the occurrence of the traumatic event, the trauma response or recovery. Gender is a significant factor, since men are more likely than women to experience a traumatic event. Other important factors include 1) lower educational achievement, 2) lower socioeconomic status, 3) belonging to a racial minority, 4) a history of depression or substance abuse (Breslau et al.,

Current health status and age may also modify the traumatic response. It has been well-documented that very young and elderly trauma victims have a much higher risk of suffering traumatic deaths and disability than adolescents and young adults (Keough, Letizia, & Baldonado, 1994; Keough & Letizia, 1996; Keating, 1987; Champion et al., 1989).

The unexpected nature of trauma is the very cornerstone for the development of subsequent post-traumatic disorders. Patients who have a supportive network are less likely to experience Post Traumatic Stress Disorder (PTSD) syndrome (DeWitt, 1993).

**Risk-Taking Behavior**

Those who exhibit patterns of risk-taking behavior may be more prone to experience trauma. Characteristics of a risk-taking behavior documented in the literature include: immaturity; irresponsible behavior (drinking and driving); lack of purposeful meaning in life; impulsive, aggressive behavior; depression; hopelessness; low self-esteem; family instability; and fatigue (Baker et al., 1992; DeKeyser,
Lack of Support

Lack of support is paramount when discussing antecedents to trauma, traumatic response and recovery. Support comes in many forms. Political support is paramount to initiating and maintaining prevention programs, conducting trauma research and supporting trauma programs. Freeark (1983) discusses trauma as a social disease and calls for society to become involved in local and international programs to combat this deadly disease. Personal support is individual. Support from family, friends and the community are critical to successful recovery. Financial support is important and can drastically impact the trauma. Often those with little or no financial support are unable to afford adequate rehabilitation and support services.

Institutional support is another important factor in discussing antecedents to trauma. The location and maintenance of trauma systems and Level I, II and III trauma centers, rehabilitation centers and home care programs greatly impact the patient's ability to survive the trauma.
Trauma prevention strategies are dependent on social structure and government support (Committee on Trauma Research, 1985; Freeark, 1983).

Environmental Factors

Certain environments are more conducive to traumatic events than others. In the U.S., the rise of urban living has produced an epidemic of violence and traumatic injuries (Committee on Trauma Research, 1985; Eastman, 1992; Freeark, 1983). Access to Level I trauma centers are available in several states, however there continues to be unmet needs in many other states (Committee on Trauma Research, 1985). Some work environments may dispose one to trauma such as public servants (policemen, firemen, paramedics, disaster workers), workers handling toxic wastes, and workers operating highly flammable chemicals.

Consequences of Trauma

Consequences refer to situations, events or phenomena that follow the trauma. Consequences are the occurrences that are identified after the concept (Rogers, 1993). The consequences identified following a traumatic event were both positive and negative (Keough et al., 1994; Freedy &
Hobfoll, 1995, Niederland, 1989; Russell, 1995; Breslau et al., 1991; Baldwin, 1996; Rhodes et al., 1988). Five consequences of trauma have been identified in this analysis: (1) state of crisis, (2) adaptive change: physiologic, psychologic and social, (3) death/destruction, (4) potential revitalization, and (5) setting new life goals.

State of Crisis

A typical response to a sudden and traumatic injury is a temporary state of crisis. During this crisis period, a state of shock occurs in which the individual or group of individuals may experience temporary paralysis (e.g., an inability to make clear decisions, difficulty in acting responsibly) and may require tremendous support. The crisis response affects the victim(s), family members, and/or other significant relationships (Cardona et al., 1994; Leske, 1992; DeWitt, 1993; Oakes, 1979). If the crisis state is not relieved, perception of the situation not altered, or resources not adequate to deal with the threat, then disorganization and depletion of the traumatized individual's ability to cope can occur (Leske, 1992).
Adaptive Change: Physiologic

Physiologic change often occurs after a physical injury as a result of the stressor. Many times physical limitations linger long after the injury, changing the course of one's life. The residual physical limitations may be as small as walking with a limp or as extensive as losing control of all functioning and feeling below the neck such as in quadriplegia (Maull, 1993; National Academy of Sciences, 1980; Rhodes et al., 1988; Neff & Kidd, 1993; Cardona et al., 1994; VanDongen et al., 1991; Leske, 1992; Bailey et al., 1994; Jastremski, 1994; Keough et al., 1994). Rehabilitation becomes a dynamic process of planned adaptive change that is imposed on the individual by the traumatic incident. The goal is to attain optimal function to the injured areas (Neff & Kidd, 1993; Cardona et al., 1991).

Adaptive Change: Psychologic

There is a broad range of adjustment phases that follow an exposure to a traumatic event. Some adjustments can be healing while others become pathologic, resulting in psychological disability. Examples of changes in psychological functioning include difficulty with
relationships with family or co-workers, and increased vulnerability to alcohol and drug abuse as a means to escape the trauma. Patient outcomes related to the trauma depend on factors such as the existing psychological health of the individual, the professional and personal support services available, the degree of psychiatric disruption, and physical adjustment (Andrews, 1996; Freedy & Hobfoll, 1995; Niederland, 1989; Russell, 1995; Kirshner, 1993; Breslau et al., 1991; Wilson & Raphael, 1993; Neff & Kidd, 1993).

Some psychiatric literature suggests that no traumatic event is wholly overcome. For example, increased psychic vulnerability has been reported as an inevitable outcome of traumatic experiences associated with the horrors of war and natural disasters. Disruption of interpersonal relationships (family, friends, etc.) and difficulties with job performance may be a manifestation of the individual's altered psychological homeostasis in response to trauma. Often individuals have difficulty with relationships, jobs, and family (Russell, 1995; Niederland, 1989). Much of the literature on psychiatric vulnerability following a traumatic experience focuses on PTSD which is a psychiatric
disorder usually associated with soldiers returning from war (Freedy & Hobfoll, 1995; Niederland, 1989; Wilson & Raphael, 1993; Neff & Kidd, 1993; Russell, 1995).

Finally, psychologic change associated with traumatic events is not limited to individuals; it may also occur in a community as a result of a disaster or economic crisis in which the community as a whole is changed forever. For example, communities are changed by riots (e.g. Watts community in Los Angeles), natural disasters (e.g. flooding in Kentucky), economic disasters (e.g. 1929 stock market crash) and war (e.g. Bosnia and Serbian communities).

**Adaptive Change: Social**

Trauma can also produce a detrimental consequence to society resulting in loss of economy, increased utilization of medical services, and the loss of the contribution of valuable members of the work force. Society is often forced to reevaluate their customs and habits and make societal changes. This is often fostered by political, community, national or global involvement (National Academy of Sciences, 1980, Flemming et al., 1992; Wilson & Raphael, 1993).
Some examples of adaptive societal changes are the enforcement of motorcycle helmets in many states, mandatory seatbelt laws, gun control laws, lobbyists against gang violence, etc. The initiation of state and national disaster plans, and the development of disaster teams are other examples of social adaptation to trauma.

**Death/Destruction**

A possible outcome of any trauma is death or destruction to a person, family, culture, society, community or country. Prevention strategies as well as early intervention strategies are two powerful weapons available to combat this devastating outcome.

**Potential Revitalization**

Ironically, some individuals demonstrated increased resiliency rather than pathology to trauma. These individuals reported feeling more optimistic, having more patience, increased appreciation for interpersonal communication, family and friends and increased self-insight (Lyons, 1991; Furst, 1967; Leske, 1992).

**Setting New Life Goals**

Lifestyle changes that were permanent and long lasting
often resulted from the traumatic event. Very often individuals and families faced role changes, fear of death, uncertain outcome, emotional turmoil, and changes in family plans. Old goals were put on hold and in some cases became totally unrealistic. Changing life goals can become positive when individuals or communities change goals in relation to current abilities and talents. For example, an athlete who loses the use of his legs may learn to paint or explore opportunities to write, a community may become a model of community action against drugs or handguns, etc. (Bailey et al., 1994; Leske, 1992; Neff & Kidd, 1993).

During the review of the literature on trauma, injury (psychological and physical) and crisis were two terms often found to be used interchangeably with trauma. Injury has been described with several modifiers such as critical injury, unintentional and intentional injury (Cardona, et al., 1994; VanDongen et al., 1991; Keough et al., 1994; Moore et al., 1991; Peltier & Davis, 1989; Flemming et al., 1992). While the terms are often interchanged in the literature, trauma is very different from injury and crisis. Trauma is described in this paper not simply as an injury or
crisis but of a compilation of antecedents, stressors and consequences occurring within an evolutionary model of man as one with the universe.

Evolutionary Model of Trauma

In keeping with Newman's framework of Health as Expanding Consciousness, an evolutionary model of trauma was developed. Man is viewed as a pattern in constant interaction with the environment. These interactions are depicted as large spirals representing interactions with the environment. Interactions enhance the person's experiences with their environment and as experiences increase, the spiral transcends until man is one within their environment. This merging with the environment is known as absolute consciousness. As an individual transcends through life, many individual characteristics comprise one's pattern. These characteristics are continuously evolving and changing. Some of these characteristics will encompass many of the antecedents to trauma. As a traumatic event is experienced by either an internal or external stressor, the individual enters a state of confusion and crisis. During this time of crisis, death or destruction may occur, or
survival with resulting consequences will continue the spiral toward expanding consciousness (see Figure 1).

Figure 1.--Evolutionary Model of Trauma.
Trauma Recidivism

Trauma recidivism, as discussed earlier, is a relatively new concept in the trauma literature. In an effort to tackle this problem, a clear understanding of the definition of trauma recidivism is essential.

The term trauma recidivism is used to describe a person who has a history of previous hospital admissions due to trauma (Reiner et al., 1990; Sims et al., 1989; Smeltzer & Redecker, 1995). These individuals have been identified as the "trauma recidivist" population or as having the "gladiator syndrome" (Poole et al., 1993). While the literature on trauma recidivism is sparse, there have been several interesting studies conducted on this topic over the past eight years and one of the studies (Smeltzer & Redecker) included a framework of trauma.

**Smeltzer & Redecker Framework**

Smeltzer and Redecker (1995) are the only authors who have proposed a framework of trauma and trauma recidivism in the literature. Their framework addresses adolescents and young adults. They have identified the following risky behaviors associated with trauma: drug and alcohol use,
reckless driving, delinquent behavior, social, psychological and environmental factors. These authors propose a tri-level model of trauma and trauma recidivism composed of antecedents to risk-taking, risk-taking behaviors and possible outcomes of risk-taking (see Figure 2).

Fig 2.—Smeltzer and Redecker's Model of Trauma and Trauma Recidivism.

Smeltzer and Redecker's trauma model for youth is comprehensive but it was not considered appropriate for this study for several reasons. First, many of the developmental factors concentrate primarily on developmental stages of
children and adolescents; thus, one would have difficulty applying this model to an adult population. Second, although there are some concepts which are applicable to an adult population, the model does not address them. And finally, Smeltzer and Redecker's (1995) model proposes that a possible outcome of trauma is the return to a previous lifestyle, which was not congruent with the evolutionary framework chosen for this paper. According to Newman (1986), one never completely returns to a previous existence. Since life is constantly changing and evolving, after experiencing a traumatic event, one would continue to evolve and grow throughout this traumatic experience, making a return to normalcy an incongruent phenomenon.
CHAPTER II

REVIEW OF THE LITERATURE

Overview

The review of the literature on the subject of "trauma recidivism" was conducted in the following manner: (1) a computer generated literature search from 1980-1997 on the topic of trauma recidivism in the Loyola Medical Information Network and the Cumulative Index of Nursing and Allied Health Literature directories; (2) review of the references used for each study; (3) communication with trauma specialists; and (4) attendance at trauma symposiums to obtain information on recidivist research.

Only eleven studies (Appendix B) of trauma recidivism were found. Despite many methodological and interpretative problems, all of these studies identified several similar characteristics of the trauma recidivist. The findings suggested that recidivists had a tendency to be male, between the age of 18-33 years of age, and a member of a racial minority.
The first study to identify the problem of trauma recidivism appeared in 1989. Sims et al. (1989) highlighted the problem of trauma as a "chronic recurrent disease" (p. 946) and reported an alarming recidivism rate of 44%. They specifically concentrated on urban trauma and studied trauma victims admitted over a one year period. The subjects were followed for a five year period in an effort to assess recidivism rates. Five variables were analyzed: age, type of injury, incidence of substance abuse, employment status and involvement with police. A retrospective hospital chart review and review of police computer records provided the database for the study. Of the original 501 subjects, 238 were lost to follow up and not included in the analysis. Of the remaining 263 patients 148 were discovered to have only one documented trauma incident and 115 had repeat trauma incidents.

The recidivist group demonstrated statistically significant differences among the following variables: gunshot wounds (GSWs) (12%) and assaultive injuries (39%) as compared to the non-recidivist population (9% and 12% respectively). Substance abuse (alcohol and drugs) was found to be a factor in 67% of the recidivist population as
compared to 60% of the non-recidivist population; trauma patients with five or more trauma incidents were found to have a 100% substance abuse documentation. Data from the police Crime Computer Files showed that an alarming 75% of the trauma recidivist population had police records during the five year follow-up period as compared to 54% of the general trauma population. A five year mortality rate of 20% was found among the recidivist. The potential rate of gang involvement was not reported. Sims et al's. (1989) landmark study highlighted a problem that although highly suspected, had not been previously addressed in the trauma literature.

Males made up 85% of the trauma population while females represented 15% of the population. No difference among gender was reported among the recidivists. The average age of the general trauma patient was 36 years as compared to 32 years among the recidivist.

One weakness of this study was a very limited definition of the "trauma patient". All patients admitted to the Hospital during 1980-1981 for the treatment of stab wounds, gunshot wounds and assault were considered "trauma patients". Motor vehicle collisions (MVC) represent a large
component of the trauma population (Cesare et al., 1990) and were not identified in this study. This could explain the very high recidivist rate, since only victims of assaultive type injuries were included. Another similar study likewise identified assaultive type injuries as a significant variable in the recidivist population (Dowd, Langley, Koepsell, Soderbert, & Rivara, 1996).

Another limitation of this study was the mechanism of data collection. Chart review can be a very inaccurate method for tracing trauma recidivism since the recidivist population has the potential to be highly mobile. The chance that a trauma patient who experiences a recurrent injury will be brought to the same hospital and/or police department is not very likely (Buss & Abdu, 1995). This fact may account for the high rate of subjects lost to follow-up that was reported in the study (n=238).

Although several weaknesses have been identified in this study, it remains a landmark study in the identification and investigation of trauma recidivism. Sims et al. (1989) present a very strong argument for their proposal that "...urban trauma is a chronic recurrent disease" (p. 947).
Reiner et al. (1990) reported similar trauma recidivism findings in their prospective study. Trauma criteria were clearly identified:

1. Involvement of greater than one organ system
2. Involvement of greater than one anatomic region
3. A life-threatening or potentially life-threatening injury
4. Any patient who required an operation or close observation for the possible need of an operation

A total of 138 patients were identified in the study, a clinical history was obtained as well as demographic data identifying mechanism of injury, injury severity score (ISS), blood alcohol content (BAC), hospital course, operative intervention, length of hospital stay, morbidity and mortality. Patients were asked about previous hospital admission for trauma (according to established trauma criteria).

Two comparison groups were identified: 138 randomly selected, non-trauma related hospitalized patients and 138 randomly selected hospital visitors. No rationale was given regarding the composition of the comparison groups.

Results revealed a recidivist rate of 23%, and 66% of
the recidivists had a readmission within five years of initial injury. Ninety-seven percent of the trauma recidivists were male with a mean age of 26 years, and 81% were African American; of the non recidivist group, males composed 51% of the population and African Americans composed 67% of the population. The mean age of the subjects in the control groups was 35 years. Fifty percent of the 24 trauma recidivists admitted for penetrating injury returned with recurrent penetrating injuries. Sixty-six percent of recidivist patients presenting with an initial non-penetrating injury returned with similar non-penetrating injuries. Thirty percent of the subjects had a positive BAC and the mean length of stay for the recidivist was 12 days. Fifty-six percent of the recidivists required surgical interventions, 22% suffering in-hospital morbidity and 9% mortality. No significantly statistical differences were demonstrated between the recidivist and comparison groups for length of stay, morbidity and mortality.

One potential limitation of this study was the method for identification of the trauma patient (patients admitted to the trauma service based on evaluation of the surgical house and attending staffs). Although clear criteria were
designed to identify the trauma patient, the ultimate diagnosis of trauma was made by the attending physicians and house staff. Since there was no discussion regarding evaluation of attending physician and house staff inter-rater reliability, it is inferred that an assumption of the study was that these physicians applied the diagnosis of trauma correctly and similarly.

Another limitation of this study was the limited definition of drug abuse. The researchers only looked at alcohol levels and ignored data on other drugs that may be implicated in high risk behavior.

Cesare et al. (1990) examined characteristics of nonfatal traumatic injuries and repetitive trauma admissions. The retrospective, chart review was conducted at a university medical center and the sample consisted of 547 trauma patients. Patients were divided into three general categories: blunt traumatic injuries; personal violence injuries; and burns. Variables identified by the researchers consisted of age, sex, race, marital status, employment status, time of day, alcohol or drug abuse, and prior trauma incidence. Although definitions were given for each category, they were very general and non specific. For
example, blunt trauma was defined as "nonpenetrating insults to the body habitus which can result in internal system catastrophe" (Cesare et al., p.177). Blunt injuries were categorized as "motor vehicle accidents, pedestrian struck and falls greater than 4 feet" (p. 177). This definition needs clarification. Many mechanisms of injuries can potentially cause internal system catastrophe and are not considered traumatic injuries. For example, a 35 mph motor vehicle crash (MVC) has the potential for severe injury, but also may result in absolutely no injuries at all. A fall of five feet may result in a slight abrasion with no serious injury, etc. Repeat trauma victims were defined as "individuals with a history of a prior trauma related injury" (p. 177). There was no time delineation; a person could have had an injury as an infant and would meet the criteria 60 or 70 years later. Furthermore, no definition of trauma related injury is given.

The results of Cesare et al.'s study were congruent with previous studies in that the general characteristics of the trauma population tended to be young males. The only significant data reported in relation to the recidivist literature was that recidivism among subjects who
experienced personal violence injuries and burns (20%) was twice as high as that of blunt trauma recidivists (10%).

Trauma recidivism rates were significant among victims of personal violence injuries (20%), with the following breakdown: assaults (28%), burns (18%), and blunt trauma (11%). The authors urged further study into the behavioral characteristics of this vulnerable population.

As in previous studies, a major limitation of this study is the mechanism of data collection, namely chart review.

Morrissey et al., (1991) examined the incidence of recurrent penetrating trauma in an urban trauma center. This retrospective study consisted of chart reviews of 556 patients referred to the hospital emergency area over a 12 month period who had sustained stab, gunshot or shotgun injuries. Charts (N=402) were examined for previous injuries, age, gender, race, financial status, mechanism and location of injuries and police records. Approximately 32% of the population were found to have two or more documented episodes of penetrating trauma. These subjects were more likely to be male (91.4%, comparison group 79.2%), black (93.8%, comparison group 78.5%), and uninsured (35.41%,
comparison group 20.5%). Police records could not be differentiated between recidivists and non-recidivists, however, 48% of the patients did have police records.

Two major weaknesses were identified in Morrissey et al.'s. (1991) study. The definition of trauma was limited to penetrating injuries, GSW, and stabbings. Blunt injuries, while making up the largest portion of the general trauma population, were not studied. Data collection was limited to chart reviews, once again limiting the accuracy of reporting trauma recidivist rates.

One year later, Smith et al., (1992) conducted a five year retrospective comparative study designed to determine the incidence of recurring trauma in another urban trauma center. Other variables identified in the study were age, sex, mechanism of injury and interval between traumatic episodes. Patient admissions (10,894) were examined along with the random selection of medical records of 100 patients who survived and 50 patients who died as a result of their trauma. A recidivist rate of 6.4% was found with 87% of the subjects being male. The average age of the recidivist was 27.7 years. Sixty-one percent of the subjects suffered penetrating trauma, and 39% blunt trauma. There was a 7.5%
mortality rate. This study revealed a significant incidence of penetrating trauma in the recidivist group as compared to the total trauma population; the recidivist group was more likely to be male, younger than the general trauma population and with approximately an eight month average interval between traumatic injuries. The incidence of traumatic deaths among the recidivist group was significant and demonstrated an average time from initial presentation to the trauma service and time of death to be 18.8 months. The researchers suggested that a window of opportunity for prevention therapies may occur at the first injury.

One limitation of this study was the lack of a clear definition of trauma criteria so that all patients who were seen by the trauma service or consulted by the trauma service were admitted to the study. This means that patients who suffered only minor traumatic injuries were potentially subjects in the study. Thus, the loose definition of trauma patients may explain the low recidivist population. Another limitation was the retrospective chart review for data collection.

Rivara, Koepsell, Jurkovich, Gurney, and Soderberg
(1993) investigated the effects of alcohol abuse on readmission for trauma. A prospective design was used and 2,578 patients over the age of 18 years admitted with blunt or penetrating trauma from March 1, 1989 through February 28, 1991 were examined. BAC measurements were obtained to determine the presence of alcohol at the time of injury. Glutamyltrasferase (GGT) tests were also performed to determine chronic alcohol abuse. In addition, a Short form of the Michigan Alcohol Screening Test (SMAST) was administered to patients during their hospitalization.

The recidivist rate was noted to be 1.3 per 1000 patient-months of follow-up. The recidivist group were most likely to be male (77%), between the ages of 25-34 years (32%) and white or Hispanic (75%). Thirty-seven percent of the population had elevated BAC results, with 19% demonstrating significant GGT values and 43% with a SMAST score of 3+ (likely to be an alcoholic).

Limitations of this study include a confusing reporting mechanism for identifying trauma recidivists. While other data were reported as a percentage of occurrence or relative risk value, the recidivists were reported per 1000 patient-months. Another limitation is the absence of identification
of patients undergoing alcohol rehabilitation, and readmission to other hospitals. Trauma victims were identified by loose criteria of being admitted to the hospital as a result of blunt or penetrating trauma and having a BAC test obtained and documented upon admission.

Poole et al. (1993) conducted a study of trauma recidivism using a prospective, comparative design. Two hundred consecutive trauma patients were interviewed regarding prior trauma experience. Three groups were identified: 200 consecutive trauma admissions were compared with 200 non-trauma admissions divided into two groups: 100 consecutive non-trauma surgical admissions and 100 elective surgical admissions. Forty percent of the trauma group reported previous trauma hospitalizations as compared to 20% and 17% of the emergency and elective surgical subjects, respectively. The majority of the patients diagnosed with traumatic injuries were members of racial minorities: 76.5% as compared to the non-trauma population (NTP): 57.5%; males: 73.4% (NTP: 46.6%); and young adults: 34.9 years (NTP: 46 years). Of the trauma recidivist group, 37.5% suffered intentional injuries (NTP: 24.5%).

Poole et al. (1993) suggest that high-risk behavior
(substance abuse, unemployment, intentional injuries), preexisting psychopathology and cultural acceptance of violent resolution of personal conflicts are significant causes of trauma recidivism. However, none of these variables were identified in their study. Poole et al.'s. study never clearly stated the demographic variables examined. The reader is left to interpret tables which list gender, age, prior trauma hospitalizations during their life and trauma hospitalization within 5 years. Although Pool et al. stated they were examining type of injury, there were no tables illustrating these findings. There was no discussion as to the inter-rater reliability of the researchers obtaining the interviews.

Buss and Abdu (1995) examined repeat victims of violence in an urban trauma center in the Midwest. The focus of this study was to describe the characteristics of the repeat offenders and more importantly, to describe the circumstances surrounding violent behavior. Injuries examined included homicide and injury purposely inflicted by other persons (assaults), legal intervention, and injury undetermined whether accidentally or purposely inflicted. It is unclear how the three categories are defined or the
criteria used to determine each category. Inter-rater reliability was not discussed.

Victims of adult urban violence (N=378) were treated and admitted as inpatients over the two year study period. Two subsamples were obtained: 131 patients responded to a retrospective telephone survey and 102 patients were interviewed while still in the hospital. Interviewer validity and reliability were assured through training sessions and evaluation by the researcher. Questionnaires were analyzed by the researcher to monitor interviewer bias.

Results revealed a 39% recidivist rate among the sample (N=233). Sixty-one percent of the recidivists were victimized within 4 years of their most recent traumatic episode.

Characteristics of the victims of urban violence included: 77% male, a mean age of 32 years, and single (64.8%). The predominant race was African American or Hispanic (66%), the average subject was unemployed (57.5%), and suffered penetrating wounds (68.7%) with 50% resulting from a GSW. In comparing the trauma population to the recidivist population the following significant differences were found: The recidivist group was more likely to: be
African-American or Hispanic; live below the poverty level; have witnessed violent acts on others; have been threatened over the past year; carry a gun or knife; put up a fight when attacked; have a history of drug or psychiatric treatment; and have no health insurance (p<.015).

In general this was a very well designed study. An important strength of Buss & Abdu's (1995) study was the use of survey research to compliment their demographic data collection. This approach enhances the validity and quality of the data and provides a more holistic approach to study the problem of recidivism.

Hedges et al., (1995) conducted a retrospective chart review examining the characteristics of repeat trauma patients in six hospitals belonging to the San Diego County Regional Trauma System and compared these findings to a group of non-recidivist trauma patients. Charts were reviewed for trauma admission, age, gender, race, Glasgow Coma Score, Champion trauma score, Injury Severity Score, mechanism of injury, cost of hospitalization and insurance.

Findings demonstrated a recidivist rate of 0.8%. The recidivist was more likely to be male (86.6% vs 75%) and younger than the general trauma population (29.9 years vs
32.8 years). African Americans made up 22% of the recidivist population as compared to 9.1% of the non-recidivist population (total African American population in San Diego County was 4.5%). Victims of an assault-type injury made up 38.4% of the recidivist population as compared to 18.8% of the non-recidivist population and 52% of the recidivists were uninsured.

Many limitations of the study exist. Retrospective chart review ignores the incidence of recidivist victims that have been admitted elsewhere. Inter-rater reliability among the researchers was not discussed. The definitions of "trauma" and assault-type injury lacked clarity. Patients were considered trauma patients simply by the fact that they were admitted to the trauma service; no criteria was discussed as to what admission to the trauma service entails.

Dowd et al. (1996) conducted a retrospective chart review to examine the recidivist population in New Zealand. The object of the research was to determine the degree to which hospitalizations due to assault-type injuries can be predictive of subsequent hospitalizations. Variables identified were age, gender, race, marital status, and
employment status.

The results revealed that 70% of those admitted for an assault were readmitted within 30 days of the initial hospitalization. Males had a 300% higher incidence of sustaining assaultive injury as compared to females. Individuals with a non-assault-type injury were 3.2 times more likely to be admitted for an assault than those with no injury. Therefore, the conclusion was that prior injury is a risk for serious assault and the risk is even greater if the initial injury is due to assault. Risk for readmission for an assault was not significant for race, sex, marital or employment status.

In most cases of trauma readmissions, retrospective chart reviews for trauma readmissions with no interview is unlikely to give an accurate description of the trauma population. It can be justified in this population since national New Zealand registry data were used which represent admissions to the public hospitals caring for 98.6% of the New Zealand population. One limitation of this study was that it was conducted over only a one year period while the bulk of recidivist research consistently uses a five year follow-up in an effort to provide a reliable indicator of
recidivism (Sims et al., 1989, Poole et al., 1993, Morrissey et al., 1991, Ponzer et al., 1996). Another potential limitation was the use of ICD-9 codes or E-codes which classify the admission as to the type of injury to identify trauma patients since inter-rater reliability was not established. The biggest limitation, however, has to do with the inability to generalize the findings to the United States. Of the 43,507 acute injuries in New Zealand reported in 1990, 94% of the injuries were non-assault-type injuries. These data differ dramatically from the United States trauma statistics.

Ponzer, Bergman and Brismar (1996) examined the morbidity and injury recurrence in victims of firearm injuries. Ponzer et al. used a retrospective review to collect data on firearm injuries reported between 1972 and 1992 in Sweden and examined morbidity and reinjury. The sample consisted of 820 victims of firearm injuries; a comparison group of 820 subjects matched for age and gender, who were not hospitalized for injury was used for comparison. No further description of exclusionary criteria for the comparison group was given. The study demonstrated an increased morbidity among the firearm injury (FI) group
of 69.9% as compared to a 45.5% of the noninjured group. A recidivist rate of 34.9% was found among the FI group and an injury rate of 12.7% among the comparison group. The following characteristics were significant findings among the FI group: substance abuse, suicide and homicide, psychiatric disorders, and increased use of hospital days. Ponzer et al. (1996) concluded that there appears to be a "chronic trauma syndrome" (p. 45) characterized by victims of GSWs. The authors suggested that there may be other common characteristics for "chronic trauma syndrome" such as risk-taking and destructive behavior, high morbidity, and mortality and anti-social traits. Ponzer et al. (1996) recommended that trauma be treated as a social disease as well as a physical injury with programs designed to change the destructive lifestyles so common to the trauma recidivist.

Discussion

In summary, the only consistent variable identified throughout the literature was an increased recidivist rate among young males, especially of a racial minority (Sims, et al., 1989; Cesare et al., 1990; Poole et al., 1993; Morrissey et al., 1991; Reiner et al., 1990; Smith et al.,
1992; Hedges et al., 1995; Buss & Abdu, 1995; Rivara et al., 1993; Dowd et al., 1996; Ponzer et al., 1996; Smeltzer & Redecker, 1995). Although not as consistent, other variables such as unemployment (Sims et al., Buss & Abdu, Dowd et al., & Smeltzer & Redecker), being victims of assault (Sims et al., Reiner et al., Smith et al., Hedges et al., Rivara et al., Dowd et al., Buss & Abdu, Ponzer et al., & Smeltzer & Redecker) and substance abuse (i.e., either alcohol, drugs or both) were also implicated as significant risk factors in many studies (Sims et al., Cesare et al., Buss & Abdu, Rivara et al., Ponzer et al., & Redecker, Smeltzer, Kirkpatrick & Parchment, 1995).

Having a police record was a significant factor in three studies of trauma recidivism (Sims et al., 1989; Morrissey et al., 1991; & Smeltzer & Redecker, 1995) and suggests that an association between having a police record and being the victim of a recurrent traumatic event may exist.

Morbidity and mortality rates were the focus of several trauma recidivism studies (Sims et al., 1989; Morrissey et al., 1991; Reiner et al., 1990; Ponzer et al., 1996) and a correlation between increased morbidity and mortality and
trauma recidivism was reported.

Other significant predictors of recidivism that were reported included: being single (Cesare et al., 1990; Buss & Abdu, 1995; Dowd et al., 1995), having a psychiatric disorder (Poole et al., 1993; Buss & Abdu; & Ponzer, 1996), not having insurance (Reiner et al., 1990; Hedges et al., 1995; Buss & Abdu; Rivara et al., 1993), having a high injury score (Morrissey et al., 1991; Hedges et al.; & Rivara et al.), and poverty (Morrissey et al., Buss & Abdu, & Smeltzer et al., 1995).

The recidivist rates ranged from a low report of only 0.8% (Hedges et al., 1995) to an astonishing 65% (Smith et al., 1992) which may reflect inconsistencies in the reporting of trauma recidivism. There are many reasons for this inconsistency which will be discussed below.

A major problem identified within the studies was the lack of a universally accepted definition of trauma. This presents a major gap in the trauma literature and illustrates the need for a clear and explicit conceptual and operational definition of trauma. This lack of definition, however, is understandable since trauma crosses so many disciplines, each having their own description and a limited
or biased view of trauma criteria. The review of the literature on the concept of trauma also revealed no clear conceptual analysis of trauma. Definitions and conceptual models of trauma varied greatly with little or no agreement among the researchers. Most often, the trauma subject was identified simply by meeting criteria for being admitted to the trauma service. Since this criteria is often identified by individual hospitals and trauma services, it is not standardized (Smeltzer et al., 1995; Sims et al., 1989; Cesare et al., 1990; Poole et al., 1993; Reiner et al., 1990; Smith et al., 1992).

Only one study (Poole et al., 1993) examined the incidence of trauma recidivism in a non-urban setting. Poole et al. studied trauma in a rural population. Further research is needed in the area of trauma recidivism in a non-urban environment.

Another major conceptual problem identified throughout the recidivism research is the manner of identifying the trauma recidivist. It is well documented that the trauma population tends to be poor and highly mobile. The assumption that the trauma victim will return to the same institution for subsequent admissions may be very unlikely.
Therefore, identifying a recidivist population solely by hospital chart review (Cesare et al., 1990; Morrissey et al., 1991; Smith et al., 1992; Hedges et al., 1995; and Rivara et al., 1993) is unlikely to provide an accurate estimation of the recidivist rate.

Finally, several methodological issues exist. Only one study (Buss & Abdu, 1995) used a qualitative approach to study the recidivist. Two other studies used interviews to illicit previous trauma history (Reiner et al., 1990; Poole et al., 1993). All other studies used structured surveys or identification of variables to describe the trauma recidivist population (Sims et al., 1989; Cesare et al., 1990; Morrissey et al., 1991; Smith et al., 1992; Hedges et al., 1995; Rivara et al., 1993; Dowd et al., 1996; Ponzer et al., 1996). These variables and questionnaires were designed by researchers with the intention of identifying similarities among the recidivist victims, however, the rich perspectives from the recidivists is lost in a quantitative design.

In summary, the review of the literature revealed five major deficits centering on conceptual and methodological issues: (1) only one trauma recidivism framework has been
identified, applicable only to the adolescent population (Smeltzer & Redecker, 1995); (2) there is a lack of a consistent definition of trauma or criteria for identifying the trauma population; (3) chart review is the most common method used to illicit information regarding the recidivist which has demonstrated inconsistent identification of variables describing the characteristics of the recidivist and high dropout rates among the recidivist population; (4) only one study examined recidivism in a non-urban setting, and (5) there is a lack of qualitative information about the recidivist population.

Buss and Abdu (1995) raised some very interesting points in discussing the problem of trauma recidivism. First they reported urban trauma victims are likely to be readmitted to the ED using up a significant amount of already scarce health care resources. Second, they suggested that the prevalence of urban trauma recidivism is epidemic and underestimated in the medical literature because medical record data is usually the sole identifier of recidivism. Many trauma victims will have no evidence of trauma recidivism in their charts due to the mobility of the victims (often having been treated elsewhere), therefore,
personal interview is an important tool used to obtain accurate information. Third, they proposed that urban trauma victims may often be improperly treated by physicians who are concerned solely with their physical injuries and providing emergency care without knowing the circumstances surrounding the trauma. And, finally they stated that urban trauma recidivism can only be reduced if patients are viewed in a more holistic manner, taking into account their socioeconomic, psychological and health status.

The recidivist population is becoming a recurring theme among trauma centers. Two studies even went so far as to call it a chronic disease among urban trauma centers (Morrissey et al., 1991, Sims et al., 1989). A well-designed study is needed to address the characteristics and concerns of the recidivist population. Once the characteristics and concerns are addressed, prevention strategies can be designed to combat this deadly disease. Therefore, the purpose of the proposed study is to identify and describe characteristics and perceptions of both trauma recidivists and non-recidivists.
CHAPTER III

METHODS

Design

An exploratory, descriptive, comparative design and a semi-structured interview technique were used to examine the characteristics and perceptions of trauma patients and trauma recidivist patients.

Sample

A convenience sample of 100 trauma patients admitted to a large, Midwestern university medical center trauma unit was obtained in an effort to ensure at least 20 trauma recidivists. For subjects to be eligible for this study they had to meet the following criteria: (1) 18 years of age or older, (2) their injury must meet the criteria for trauma according to the American College of Surgeons (Appendix C) (criteria used for hospital trauma service), (3) English speaking, (4) able to participate in a 30 minute interview as determined by the Principle Investigator/Research Assistant (PI/RA), and 5) give their informed consent. In
order to be categorized as a trauma recidivist, in addition to meeting the preceding criteria, the subject must have also suffered a traumatic injury within the past five years (according to the same trauma criteria identified above). Reading and educational levels were not determined since the interviewer was present to answer any questions and read the interview questions to the subjects. Subjects who were under police guard or who were wards of the state were excluded from the study.

**Setting**

The interviews took place while the patient was hospitalized in the emergency department, ICU or general floor. The interview was conducted only when the patients were well enough to give informed consent and able to describe the purpose of the study to the PI/RA. Privacy was provided by arranging a time for the interview when visitors and staff would not be present and the curtains were closed. If the patient was discharged prior to the interview, a telephone interview was attempted the following day.

**Instruments**

A quantitative research survey was designed to illicit the characteristics of the trauma patient and trauma
recidivist and their perspectives of the traumatic event. A chart audit form designed by the investigator was used to identify demographic information from the in-patient hospital chart of identified trauma patients (Appendix D). Information on the following recidivist characteristics was solicited: demographics (gender, age, race, marital status); mechanism of injury; insurance; injury severity; substance abuse; and income.

A semi-structured interview guide was also developed by the investigator, based on a review of the literature and personal experiences of the investigator. A brief (about fifteen minute) personal interview was conducted on each subject to assess police record, psychiatric disorder, morbidity, prior assaultive injuries, prior traumatic injuries, witness of violent injuries in the past, owning a gun, carrying a gun or knife, gang membership, familiarity with their attacker, have they seen their attacker since the injury, did they believe they would be injured again, did they blame themselves for the injury (Appendix E).

The perspectives of the trauma patient regarding future prevention were elicited through the use of two open-ended questions at the end of the interview guide. These questions
centered around the patient’s perspective regarding the consequences of the traumatic injuries and suggestions for future prevention strategies (Appendix E).

Content validity for the interview guide was established by a panel of experts (trauma coordinator, trauma case manager and trauma nurse specialist). Face validity had been obtained from trauma patients during a pilot study to determine if they understood the questions and if they would be willing to give honest responses. Modifications were made based on their responses. The revised instrument was pilot tested prior to initiation of the protocol and further refinements were made as necessary.

Protocol

Training of Research Assistants

A RA was hired and trained by the PI to ensure quality data collection and assist in conducting interviews (Appendix F). Inter-rater reliability between the PI and RA was established by the PI calling back approximately 15% of the sample who had been initially interviewed by the RA. These subjects were re-interviewed by phone in order to evaluate the reliability of the responses. A 98% reliability was obtained between PI and RA responses.
Identification of Trauma Patients

Each weekday the PI/RA obtained a list of all trauma patients admitted the previous day. All eligible trauma patients were invited to participate in the study and consents were obtained from interested patients. Each patient was advised that their participation was strictly voluntary and that they could refuse to answer any question and/or terminate the interview at any time. The PI/RA determined the ability of the subject to respond to the interview by asking them to repeat the purpose of the study and their right to refuse at any time. Once consent was obtained the PI/RA arranged a time, preferably within the same day, to interview the patient. If the trauma patient had been discharged from the hospital, a phone interview was conducted.

Demographic Information/Interview

Prior to the interview, the PI/RA conducted a chart review and completed a demographic data sheet (Appendix D). They then conducted the interview, using the interview guide (Appendix D). Responses were recorded (i.e. written) by the PI/RA. The interview took approximately 20 minutes.
Data Analysis

All of the quantitative data (structured interview and demographic data) were recorded as nominal data. Frequency distributions were noted and a chi-square test for differences was conducted. Perceptions of the trauma patients through the use of the two open-ended questions located at the end of the interview guide were categorized and reported.

Protection of Human Subjects

IRB approval was obtained (Appendix G) prior to initiation of the study. Each subject was given a verbal and written description of the study including purpose, procedures, risks and benefits. The subjects were asked to provide a written or verbal witnessed consent. The subject was advised of his/her right to refuse to participate in the study or to drop out of the study at any time.

Protection of anonymity was assured. Names were not used at any time throughout the reporting of the study. Interview sheets were coded with an unidentifiable number and a master kept in a locked file by the PI.
CHAPTER IV

FINDINGS

The findings from this study will be discussed in two sections. The first section will describe the demographic data and clinical characteristics of the trauma subjects in general and then compare and contrast two subgroups of the sample (i.e., trauma recidivists and non-recidivists). The second section will focus on responses of the subjects to open-ended questions regarding consequences and prevention of trauma.

Demographics and Characteristics

Total Trauma Sample

The sample consisted of 100 trauma patients admitted to a suburban, Midwestern, university level 1 trauma center between September, 1997 through January, 1998. The majority of the trauma subjects were less than 45 years of age, male, Caucasian, single, with a high school or greater education. Only 12% of the general trauma sample was reported to be Hispanic, but this may be misleading since some Hispanics
could not speak English and non-English speaking patients were not eligible to participate in the study. The majority of the subjects had incomes between $10-40,000 and 50% were privately insured (see Tables 1 and 2).

Table 1.--Demographics: General Trauma Sample: Age, Gender Race and Marital status.

<table>
<thead>
<tr>
<th>N</th>
<th>Age</th>
<th>Gender (%)</th>
<th>Race (%)</th>
<th>Marital Status (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>+/- 15</td>
<td>&amp; 68 68</td>
<td>White=52</td>
<td>Single=47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&amp; 32 32</td>
<td>Black=31</td>
<td>Married=38</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hispanic=12</td>
<td>Divorced=12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other=5</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.--Demographics: General Trauma Sample: Education, Income, and Insurance.

<table>
<thead>
<tr>
<th>N</th>
<th>Education</th>
<th>Income</th>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>&amp;HS*=18</td>
<td>&lt;$10,000=26</td>
<td>Private=50%</td>
</tr>
<tr>
<td></td>
<td>HS = 42</td>
<td>$10-40,000=64</td>
<td>Medicare/</td>
</tr>
<tr>
<td></td>
<td>&gt;HS = 40</td>
<td>&gt;$40,000=10</td>
<td>Medicaid=7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>None= 39%</td>
</tr>
</tbody>
</table>

*HS=High School

The mechanism of injury among this general trauma sample tended to be non-violent, with motor vehicle collisions causing 54% of injuries (see Table 3). Pedestrians struck by cars were the second highest non-violent injury reported. Other causes of non-violent
injuries included falls and work-related injuries (see Table 3). Violent injuries comprised 20% of the sample with GSWs being the most frequent type of violent injury.

Table 3.-General Trauma Sample: Mechanism of Injury.

<table>
<thead>
<tr>
<th>Population</th>
<th>Non-Violent*</th>
<th>Violent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MVC</td>
<td>Pedestrian</td>
</tr>
<tr>
<td>General Trauma N=100</td>
<td>54%</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Only the four highest (%) non-violent injuries reported

Recidivists vs Non-Recidivists

The trauma population was then divided into recidivists and non-recidivists depending on how they answered the question, "Have you had a previous traumatic injury within the last five years?" Using a frequency distribution, the recidivist population in this study represented 36% of the total sample, with 64% being non-recidivists. Cross tabulations were performed to determine chi-square significance between the two groups, trauma recidivists and non-recidivists (see Tables 4-10). The recidivist and non-recidivist populations reflected a similar composition to the general trauma population in regards to gender, with the majority of the population being male. However, although not statistically significant, the recidivist population had
a higher percentage of non-Caucasian subjects with 56% of the recidivist population being of a racial minority as compared to 44% of the non-recidivists (see Table 4).

Table 4--Demographics: Recidivists vs Non-Recidivists: Gender and Race.

<table>
<thead>
<tr>
<th>Population</th>
<th>N</th>
<th>Gender</th>
<th>Race</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>White</td>
<td>Black</td>
<td>Hispanic</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Recidivist</td>
<td>36</td>
<td>69%</td>
<td>31%</td>
<td>44%</td>
<td>42%</td>
<td>6%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Non-Recidivist</td>
<td>64</td>
<td>67%</td>
<td>33%</td>
<td>56%</td>
<td>25%</td>
<td>16%</td>
<td>3%</td>
<td></td>
</tr>
</tbody>
</table>

The trauma recidivist group differed significantly (p<.05) from the non-recidivist group in that the former were more likely to be single or divorced and have less education (see Table 5). There was a negative correlation between education and being a recidivist, with the recidivist more likely to have less than high school education and less likely to attend college (Rho=-.25, P<.01). There was no significant difference reported between groups regarding income, with the majority of participants earning between $10-$40,000 per year (see Table 6).
Table 5.—Demographics: Recidivists vs Non-Recidivists: Marital Status, and Education.

<table>
<thead>
<tr>
<th>Population</th>
<th>S</th>
<th>M</th>
<th>W</th>
<th>D</th>
<th>&lt;HS</th>
<th>HS</th>
<th>&gt;HS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recidivist N=36</td>
<td>47%</td>
<td>28%</td>
<td>8%</td>
<td>17%</td>
<td>28%</td>
<td>47%</td>
<td>25%</td>
</tr>
<tr>
<td>Non-Recidivist N=64</td>
<td>46%</td>
<td>44%</td>
<td>0</td>
<td>10%</td>
<td>13%</td>
<td>39%</td>
<td>48%</td>
</tr>
</tbody>
</table>

*Significant differences demonstrated between groups p<.05

Table 6.—Demographics: Recidivists vs Non-Recidivists: Income.

<table>
<thead>
<tr>
<th>Population</th>
<th>Income (K=$1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;10K</td>
</tr>
<tr>
<td>Recidivists N=36</td>
<td>32%</td>
</tr>
<tr>
<td>Non-Recidivists N=64</td>
<td>23%</td>
</tr>
</tbody>
</table>

The recidivist also tended to be significantly (p < .05) younger than the non-recidivist population with 83% of the sample less than 45 years old (see Table 7). A significant correlation (Rho=.29, p <.01) was demonstrated between having no insurance and being a recidivist; 56% of the sample reported having no insurance (see Table 7).
Table 7.--Demographics: Recidivists vs Non-Recidivists: Age and Insurance.

<table>
<thead>
<tr>
<th>Population</th>
<th>Age*</th>
<th>Insurance*+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18-29</td>
<td>30-45</td>
</tr>
<tr>
<td>Recidivist N=36</td>
<td>47%</td>
<td>36%</td>
</tr>
<tr>
<td>Non-Recidivist N=64</td>
<td>43%</td>
<td>22%</td>
</tr>
</tbody>
</table>

*Significant difference demonstrated between groups p<.05  
+1 subject had both medicare and private insurance.

The trauma score was another variable that was affected by the exclusionary criteria used in this study. The trauma score represents the severity of injury with a score of 1 being an unstable, life-threatening injury and 12 representing a stable injury. Most trauma subjects had recorded trauma scores of 12 (range 5-12, mean score 12). The recidivists and non-recidivist groups did not differ greatly in their trauma score (see Table 8).

Table 8.--Demographics: Recidivists vs Non-Recidivists: Trauma Score.

<table>
<thead>
<tr>
<th>Population</th>
<th>Trauma Score (Mean) (Range 5-12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recidivist (N=36)</td>
<td>12</td>
</tr>
<tr>
<td>Non-Recidivist (N=64)</td>
<td>12</td>
</tr>
</tbody>
</table>
There were no significant group differences in relation to positive alcohol tests. Thirty-three percent of the general trauma sample (45% of the recidivists and 26% of the non-recidivist sample) tested positive for blood alcohol levels upon admission to the emergency department.

The recidivists and non-recidivists resembled the general trauma sample in their mechanism of injury. The most frequent cause of trauma among all samples were MVCs. Although there were no significant group differences, the recidivist group had a higher tendency to suffer gunshot wounds than the non-recidivist groups (see Table 9).

Table 9.--Mechanism of Injury: Non-Violent vs Violent.

<table>
<thead>
<tr>
<th>Population</th>
<th>Non-Violent*</th>
<th>Violent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MVC</td>
<td>Pedestrian</td>
</tr>
<tr>
<td>Recidivist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=36</td>
<td>67%</td>
<td>11%</td>
</tr>
<tr>
<td>Non-Recidivist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=64</td>
<td>56%</td>
<td>11%</td>
</tr>
</tbody>
</table>

*Only the 4 highest(%) non-violent injuries reported here.

Behavioral Characteristics

A comparison of behavioral characteristics of recidivist and non-recidivist trauma patients showed that
the groups differed significantly (p<.05). Low to moderately positive significant (p<.05) correlations were found between recidivists and: a) a history of prior arrests (Rho=.31); b) use of illegal drugs (Rho=.25); and c) witnessing a violent injury in the past (Rho=.20) (see Table 10).

Table 10.--Behavioral Characteristics: Arrested in the Past, Use of Illegal Drugs, Having Witnessed a Violent Injury in the Past.

<table>
<thead>
<tr>
<th>Population</th>
<th>Arrested*</th>
<th>Illegal Drugs*</th>
<th>Witnessed Past Violent Injury*</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Trauma</td>
<td>36%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>N=100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recidivist</td>
<td>69%</td>
<td>33%</td>
<td>64%</td>
</tr>
<tr>
<td>N=36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Recidivist</td>
<td>31%</td>
<td>12%</td>
<td>43%</td>
</tr>
<tr>
<td>N=64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

Cannabis and cocaine were the illegal drugs most often reported, however other drugs for which the subjects tested positive included opiates, benzodiazepines and barbiturates. There was no statistical significance of individual drug use between groups (see Table 11, Appendix H).
Patients then responded to questions in a survey interview which focused on general safety and risky behaviors. The first question asked about use of seatbelts and child seats; no significant group differences were found (see Table 12, Appendix H). Approximately 40% of the subjects of each group reported always using seatbelts when traveling in a car and 12% of the recidivists and 5% of the non-recidivists reported never using a seatbelt. No significant differences were noted between groups related to the use of child seats (see Table 12, Appendix H).

Other characteristics studied but not reported as statistically significant included use of airbags. While 64% of the recidivists and 53% of the non-recidivist reporting currently having airbags in their car, only 43% of the recidivists stated that they would refuse to buy a car without an airbag (see Table 13, Appendix H).

Whether or not the subjects rode a motorcycle was also examined along with helmet use for those who rode motorcycles. While the majority of patients denied riding a motorcycle, 25% of the recidivists and 33% of the non-recidivists who did ride motorcycles reported never wearing a helmet when riding a motorcycle (see Table 14, Appendix
The use of sportsgear and safety goggles were also examined. While only 36% of the recidivists claimed to always wear sportsgear when necessary, 50% of the non-recidivists responded similarly. Use of goggles when performing tasks that put the subjects at risk for eye injuries was reported as always for 81% of the recidivists and 71% of the non-recidivists, and never by 6% of the recidivists and 13% of the non-recidivists (see Table 15, Appendix H).

Whether or not the subject owned a gun, belonged to a gang, had tattoos and pierced body parts were also explored. It is interesting to note that while the vast majority of both groups denied gun use, gang attachment, or pierced body parts, 9% of recidivists admitted to belonging to a gang, while only 3% of non-recidivists admitted gang association (see Table 16, Appendix H).

The psychological impact of trauma was also examined. Responses to questions about a history of psychiatric problems, driving under the influence of drugs or alcohol, knowing their attacker, perceptions of vulnerability to future injuries and blaming themselves for their injury did
not differ significantly between recidivists and non-recidivists (see Table 17, Appendix H).

Perceptions of Trauma Patients

Trauma Consequences and Prevention Strategies

In addition to the previous questions about safety and risky behaviors, all trauma subjects were also asked two open-ended questions. The purposes of these open-ended questions were to have trauma patients share their perceptions regarding 1) the consequences of their trauma and 2) ideas for possible prevention strategies that could not be obtained through the use of closed-ended questions.

Consequences of trauma and prevention strategies were categorized according to the antecedents to trauma as outlined in the "Evolutionary Model" (see Chapter II). The initial question centered on the consequences of the trauma and how the trauma experience would affect the subjects' lives. The consequences of trauma identified in the evolutionary model include adaptive change (physiologic, psychologic & social), potential revitalization, setting new life goals, and death/destruction. Many people said that their lives were not affected in any major way by the trauma (N=18), and 11 subjects were uncertain at that point how the
trauma would affect their lives. However, 74 subjects discussed how the trauma experience would change their lives.

**Adaptive Change: Physiologic**

Twenty subjects reported physical limitations with such quotes as: "...my legs won’t be the same", "...I will be in a wheelchair", "...I lost my vision".

**Adaptive Change: Psychologic**

Many subjects reported psychological changes as a result of their trauma. Some responses included a resolve to be "smarter", "more careful", "more cautious", "pay more attention", "will put safety first". The following list categorizes the responses: resolve to be more careful, cautious (N=31); will limit drinking/drugs (N=2); vow to change unhealthy behaviors (riding motorcycle, drinking & driving) (N=4); resolve to wear seatbelt (N=3); fear of driving, being in car, heights (N=3).

**Adaptive change: Social**

Responses in this category included a resolve to stay away from drugs, gangs, off streets (N=3); financial burdens (N=2); and plans to relocate (N=1).
Death/Destruction

A negative result is when there is the loss of hope, a feeling of doom as a result of the trauma. Two subjects expressed these feelings: "...Afraid I will not survive" and "I will be going to jail". One other subject expressed a need for revenge against his attacker.

Potential Revitalization

One victim was a nurse involved in a house fire in which she jumped from a second story window to save her life, fracturing both arms and legs. Her statements were heart rendering, "this has changed my life dramatically...I will be more thoughtful and caring toward others, especially my patients. I have a new appreciation for them. I will treat them as individuals, give them more respect, trust and attention. I will be a more caring person, not just toward my patients but to my family. I have a new appreciation for life". Other responses included: a new appreciation for life (9), resolve to live life to the fullest (N=9); will slow down, enjoy life more (N=5); will appreciate others more (N=4); will be more expressive of feelings (N=1); feels he got another chance at life, will be a better person because of the trauma (N=7).
New Life Goals

Some suggested, "(this injury) will limit my career...", "I may lose my job as a result of my injuries". Many said they would take a new look at their life and make some changes in their "life goals" or "will look at life differently". Responses included: will have to change job/career/family role (N=8); will take a look at their lives, introspection (N=6).

In an effort to obtain the trauma patient's perspectives regarding trauma prevention strategies, the second question asked was: "Can you think of any way this trauma could have been prevented?" Sixty-five subjects responded to the question. The responses were divided into violent and non-violent injuries. According to the evolutionary model, these antecedents to trauma fell into three general categories: lack of support, risk-taking behavior and environmental factors.

Lack of Support

Many subjects discussed a lack of support available to either prevent trauma or make their neighborhoods safe. This category was further divided into responses of those suffering violent injuries and those suffering non-violent
injuries.

Lack of Support: Violent Injuries

One victim expressed frustration when he stated, "tell them (kids) that drugs are bad, but it doesn't matter, everyone smokes weed (marijuana)". Drug education and better police protection was a common theme: better enforcement of laws (gun, gang violence) (N=9); More policing of streets/more police protection (N=8); More community/parental support (N=3); Need for drug education (N=1); Need for counseling (N=3)

Lack of Support: Non-Violent Injuries

One subject stated, "...elderly cause accidents and should have their license revoked". Many suggestions centered around driving and highway safety: better enforcement of laws (speeding, drunk driving) (N=15); stricter elderly driving laws (N=1); better building maintenance (sprinklers, smoke detectors, railings) (N=3); enforce truck safety regulations and maintenance (N=3); improve driving conditions (N=7); offer driving classes (N=7); alcohol counseling (N=5).

Risk-Taking Behavior

Many expressed a need to stop and consider the
consequences of their impulsive behavior, for example: "I shouldn't have gotten into the car that was used in an earlier (shooting) incident" or "I'll be more careful next time" reflected a desire on the part of the injured patient to use more caution in the future. These responses are also reported according to violent and non-violent injuries.

**Risk-Taking Behavior: Violent Injuries**

The responses focused on the need to use better judgment (N=21). The discussions centered on impulsive actions and a need to be more cautious.

**Risk-Taking Behavior: Non-Violent Injuries**

Responses to prevention strategies among those suffering non-violent injuries were found in such statements as, "If I never picked up a beer can, this wouldn't have happened". Drinking and driving was cautioned by 3 subjects. Other responses included: use better judgment, more caution, more control (N=21 same as violent injury); should have worn seatbelt (N=3).

**Environmental Factors**

Responses centering on environmental factors were also divided into violent and non-violent injuries.
Environmental Factors: Violent Injuries

Most responses in this category stressed the importance of moving to a safer neighborhood (N=5). One subject highlighted this fact when he stated, "...there is no way you can change the gangs, (you need to) talk to the little kids and tell them about how bad gangs are, tell them the streets will take your life away, the street will hurt you and your family, stay away from gangs, join intramural sports, get involved in school".

Environmental Factors: Non-Violent Injuries

Strategies for prevention of non-violent injuries included: better maintenance of highways (N=11); better enforcement of truck safety regulations (N=3); need better work safety regulations (N=2); Lower speed limits (N=3).
CHAPTER V

DISCUSSION

Trauma recidivism is believed to be a significant problem to the American people, however the exact incidence varies dramatically among studies. A 36% recidivism rate was found among the trauma subjects in this study, which is comparable to the rates (23-44%) reported in several previous studies (Sims et al., 1989 (44%); Poole et al., 1993 (40%); Morrissey et al., 1991 (32%); Buss & Abdu, 1995 (39%); Reiner et al., 1990 (23%).

Most of the previous studies on trauma recidivism have been conducted in urban centers (Sims et al., 1989; Reiner et al., 1990; Morrissey et al., 1991; Buss & Abdu, 1995). Poole et al., 1993), however conducted their recidivism study in a rural population and found a 40% recidivism rate. This was a very interesting finding because trauma recidivism in the past was considered a result of urban violence. In this study, the study setting was a suburban
medical center. The majority of trauma patients in this center suffered non-violent injuries, such as motor vehicle collisions. Therefore, this study, along with the Poole et al. (1993) study indicate that trauma recidivism is not a problem unique to only urban centers.

Three general characteristics of trauma recidivists found in this study were consistent with the findings of previous studies. The majority of the subjects were less than 45 years old, male, and members of a racial minority group (Sims et al., 1989; Cesare et al.; 1990, Poole et al., 1993; Morrissey et al., 1991; Reiner et al., 1990; Smith et al., 1992; Hedges et al., 1995; Buss & Abdu, 1995; Rivara et al., 1993; Dowd et al., 1996; Ponzer et al., 1996; Smeltzer & Redecker, 1995).

Subjects were required to be 18 years of age or older to be included in this study. Rachuba, Stanton, and Howard (1995) reported an alarming 317% increase in violent injuries among youth aged 10-14 over the past 21 years. The number of younger trauma patients (<18 years old) was not reported and represented one limitation of this study. Future studies should be designed to include young subjects.

While the racial composition of the recidivists' and
non-recidivists' groups did not differ statistically, similar to previous reports there was a higher percent of minorities in the recidivist group. In regards to racial composition, a small population size may account for the lack of significant group differences. Another potential limitation of this study is that the sample may not have included a sufficient number of Hispanic subjects to be representative of the surrounding community. While a Hispanic population of 12% was found, in reality Hispanics make up approximately 16% of the general trauma population within this study institution (Esposito & Zougras, 1998). Although the difference seems small (4%) it may indeed impact the recidivist sample, since other studies have demonstrated increased minority rates among the recidivists. Because of the exclusionary criteria, large numbers of Hispanic patients may have been excluded from the study due to lack of English speaking abilities. Therefore, it is very likely that the Hispanic population is not accurately reflected in this study.

Other characteristics of trauma recidivists that have been reported in the past are: being single, having less educational preparation than the non-recidivists, and no
insurance (Sims et al., 1989; Reiner et al., 1990; Morrissey et al., 1991; Buss and Abdu, 1995; Cesare et al., 1990; Hedges et al., 1995; Rivara et al., 1993; Dowd, 1995).

These three traits were also found to be significant in this study.

Being single was correlated to being a recidivist in several studies (Cesare et al., 1990; Buss & Abdu, 1995; and Dowd, 1995) and this was also corroborated in this study. The link between being single and being a trauma recidivist could be explored in a number of ways. First, the recidivist group tends to be younger than the general population; therefore many subjects may have been too young to be married. Marriage also represents a level of commitment and personal stability, a trait more likely to be found among those taking less risks than their single, young counterparts. The recidivist sample also included a larger number of divorced and widowed subjects. This finding needs to be explored further through future research.

Lower educational preparation among the recidivists, which was found in this study, has also been linked to trauma recidivism by others (Buss & Abdu, 1995). The fact that trauma recidivists have a significantly higher
incidence of high school drop-outs (28% reported in this study) has serious ramifications for public involvement such as government programs targeted to keep youth in school.

Inability to pay for trauma services has had a major adverse impact on society and trauma hospitals for many years (Eastman, 1992). The fact that 56% of the recidivists had no insurance is alarming. Several other investigators (Reiner et al., 1993; Hedges et al., 1995; Buss & Abdu, 1995; Rivara et al., 1993) also reported lack of insurance as a significant problem among trauma recidivists. In a report from the National Safety Council (1997), the annual cost of trauma care in 1996 was $444 billion dollars, with $75 billion dollars due to medical costs alone. The financial cost of trauma care to society is tremendous.

The Trauma Score (TS) was also recorded for all study participants. The TS is a numerical indication of severity of injury ranging from 1-12. A TS of 1 represents the most severe type of injury that is always life-threatening and a TS of 12 represents a stable patient. The average TS was 12 (normal finding) for both groups, which is a reflection of the exclusionary criteria. For a patient to be eligible for this study they had to be mentally alert and able to respond
to a 15-30 minute questionnaire. With this level of alertness, it is not surprising that the study subjects would have a normal TS. Thus the findings of this study are limited to trauma patients with similar TS.

The next characteristic examined was the type of injury most likely to occur to the trauma recidivist. Other studies have found that trauma recidivists are more likely to suffer violent injuries than the general trauma population (Sims et al., 1989; Cesare et al., 1990; Smith et al., 1992). While mechanism of injury was not found to differ significantly between recidivist and non-recidivist groups in this study, there were clinically significant differences. The incidence of GSWs among the recidivist population was almost double that of the non-recidivist. Ponzer et al. (1996) suggested that this high-risk group be targeted for prevention strategies. The practitioner should be aware that patients who are victims of a GSW are at greater risk for recurrent injuries.

Two characteristics that have been linked to trauma recidivism in the past are having a previous arrest record and drug use, including alcohol. These characteristics were also found to be significant in this study. Sixty-nine
percent of the recidivists reported past arrests. Although the type of crime committed was not ascertained in this study, other researchers found a link between violent crimes and recidivism (Sims et al., 1989; Morrissey et al., 1991). Police records were not available during this study which could have shed some light on the types of crimes committed by the study recidivists.

The use of illegal drugs among trauma patients has been well documented and was also demonstrated in this study with 33% of the trauma recidivist patients voluntarily admitting illegal drug use as compared to 12% of the non-recidivist population. Other researchers also found drug abuse to be one of the most significant risk factors among trauma victims across all injury types, violent and non-violent (Sims et al., 1989; Cesare et al., 1990).

Alcohol abuse is reported to be the most common chronic illness found in trauma patients (Rivara et al., 1993). In this study an alarming 33% of the trauma subjects entered the hospital with positive serum alcohol levels. Although more recidivists tested positive for alcohol then non-recidivists (45% and 26% respectively), no significant group difference was found.
Alcohol abuse still remains a serious problem among the general trauma population. While there have been mass campaigns against drinking and driving in the media, alcohol abuse in combination with driving remains a common lethal combination. Rivara et al. (1993) reported that patients who were intoxicated on the initial admission were 2.5 times as likely to be readmitted than those not intoxicated. Buss and Abdu (1995) state, "clearly substance abuse problems are not adequately dealt with .... Trauma is viewed as an injury, while substance abuse is viewed as a symptom. Perhaps this view should be reversed: trauma may well be a symptom of drug and alcohol abuse" (p. 191). Sims et al. (1989) reiterated this sentiment and found that the incidence of substance abuse rose precipitously with increasing numbers of trauma admissions.

Researchers Buss and Abdu (1995) found that having witnessed a violent injury in the past was a significant factor among trauma recidivists. They found that recidivists were likely to be encumbered in a "circle of violence". That "circle of violence" consists of having witnessed a violent injury and then becoming the victim of a violent injury. The findings of this study support Buss and
Abdu's (1995) theory, since 64% of the trauma recidivists reported having witnessed a previous violent injury in the past. Knowing a patient was a victim of a violent injury should alert the practitioner to target this patient for prevention strategies and further counseling.

The following characteristics did not demonstrate statistically significant differences between recidivist and non-recidivist groups, however the substance of the responses have tremendous implications for future trauma care.

The use of safety precautions is an important factor in trauma prevention. Therefore, identifying the use of safety precautions among the general trauma population will provide valuable information to the trauma healthcare team. Safety factors identified by the study included use of seatbelts, childseats, and airbags.

It is common knowledge that seatbelts prevent many serious injuries (Moore, et al., 1991). Inconsistent use of seatbelts was reported by 62% of the trauma patients, more than half of the total population.

Another common problem discussed in the trauma literature is the lack of proper protection for children in
vehicles. This study revealed that 8% of the sample never placed children in childseats. One subject even stated, "I always make sure children ride in the front seat because I know that rear seats are very dangerous for children". Clearly a lack of public education regarding child safety is evident.

Airbags have been controversial in the past several years after a report by the National Highway Transportation and Safety Agency (1995) cited airbags as the cause of several child deaths. The group most at risk for trauma during airbag insufflation are infants in rear-facing car seats, children under 13 years of age, and adults shorter than 62 inches (Rivara, Grossman & Cummings, 1997). The safety of airbags must not be misunderstood. Rivara et al., (1997) state that an estimated 1600 lives have been saved due to airbags. Thirty-one per cent of the general trauma population stated that they would buy a car without an airbag, clearly demonstrating a lack of information regarding the life-saving benefits of airbags.

The next area to be discussed involves the use of motorcycles and general motorcycle safety, such as helmet use. Helmet use among motorcycle riders has long been an
issue across the country. The fact that this study found almost a third of the subjects (who rode motorcycles) do not wear helmets was impressive. Cesare et al. (1990) found that 90% of all subjects involved in motorcycle trauma did not wear helmets. In a study by Watson et al. (1980) motorcycle mortality increased by 38% after helmet laws were repealed. Once helmet laws were passed in California, 95% of riders used helmets and head injury deaths decreased by 34% (Kraus & Peck, 1995).

Other important safety issues examined included gun safety and gang involvement. When trauma patients were asked whether they owned a gun, 17% of the sample admitted gun ownership. Ponzer et al. (1996) looked at firearm injuries and found that victims of firearm injuries sustained increased morbidity and mortality rates and also demonstrated more destructive behavior than the control group. They went so far as to say that the gunshot episode might be regarded as an expression of a "chronic trauma syndrome" (p. 45), characterized by episodes of recurrent trauma, risk-taking and destructive behavior, high morbidity and mortality rate as well as anti-social traits. They suggest an intervention program such as counseling be
undertaken and researched to see if it can impact this very vulnerable group. The fact that one gunshot wound occurred should alert public health authorities of the need for preventive counseling.

According to the literature (Sims et al., 1989; Eastman, 1992; Rachuba et al., 1997) gang involvement is associated with increased injuries. While gang association did not differ significantly between recidivists and non-recidivists in this study, the recidivist was three times more likely to belong to a gang than the non-recidivist. One reason this was not significant was that the number of subjects reported gang association was only 5.

The presence of tattoos or body piercing was also examined in relation to impulsive and risk-taking behavior. This was included in the study as the researcher noted a significant number of trauma patients with multiple tattoos and some body piercing. Thirty per cent of the trauma sample admitted to having tattoos, one subject admitted to having nine tattoos. Baker (1997) found that 25% of drivers who were at fault during car crashes had tattoos. More research is needed in this area before generalizations can be made.
One cannot discuss trauma without addressing the issue of psychiatric illness. Ponzer et al. (1990) found that the trauma patient had four times greater incidence of psychiatric treatment than the non-trauma control group. Buss and Abdu (1995) also found an 11% incidence among trauma patients with no significant differences between recidivists and non-recidivists. The findings of this study are similar to the results of Buss and Abdu (1995) in that 9% of the trauma patients in this study reported previous psychiatric treatment.

The last two traits examined through the use of a closed-end questionnaire centered around whether or not the subjects knew their attacker and if they blamed themselves for their injuries.

Buss and Abdu (1995) suggested that many trauma recidivists were likely to know their attacker and found that the trauma recidivists were surrounded by violence. "...Violent behaviors enveloped victims. Victims witness violence all around them. They were just as likely to be victims as they are to be attackers..." (Buss & Abdu, p. 191). Although the subjects in this study generally did not know their attacker, it is still important to note that 47%
of trauma recidivists expected repeated injuries in the future as compared to only 34% of the non-recidivists. This notion supports Buss and Abdu’s (1995) claim that those surrounded in violence expect repeated acts of violence to occur.

Whether or not the subjects blamed themselves for their injuries did not differ significantly between groups which was also corroborated in the study by Buss and Abdu (1995). This highlights the fact that most trauma patients do not feel responsible for causing their injuries. It is important to note at this point, however, that in the open-ended questions, many subjects did express remorse and felt they could have prevented the trauma from occurring. This contradiction may have to do with the fact that the subjects were given a forced “yes or no” response format in response to the question “Do you blame yourself for your injury?”.

A problem with closed-end questionnaires is the limited information afforded. In an effort to ascertain the perceptions of the trauma patient regarding how the trauma will affect their lives in the future and the circumstances surrounding the traumatic event, two open-ended questions were asked of the subjects.
Patient's Perceptions: Consequences of Trauma

The first question to be discussed centered on the perceptions of the subjects regarding the consequences of their traumatic injuries. These responses were grouped according to the "Evolutionary Model of Trauma" presented in Chapter II. This discussion is centered around adaptive change (physiologic, psychologic and social), potential revitalization, setting new life goals, and death/destroy.

**Adaptive Change: Physiologic**

Many of the responses in this category centered on the need for physical rehabilitation due to their disabilities. As discussed previously, physical limitations often linger long after the injury, changing the course of one's life. Rehabilitation becomes a major part of the new lifestyle with a goal being to attain optimal function to the injured areas (Neff & Kidd, 1993; Cardona et al., 1991). Since many trauma patients will face weeks of rehabilitation, this would be an ideal location to host trauma prevention programs.

**Adaptive Change: Psychological**

The most common adaptive psychological change was a
resolve to be more careful in the future and use more caution. Many highlighted the need to work on their impulsiveness, this trait has also been highlighted by other trauma researchers (Reiner et al., 1990, Poole et al., 1993).

One subject stated that she was afraid to ride in a car after her accident. This was found to be a common consequence of post-traumatic stress which ordinarily lasts up to six months (Freedy & Hobfoll, 1995; Niederland, 1989; Wilson & Raphael, 1993; Neff & Kidd, 1993; Russell, 1995). An alert trauma team will recognize signs of post-traumatic stress and be prepared to offer counseling to this group of patients.

Adaptive Change: Social

Many responses centered around a resolve to be more street smart. As a result of their injuries many stated that they would now relocate, and/or stay away from drugs and gangs.

Financial burden was also a theme expressed by the subjects as a consequence of the trauma. Several subjects expressed concern as to how they would pay for their medical bills, car repairs, possible loss of job. These social
consequences can be aided by political and community programs designed to offer help to subjects experiencing the devastating social effects of trauma (National Academy of Science, 1980; Flemming et al., 1992; Wilson & Raphael, 1993).

**Potential Revitalization**

If there could ever be a positive side to trauma, it is in the responses of the subjects as to how this traumatic injury will affect their lives. An overwhelming expression of gratefulness for another chance at life, a new appreciation for life, and a renewed thankfulness of family and friends was often expressed. This "new appreciation for life" was a common theme among the subjects. Lyons (1991) reported similar findings among subjects suffering life-threatening illness. Post-trauma patients are often anxious to become involved in supporting trauma patients and families and trauma prevention programs. This would be an ideal group to target for volunteer programs that support trauma prevention.

**New Life Goals**

Several patients expressed a need to change their life
goals and roles in life. Bailey et al. (1994), Leske (1992) and Neff and Kidd (1993) emphasized the importance of communities becoming involved with finding solutions to the role changes faced by the trauma victims and help them return to a functional role within society. Changing life goals can become a positive step toward the future.

**Death/Destruction**

Several subjects felt that they would not survive their injuries or that they would never return to their families. Ponzer et al. (1996) suggested that this group be targeted for counseling to change their "destructive lifestyle" (p.44). It was clear in talking with these patients that they were depressed and felt hopeless. Counseling may have a great impact on this particular group.

**Patient’s Perceptions: Prevention Strategies**

Once again, the Evolutionary Model of Trauma was used as an organizational framework for the responses. These responses were categorized according to the antecedents of trauma which included: risk-taking behavior, lack of support and environmental factors.
Risk-Taking Behavior

Impulsiveness, immaturity, and aggressive behavior has been cited as a common antecedent to trauma (Baker et al., 1992; DeKeyser, 1994; Bailey et al., 1994; Tellez et al., 1995). Many of the subjects suffering violent injuries expressed remorse over their poor use of judgment.

Alcohol, as discussed previously, was also mentioned by several patients as a contributing factor to their injury. Patients who experienced non-violent injuries regretted drinking and driving along with a conviction to use more caution in the future. "I should have paid more attention to what I was doing" was a common response.

Lack of Support

Most suggestions regarding violent injuries called for more police protection and better enforcement of laws. The two law issues expressed most often were gun and gang violence laws. More parental and community support was another prevention strategy suggested. It was interesting to note that most trauma patients failed to accept any accountability for their injuries. One victim summed it up when he said, "...we need more honest police to patrol the area", insinuating that the police were the problem.
Many subjects reported a need for more social programs to help prevent further trauma. The subjects experiencing violent injuries identified a need for counseling and drug education.

Many subjects experiencing non-violent injuries called for alcohol rehabilitation programs, elderly driving classes, safe driving classes, and more experience for drivers. Responses also centered around better enforcement of driving laws and drunk driving laws, truck safety regulations and maintenance and improvement of driving conditions.

Several people mentioned the problem of elder drivers, stating that they should have to attend driving classes, etc. In a report of the National Safety Council (1997) those aged 75 and over were found to have a death rate three times that of younger trauma patients involved in unintentional-injury deaths. This same study reported a 31% increase in deaths among those over 65 years old involved in motor vehicle crashes (National Safety Council, 1997). With the numbers of elderly in America predicted to grow from the current rate of 11% to 20% by the year 2020 (Levy, Hanlon, & Townsend, 1993), it behooves Americans to examine ways to
make driving safer for the elderly and victims of elder drivers.

**Environmental Factors**

Those experiencing violent injuries reinforced the fact that their neighborhoods were unsafe. They repeatedly spoke of feeling vulnerable and afraid they would experience the same fate if they were to return to their environment. This is the same sentiment expressed by Buss and Abdu (1995) as they addressed the “circle of violence” discussed earlier. Once again, community projects targeted at keeping kids off the street, away from gangs and off drugs could greatly decrease the number of trauma deaths.

Environmental factors were also implicated in non-violent injuries. Many subjects called for better maintenance of highways, better enforcement of truck safety regulations and better work-safety regulations. Several called for mandatory reduction in speed limits.

The Evolutionary Model of Trauma which was introduced earlier (Chapter II), proved to be a useful framework for organizing characteristics and perceptions of trauma patients. Although testing the model was not a purpose of the study, it provided a useful paradigm. Antecedents to
the traumatic event have been supported by this study. Antecedents discussed included lack of support, risk-taking personalities, modifying factors (age, race, gender, etc), and environmental factors. The traumatic event included the internal and external stressors that may have caused the injury, such as a motor vehicle injury, GSW, etc. The consequences of trauma centered around death/destruction, adaptive change (physical, psychological and social), revitalization and setting new goals.

Implications for Research and Practice

The study of the incidence of trauma recidivism was first addressed in 1989. More studies are needed to define and identify the incidence and characteristics of trauma patients and trauma recidivists. Only one other study (Poole et al., 1990) examined recidivists in a non-urban setting.

This study was hampered by the lack of English speaking patients and as reported previously, may have represented the characteristics and perceptions of the Hispanic population. More studies need to be designed to be representative of the racial composition of the community studied.
A sample size of 100 limits the generalizability of the findings and also affected several categories with low respondents. For example, while the incidence of violence has been reported as a significant finding among trauma recidivists in previous studies, this study did not find significant differences, possibly because only 21 subjects reported suffering violent injuries. Furthermore, in relation to gang violence, only 5 subjects reported gang association, which severely limits the generalizability of the findings. Further research with a larger sample size is needed in an effort to make the study more generalizable.

The open-ended question approach to this study proved useful in ascertaining recidivism rates which would not be possible merely through a chart review. One limitation to reporting data from interviews is the possibility of obtaining false information. When sensitive questions were asked such as gun ownership, illegal drug use, alcohol use and gang involvement, the researchers often questioned the honesty of the respondents. While drug and alcohol use were also identified by laboratory findings, the results were only reported on admission and does not give historical information. In regards to violent behaviors, police
104 records were not available during this study, however information from police files would give the researcher better information regarding gang involvement, gun use and violent activities. Further research should address these issues.

Implications for prevention strategies have been addressed throughout the study. Rice and MacKinzie (1989) proposed a model of trauma prevention that highlights each area of trauma prevention discussed in this study:

**Motor Vehicles:** Child passenger restraint laws
- Seatbelt laws
- Motorcycle-helmet laws
- Automatic restraints in cars
- Automatic airbags
- Laceration-protective windshields
- Nighttime curfew for teenage drivers
- Pedestrian-friendly front ends of automobiles
- Break-away utility poles

**Firearms:** Removal of handguns from the homes
- Waiting period on firearm purchase
- Trigger locks

**Fires/Burns**
- Manufacture of fire-safe cigarettes
- Smoke detectors installed and working
- Fire exits and fire drills

**Recreational:**
- Four-sided barriers for swimming pools
- Promoting bicycle helmet use
- Break-away bases for softball sliding injuries

**Falls/Poisonings:** Window guards in high-rise buildings
Conclusion

Valuable information was obtained as a result of this study in terms of characteristics and perceptions of trauma recidivists and non-recidivists. As shown by this study and others, the trauma recidivist can be found among all types of medical centers, urban, rural, and suburban. Recidivists are usually young, single males, under 45 years of age, and members of a racial minority. They usually have less education than the general trauma population and are likely to be un-insured. Finally, the recidivists are also more likely to experience violent injuries, take illegal drugs, have a past history of arrest, and have witnessed a violent injury in the past. Armed with this valuable information, in conjunction with a review of related literature, a high-risk profile can be obtained of the trauma recidivist. Knowing
this, prevention strategies can target this high-risk group in the hopes of preventing further injuries.

Baker (1997) stated, "We have emerged from the Dark Ages in terms of making the science of trauma prevention a respectable pursuit for academic research" (p.370). This study highlighted four major categories termed "antecedents" in the Evolutionary Model of Trauma, which trauma prevention could target: having a risk-taking behavior, lack of support, modifying factors, and environmental factors.

Baker (1997) and Rivara et al., (1997) encouraged involving physicians in the fight against trauma. Nurses must not be overlooked in this category. Nurses must take an active role in the prevention of trauma especially with their expertise in wellness, health promotion, delivery of acute and chronic care and rehabilitation. Becoming involved in prevention programs is important, however becoming involved in research such as this recidivism study must not be underestimated.

Buss and Abdu (1995) suggest that "by understanding the recidivist, trauma centers can better allocate scarce resources, ED physicians can improve patient management and preventions and interventions can be more effective". I
reiterate this sentiment with the exception that nurses, in conjunction with the health care team can be leaders in trauma prevention of the future.
APPENDIX A

FREEDY AND HOBFOLL'S RANGE OF PSYCHIC TRAUMA
## Research on Psychic Trauma

**Author:** Freedy & Hobfoll (1995)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Research</th>
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<tbody>
<tr>
<td>Battle Trauma</td>
<td>Archibald, Long, Miller, &amp; Tuddenham, 1962</td>
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<td></td>
<td>Jordan et al., 1991</td>
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<td></td>
<td>Laufer, Gallops &amp; Frey-Wouters, 1984</td>
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<td></td>
<td>Solomon, Mikulincer &amp; Hobfoll, 1986</td>
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<td>Impact of War on Civilians</td>
<td>Chodoff, 1963</td>
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<td>Etinger, 1961</td>
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<td>Hobfoll &amp; London, 1986</td>
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<td>Hobfoll, Lomranz, Eyall, Bridges &amp; Tzemach, 1989</td>
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<td>Lomranz, Hobfoll, Johnson, Eval &amp; Tzemach, 1994</td>
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<td>Lewis, 1942</td>
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<td>Solomon, 1988</td>
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<td>Wolf &amp; Ripley, 1947</td>
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<td>Violent Crimes</td>
<td>Kilpatrick et al., 1985</td>
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<td>Kilpatrick &amp; Resnick, 1993</td>
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<td>Natural Disasters</td>
<td>Freedy, Kilpatrick &amp; Resnick, 1993</td>
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<td>Gibbs, 1989</td>
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<td>Rubonis &amp; Bickman, 1991</td>
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| Disasters caused by Technological Failure | Baum, 1987  
|                                         | Butcher & Hatcher, 1988  
|                                         | Jacobs, Quevillon & Strichetz, 1990  
|                                         | Green et al., 1990  
|                                         | Williams, Solomon & Bartone, 1988  
| Accidental Injury                      | Kuch, Swinson & Kirby, 1985  
| Refugee Status                         | Burkle, 1983  
|                                         | Eisenbrunch, 1991  
|                                         | Kinzie, 1989  
|                                         | Kinzie, Sach, Angell, Clark & Ben, 1989  

APPENDIX B

CRITIQUE OF TRAUMA RECIDIVISM RESEARCH
<table>
<thead>
<tr>
<th>Author</th>
<th>Purpose</th>
<th>Design</th>
<th>Subjects</th>
<th>Instrument</th>
<th>Results</th>
<th>Summary</th>
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<tbody>
<tr>
<td>Sims, Bivins, Obeid, Horst, Sorensen, &amp; Fath. (1989). Urban trauma: A Chronic recurrent disease. <em>Journal of Trauma</em>, 29(1), 940-947.</td>
<td>Study trauma as a chronic disease possibly related to lifestyle, environment, or other factors of its victims.</td>
<td>Retrospective chart review</td>
<td>N=263 survivors of trauma between 1980-1981.</td>
<td>Retrospective chart review of 3 Detroit Level I Trauma Centers: type of injury, age, evidence of substance abuse, employment, Michigan death cert. Detroit Police Files.</td>
<td>44% recidivism. Significant findings among recidivists (p&lt;.05): average age: 32 (Non-rec. 36); subst. abuse 67% vs 60%; GSW 12% vs 9%, assault 39% vs 12%; Mortality 20%; Police record 75%.</td>
<td>Recidivist population had a higher incidence of assault type injuries. Does not describe how they identified &quot;trauma&quot; except for a trauma admission. Did not look at history of previous trauma of Ss since study subject retrieval was limited to chart review. Study limited to assault injuries.</td>
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<td>Author</td>
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<td>Cesare, Morgan, Felice, &amp; Edge. (1990). Characteristics of blunt and personal violent injuries. <em>Journal of Trauma</em>, <strong>30</strong> (1) 176-182.</td>
<td>Identify risk factors for ind. involved in nonfatal trauma-related injuries and implications.</td>
<td>Retrospective chart review of trauma pts admitted from 1986-1987. Three groups: blunt trauma, personal violence, burns. Data: age, sex, race, marital status, employment, substance abuse, repeat</td>
<td>N=547</td>
<td>Chart review</td>
<td>MVC: male (60%), mean age (20-29), single (55%), white (74%), employed (60%), +BAC (32%), no seatbelt (57%); Personal violence: Male (80%), mean age (31), single (78%), black (58%), substance abuse (48%), unemployed (50%), substance abuse (35%).</td>
<td>Weak definition of trauma victim for each category. Chart review limited data retrieval for recidivism rates.</td>
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<td>Author</td>
<td>Purpose</td>
<td>Design Trauma</td>
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<td>Poole, Griswold, Thaggard &amp; Rhodes. (1993). Trauma is a recurrent disease. Surgery, 113 (6), 608-611.</td>
<td>Identify incidence of recurrent traumatic injuries in a rural environment</td>
<td>Prospective, comparative design.</td>
<td>N=200 over 18 years old. Victims of acute traumatic injuries.</td>
<td>Interview; chart review. Control: 100 adult non-trauma patients admitted and 100 adult elective surgical admissions</td>
<td>40% recidivism (C=18.5%), racial minorities 76.5% (C=57.5%); Males 73.4% (C=46.6%); young adults 34.9 yo (C=46); intentional injuries 37.5% (C=24.5%).</td>
<td>Consider chronic high-risk behavior, preexisting psychopathology and cultural acceptance of violent resolution of personal conflicts. Definition of trauma: admission to trauma service Sample size small (73) No inter-rater reliability data.</td>
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<td>Author</td>
<td>Purpose</td>
<td>Design</td>
<td>Subjects</td>
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<tr>
<td>Morrissey, Byrd &amp; Deitch. (1991). The incidence of recurrent penetrating trauma in an urban trauma center. <em>Journal of Trauma.</em> 31 (11), 1536-1538.</td>
<td>Determine recurrence rates of penetrating injuries.</td>
<td>Retrospective exploratory descriptive design.</td>
<td>N=402 records.</td>
<td>Medical record review; Police computer files.</td>
<td>32.6% experienced repeated penetrating injuries. Increased rate among men (91.4%), blacks (93.8%), uninsured (81%), medicare/medicaid (14%). 48% had police record.</td>
<td>Trauma defined as penetrating injuries. Did not look at blunt trauma or substance abuse.</td>
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<td>Author</td>
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<td>Reiner, Pastena, Swan, Lindenthal &amp; Tischler. (1990). Trauma recidivism. <em>The American Surgeon</em>, Sept., 55 6-560.</td>
<td>Identify the trauma recidivist and define its magnitude at a Level 1 Trauma Center.</td>
<td>Prospective, quasi-experimental comparative design: Interview; Chart review.</td>
<td>N=138</td>
<td>Comparison of three groups: hospital visitors; non trauma hospitalized pts and trauma pts. Variables: Clinical history, demographic data, ISS, blood alcohol length of hospital stay, morbidity and mortality.</td>
<td>23% trauma recidivist; Male 97% (Control 51%); mean age: 26 (Control 35); black 81% (Control 67%); 75% penetrating injury; 25% non-penetrating injury; 66% had interval between injuries &lt; 5 yrs.</td>
<td>Definition of trauma victim: admission to the trauma service. No inter-rater reliability data. Limited definition of drug abuse to alcohol only. Limited information regarding recidivism rates due to data retrieval from chart review.</td>
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<td>Author</td>
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<td>Design Trauma</td>
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<td>Smith, Fry, Morabito, Organ. (1992). Recidivism in an urban trauma center. Archives of Surgery, 127 (June), 668-670.</td>
<td>Early identification of pts at risk for recurrence may provide an opportunity for behavior modification.</td>
<td>Retrospective chart review: exploratory descriptive design and comparative design.</td>
<td>N=342 recidivist.</td>
<td>Trauma registry data review.</td>
<td>6.4% total trauma pts were recidivists; male 87% (Control 76%); mean age 27.7% (C=33); (93% under age 40). Penetrating injury 61% (C=37%); Interval between episodes: 7.9 months.</td>
<td>Recidivist defined as &quot;activations or consultations&quot;. Unclear as to whether these recidivists are repeat trauma victims or seeking consultation for previous traumatic injury. Significantly lower incidence than previous studies. Only 100 patients used for comparative study.</td>
</tr>
<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design Trauma</td>
<td>Subjects</td>
<td>Instrument</td>
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<tr>
<td>Hedges, Dimsdale, Hoyt,</td>
<td>Characterize patients who repeatedly sustain traumatic injury in an</td>
<td>Exploratory descriptive;</td>
<td>N=185</td>
<td>Retrospective chart review.</td>
<td>Recidivists made up 0.8% of the trauma population;</td>
<td>Definition of trauma: meeting criteria for major trauma: not defined.</td>
</tr>
<tr>
<td>Berry &amp; Leitz. (1995)</td>
<td>effort to prevent further injury.</td>
<td>comparative design.</td>
<td></td>
<td>Comparison with non-recidivist</td>
<td>male (86.4% vs 75%), younger (29.6 vs 32.8), African American (22% vs 9.1%), assault 38.4% vs 18.8%),;</td>
<td>Retrospective chart review limits the data available regarding recidivism.</td>
</tr>
<tr>
<td>Characteristic of repeat</td>
<td>trauma patients, San Diego County.</td>
<td></td>
<td></td>
<td>trauma pts.</td>
<td>injured by the same general mechanism (48%); ISS greater on 2nd admission than first.</td>
<td></td>
</tr>
<tr>
<td>trauma patients, San Diego</td>
<td></td>
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<td>Reviewed for gender, age,</td>
<td></td>
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<tr>
<td>County.</td>
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<td>mechanism of injury, GCS, race,</td>
<td></td>
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<tr>
<td>American Journal of Public</td>
<td></td>
<td></td>
<td></td>
<td>ISS, hospital costs.</td>
<td></td>
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<tr>
<td>Health. 85 (5), 1008-1010.</td>
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<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design</td>
<td>Subjects</td>
<td>Instrument</td>
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<tr>
<td>Buss &amp; Abdu. (1995). Repeat victims of violence in an urban trauma center. Violence and Victims, 10 (3), 183-194.</td>
<td>Search for patient management and prevention implications focusing on circumstances surrounding violent behavior.</td>
<td>Retrospective exploratory descriptive; comparative design.</td>
<td>N=328 adult victims of violence.</td>
<td>Retrospective chart review, retrospective telephone and personal interview, survey.</td>
<td>39% recidivist, male 84.6%. Significant findings: threatened in the past, see others attacked, no health insurance, previous psychiatric problems and of a racial minority. 80% believed violence was increasing in their area; unemployed (50%); substance abuse (50.5%); poor interviewer reliability good.</td>
<td>Definition of violent injury defined as: homicide and assault. Unclear as to how assault was determined. Largest contributors in separating victims groups was: Having been threatened with a knife or gun in the past; seeing someone else become a victim of violence; &amp; living in poverty. Interviewer reliability good.</td>
</tr>
<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design</td>
<td>Subjects</td>
<td>Instrument</td>
<td>Results</td>
<td>Summary</td>
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<td>-----------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Rivara, Koepsell, Jurkovich, Gurney &amp; Soderberg (1993). The effects of alcohol abuse on readmission for trauma. <em>JAMA, 270 (16), 1962-1964</em></td>
<td>To determine the effect of admission for trauma with concurrent acute alcohol intoxication or chronic alcohol abuse on the risk of subsequent recurrence of trauma.</td>
<td>Prospective cohort study.</td>
<td>2578 trauma admissions 1989-1991</td>
<td>Blood alcohol tests, a GGT test and the short Michigan Alcohol Screening Test (SMAST) performed on admission. Medical records chart review.</td>
<td>Predictor of admission for new injury: assault. Recidivist rate 1.3 per 1000 pt months; 77% male; 32% aged 25-34; 75% white/Hispanic; 20% penetrating trauma; 32% MVC; 22% assault; 37% alcohol abuse; 19%.</td>
<td>Did not identify those undergoing alcohol rehab. Readmission to other hospitals? Alcohol abuse and injuries from violence are important predictors of readmission for trauma. Trauma criteria unclear.</td>
</tr>
<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design</td>
<td>Subjects</td>
<td>Instrument</td>
<td>Results</td>
<td>Summary</td>
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<tr>
<td>Dowd, Langley, Koepsell, Soderberg &amp; Rivara. (1996). Hospitalizations for injury in New Zealand: Prior injury as a risk factor for assaultive injury. American Journal of Public Health. 86 (7).</td>
<td>Determine the degree to which injury hospitalizations, especially for assaultive injury is a risk for subsequent hospitalizations due to assault.</td>
<td>Retrospective exploratory descriptive design</td>
<td>N=43,507 trauma patients.</td>
<td>Retrospective chart review according to type of injury, age, gender, race, marital status, employment status.</td>
<td>Males had a rate of assaultive injury nearly triple that of females (122.2 vs 43.2 per 100,000 person years).</td>
<td>Follow-up period was only 1 year. Difficult to interpret statistics. Author suspects that unintentional injuries may have often been misclassified as undetermined. Patients were classified by each hospital coder with no inter-rater reliability determined.</td>
</tr>
<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design Trauma</td>
<td>Subjects</td>
<td>Instrument</td>
<td>Results</td>
<td>Summary</td>
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<td></td>
<td>Of 154 individuals with a previous hospitalization for an assault, 70% were hospitalized within 30 days of the initial injury. Risk factors include male gender, Maori race, and unemployed. 6.4% readmission rates noted for assault.</td>
<td></td>
</tr>
<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design Trauma</td>
<td>Subjects</td>
<td>Instrument</td>
<td>Results</td>
<td>Summary</td>
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</tr>
<tr>
<td>Panzer, Bergman, &amp; Brismar. (1996). Morbidity and injury recurrence in victims of firearm injuries. Public Health. 110, 41-16.</td>
<td>Analyze and describe the general morbidity of firearm victims.</td>
<td>Retrospective exploratory descriptive correlational/comparative design.</td>
<td>N=820 firearm victims. 820 matched controls.</td>
<td>Review of all inpatient care in public hospitals between 1972 and 1992 and identify firearm injuries and subsequent care. Construct a control group of 820 individuals matched by for sex and age with no history of firearm injuries.</td>
<td>Of the firearm victims, 69.9% of the victims were treated for subsequent medical care, not firearm injuries. Morbidity for the firearm group was much higher than in the control. Repeated traumatic injuries occurred at a rate of 34.9% among the FI group, Control:12.7</td>
<td>Well designed study. Concepts well defined and reflective of the literature. Authors suggest that GSWs may be an indication of a &quot;chronic trauma syndrome&quot;.</td>
</tr>
<tr>
<td>Author</td>
<td>Purpose</td>
<td>Design</td>
<td>Trauma</td>
<td>Subjects</td>
<td>Instrument</td>
<td>Results</td>
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APPENDIX C

CRITERIA FOR TRAUMA ADMISSION
Criteria for Trauma Admission

(Committee on Trauma, American College of Surgeons, 1990)

<table>
<thead>
<tr>
<th>Vital Signs/Level of Consciousness:</th>
<th>Scene:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Coma Score (13 or)</td>
<td>Ejection from auto</td>
</tr>
<tr>
<td>Systolic BP (&lt;90 or)</td>
<td>Death in same vehicle</td>
</tr>
<tr>
<td>Respiratory Rate (&lt;10 or &gt;29 or)</td>
<td>Extrication time &gt; 20 minutes</td>
</tr>
<tr>
<td>Revised Trauma Score (&lt;10)</td>
<td>Falls &gt; 20 feet</td>
</tr>
<tr>
<td>Pediatric Trauma Score (&lt;9)</td>
<td>Roll-over</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Injuries:</th>
<th>Personal Hx:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetrating injuries to head, neck, torso, extremities proximal to elbows/knees</td>
<td>Age &lt;5 or &gt;55</td>
</tr>
<tr>
<td>Flail chest</td>
<td>Known cardiac disease, respiratory disease, psychotics taking medication</td>
</tr>
<tr>
<td>Combination of trauma w/burns of 10% or inhalation injuries</td>
<td>Diabetics taking insulin, cirrhosis, malignancy, obesity or coagulopathy</td>
</tr>
<tr>
<td>Two or more proximal long bone fractures</td>
<td>Pelvic Fx</td>
</tr>
<tr>
<td>Limb paralysis</td>
<td>Limb paralysis</td>
</tr>
</tbody>
</table>

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APPENDIX D

DEMOGRAPHIC INFORMATION
Demographic Information: Chart Review

Code: __________

Age:

Gender: ___ M ___ F

Race: ___ W ___ B ___ Hs

Marital Status: ___ S ___ M ___ W ___ D

Trauma Score:

Insurance: ___ Private ___ Medicare ___ Medicaid
___ No Insurance ___ Other (explain)

Employment/Occupation:

Under Police Guard:

Mechanism of Injury:

Violent Injury: ___ GSW ___ Stabbing ___ Battery

Non-Violent Injury: ___ MVC ___ Motorcycle ___ Bicycle
___ Pedestrian vs Car ___ Fall
___ Burn ___ Industrial Accident

Other (Describe):
Alcohol & Drug Screening: ___ Alcohol ___ Cocaine

___ Opiates
___ Cannabis ___ Other (Describe)

Is there a documented traumatic injury within the last 5 years?
___ Yes ___ No

If so, what type of injury?
APPENDIX E

INTERVIEW GUIDE
Interview Guide

Thank you for agreeing to be interviewed. This interview will take approximately 30 minutes to complete. Our goal for this research project is to obtain enough information from trauma patients like yourself to identify prevention strategies to help decrease the number of traumatic episodes in the future.

It is important to be very honest with your answers. Many of the questions may seem very personal however it is important to give each question your honest response.

You may refuse to answer any questions. Remember that all your responses will be strictly confidential and at no time after the initial coding will your name be associated with the questionnaire. They are coded to ensure this. Only the PI will have the code with your name and the list is kept in a locked file cabinet at the School of Nursing.

1. **Economic Status:**

   ____<$5,000/yr  ____$5-10,000  ____$10-20,000
   ____$20-30,000  ____$30-40,000  ____>$50,000

2. **Educational level: (# years completed)**

   ____<8  __ 8  __ 9  __10  __11  __12  __13  __14  __15  __16
   ____>16

3. **Could you describe what happened to cause your current injury?**

The following questions are about the circumstances surrounding your injury. Many of them have to do with the use of safety devices that could help to prevent injuries.

4. **Do you always wear a seatbelt?**

   ____ Always  ____Most of the time  ____Some of the time  ____Never
   ____ NA
5. Do you insist on seatbelt use for passengers in your car?
   ___Always ___ Most of the time ___ Some of the time ___
   Never ___ NA

6. Do you insist that children under 4 ride in car seats?
   ___Always___ Most of the time ___ Some of the time ___
   Never ___ NA

7. Does your car have an airbag?
   ___Yes ___ No

8. Would you buy a car without an airbag?
   ___ Yes ___ No

9. Do you wear a helmet while riding a bicycle?
   ___Always____ Most of the time ___ Some of the time ___
   Never ___ NA

10. Do you ride a motorcycle?
    ___ Yes ___ No

    If so, Do you wear a helmet?
    ___Always ___ Most of the time ___ Some of the time ___
    Never ___ NA

    If so, do you wear protective gear? (describe)
    ___ Always ___ Most of the time ___ Some of the time ___
    Never ___ NA

11. Do you wear safety goggles when doing work where you are at risk for eye injuries?
    ___Always ___ Most of the time ___ Some of the time ___
    Never ___ NA
12. Do you wear protective gear when playing sports? (Describe)
   __ Always ____ Most of the time ____ Some of the time ____
   Never
   __ NA

The following questions have to due with behavior that has been linked to traumatic injuries in the past. Having these traits is not always negative. Please be as honest as possible with your answers. Remember that your answers are confidential.

13. Have you ever been arrested? ____ Yes ____ No
   If so, for what?

14. Have you ever been treated for a mental condition?
   ____ Yes ____ No
   If so, describe:

15. Have you ever witnessed a violent injury in the past?
   ____ Yes ____ No
   If so, what type?

16. Do you own a gun?
   ____ Yes ____ No

17. Do you usually carry a weapon (describe)?
   ____ Yes ____ No

18. Do you belong to a gang?
   ____ Yes ____ No

19. Do you have a tattoo?
   ____ Yes ____ No
   If so how many? ______
20. **Have you pierced parts of your body other than your ears?**
   ___ Yes ___ No

21. **Do you use illegal drugs?**
   ___ Yes ___ No
   *If yes, What kind? How often?*

22. **How often do you drink alcohol?**
   ___ Daily ___ 2-3 drinks/week ___ 4-5 drinks/week
   ___ 2-3 drinks/month ___ 4-5 drinks/month
   ___ Never

   *If daily, how many drinks/day?__________________*

23. **Do you ever drive while you have had more than three drinks?**
   ___ Yes ___ No

The following questions center around the psychological consequences of your injury.

24. **Do you know who injured you?**
   ___ Yes ___ No ___ NA

25. **Do you feel you may be injured again?**
   ___ Yes ___ No

26. **Do you blame yourself for the injury?**
   ___ Yes ___ No

The next two questions center on the circumstances surrounding your injury. Please be as specific as you can.

27. **Is there any way this injury could have been prevented?**
28. **Will this change your life?**

Finally, the last question has to do with past traumatic injuries.

29. **Have you had a previous injury in the past 5 years?**

    If so, what type of injury (describe)?
APPENDIX F

RESEARCH ASSISTANT

TRAINING PROTOCOL
Prior to beginning research, the RA will undergo a training program that will last approximately four hours. The RA will be paid for this training. The training will be conducted by the PI. Competency testing will be confirmed through return demonstration and verbal testing.

1. Introduction to research project.
   RA will state objectives and purpose of the research study.

2. Identification of trauma patients.
   RA will demonstrate understanding of trauma criteria through patient chart review and return demonstration.

3. Informed consent/Protection of human subjects.
   RA will read informed consent to the PI and demonstrate understanding through verbal communication. RA will state the fact that confidentiality is assured and patients have the right to refuse to participate or withdraw at any time.

4. RA will be trained to evaluate the ability of the patients to respond by asking them to restate the purpose of the study, confidentiality statement and the patients rights. They will demonstrate this evaluation with trauma patients.

5. Retrieval of chart information. RA will be taught to retrieve information from chart and will demonstrate accuracy to PI.

6. Interview techniques. RA will be informed of importance of gaining confidence of participant. The RA will be instructed on principles of successful interviews and will demonstrate interview techniques with the RA prior to beginning the research project.
APPENDIX G

INFORMED CONSENT
LOYOLA UNIVERSITY MEDICAL CENTER
MAYWOOD, ILLINOIS
LOYOLA UNIVERSITY NIEHOFF SCHOOL OF NURSING

INFORMED CONSENT

Patient's Name: ____________________________

**Project Title:** Characteristics and Perceptions of Trauma Recidivists and Non-Recidivists

The approval to conduct this research expires on 08/20/98.

**Principles Concerning Research:** You are being asked to take part in a research project. It is important that you read and understand the principles that apply to all individuals who agree to participate in the research project described below:

1. Taking part in the research is entirely voluntary.

2. You will not personally benefit from taking part in the research.

3. You may withdraw from the study at any time without anyone objecting and without penalty or loss of any benefits to which you are otherwise entitled.

The purpose of the research, how it is to be done, and what your part in the research will be is described below. Also described are the risks, inconveniences, discomforts and other important information which you need to make a decision about whether or not you wish to participate. You are urged to discuss any questions you have about this research with the staff members.

**Purpose of Research:** The purpose of the study is to increase our understanding of the events associated with injuries like yours and learn from you more about your experiences. While this study may not benefit you directly, it is hoped that the information obtained through this research will help us to develop strategies to prevent traumatic injuries or improve
the care that traumatically injured patients receive.

This research is sponsored the Loyola University School of Nursing. The principal researcher for this project is Vicki Keough, RN, MSN. This research project will partially fulfill the requirements for earning a Ph.D. in Nursing from Loyola University Chicago, School of Nursing.

About 200 patients will participate in the research project.

Procedure(s): If you agree to participate, we will ask you questions about your background, your safety habits, and your lifestyle. Some of these questions ask for very sensitive information such as whether you have previously been arrested, how much you drink and whether you use drugs. You do not have to answer any question that makes you uncomfortable or that you prefer not to answer.

There are 29 questions and the interview should take approximately 30 minutes. We may also review your medical record to determine the exact extent of your injuries.

Risks and Discomforts: Some of the questions ask about sensitive information. You have the right to refuse to answer any questions you find difficult or prefer not to answer.

A risk of participation in this research project is the loss of confidentiality. Every effort will be made to protect your identity and the information you give us. We have developed safeguards to protect against unauthorized release and use of the information. The following will be done to try to ensure confidentiality of all the information you provide:

1. Everything you say during these interviews will be kept strictly confidential, and your name will not be attached to any of the materials used in this study. Instead, your questionnaire will be given a code number which will not be associated with your name in any way. Your answers are strictly anonymous. At no time will your name be associated to the questionnaire.

2. The master list with participant names will be kept separate, in a locked location separate from the questionnaire.
and field notes. Only Vicki Keough will have access to this data and even she will not be able to associate your name to the questionnaires.

Potential Benefits: As stated earlier, this study may not benefit you directly but could provide information that may be used in the future to prevent or improve care given to patients who have similar traumatic injuries. Vicki Keough, the researcher, will benefit from your participation in this research project.

Alternatives: You do not have to participate in this research project in order to receive care and treatment at Loyola University Medical Center. Your decision about participation will not affect your care in any way. If you choose not to participate, we will not ask you the questions.

Financial Information: You will not be paid to participate in this research project. You will not be charged for the interview. You will be responsible for all other costs associated with your care.

Withdrawal of Consent: You may stop your participation in this project at any time and for any reason without anyone objecting and without affecting your care at Loyola.

CONSENT

I have fully explained to ______________________ the nature and purpose of the above described procedure and risks that are involved in its performance. I have answered and will answer all questions to the best of my ability. I may be reached at 708-216-3582.

__________________________________________ Date

(Signature)

Vicki Keough, RN, MSN, who is the principal investigator for this study, or her associates, will be available to answer any questions you may have. Ms. Keough may be reached at 708-216-3582.

If you ever feel that you have been injured by participating in this study or if you have any questions concerning your
rights as a research participant, you may contact Dr. Kenneth Micetich, Chairman, Institutional Review Board for the Protection of Human Subjects-Medical Center (708-216-4608).

You will receive a copy of this informed consent document.

All precautions to maintain confidentiality of information about you will be taken. The results of this research project may be published in a journal for the purpose of advancing medical knowledge. You will not be identified by name or any other identifying information in any reports about this research.

The following are authorized to view the records relating to this research: the Food and Drug Administration of the United States Government, Ms. Keough, and the Institutional Review Board for the Protection of Human Subjects-Medical Center.

You have been fully informed of the above-described research program with its possible benefits and risks. Your signature below indicates that you are willing to participate in this research project. You do not give up any of your legal rights by signing this consent document.

____________________________________________________________________________________ Date:____

(Signature: Patient)

____________________________________________________________________________________ Date:____

(Signature: Witness)
APPENDIX H

TABLES
Table 11.--Type of Illegal Drug Use Reported.

<table>
<thead>
<tr>
<th>Population</th>
<th>Cannabis</th>
<th>Cocaine</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recidivist N=36</td>
<td>82%</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Non-Recidivist N=64</td>
<td>78%</td>
<td>7%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Table 12.--Behavioral Characteristics: Use of Seatbelts and Childseats.

<table>
<thead>
<tr>
<th>Population</th>
<th>Seatbelts</th>
<th>Childseats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Always</td>
<td>Mostly</td>
</tr>
<tr>
<td>Recidivist N=36</td>
<td>38%</td>
<td>17%</td>
</tr>
<tr>
<td>Non-Recidivist N=67</td>
<td>37%</td>
<td>27%</td>
</tr>
</tbody>
</table>

Table 13.--Behavioral Characteristics: Use of Airbags.

<table>
<thead>
<tr>
<th>Population</th>
<th>Airbag Present</th>
<th>Would you buy a car w/o an airbag?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Recidivist N=36</td>
<td>36%</td>
<td>64%</td>
</tr>
<tr>
<td>Non-Recidivist N=64</td>
<td>47%</td>
<td>53%</td>
</tr>
</tbody>
</table>
Table 14.—Behavioral Characteristics: Motorcycle Use, Motorcycle Helmet Use.

<table>
<thead>
<tr>
<th>Population</th>
<th>Motorcycle Use</th>
<th>Helmet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Recidivist N=36</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>Non-recidivist N=64</td>
<td>14%</td>
<td>86%</td>
</tr>
</tbody>
</table>

Table 15.—Behavioral Characteristics: Sportsgear and Goggle Use.

<table>
<thead>
<tr>
<th>Population</th>
<th>Sportsgear</th>
<th>Goggles</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Always</td>
<td>Mostly</td>
</tr>
<tr>
<td>Recidivist N=36</td>
<td>36%</td>
<td>9%</td>
</tr>
<tr>
<td>Non-Recidivist N=64</td>
<td>50%</td>
<td>5%</td>
</tr>
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</table>
Table 16.--Behavioral Characteristics: Owning a Gun, Belonging to Gang, Tattoos, Pierced Body Parts.

<table>
<thead>
<tr>
<th>Population</th>
<th>Own Gun</th>
<th>Belong to Gang</th>
<th># of Tattoos</th>
<th>Pierced Body Parts*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Recidivist</td>
<td>14%</td>
<td>86%</td>
<td>9%</td>
<td>91%</td>
</tr>
<tr>
<td>N=36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Recidivist</td>
<td>19%</td>
<td>81%</td>
<td>3%</td>
<td>97%</td>
</tr>
<tr>
<td>N=64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*other than pierced ears

Table 17.--Psychological Characteristics: Recidivist vs Non-Recidivist.

<table>
<thead>
<tr>
<th>Population</th>
<th>Psych History</th>
<th>Drinking &amp; Driving</th>
<th>Know Attacker</th>
<th>Fear of Repeat Injury</th>
<th>Blame Themselves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Recidivist</td>
<td>14%</td>
<td>86%</td>
<td>25%</td>
<td>75%</td>
<td>28%</td>
</tr>
<tr>
<td>N=36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Recidivist</td>
<td>16%</td>
<td>94%</td>
<td>31%</td>
<td>69%</td>
<td>18%</td>
</tr>
<tr>
<td>N=64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


DeWitt, K. (1993). The experience of getting well as described by adolescents recovering from
trauma: A phenomenological perspective. Rehabilitation Nursing Research, Spring, 10-16.


Archives in Surgery, 127, 671-676.

American Journal of Nursing, Oct., 81-83.


VITA

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing.

April 3, 1998
Date

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