1979

Life Change Events in Patients with Minor Injuries

Janice VanDenburg Keitz

Life Change Events in Patients with Minor Injuries

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science at Virginia Commonwealth University

By

Janice VanDenburg Keitz
B.S.N. University of Maryland, 1966

Director: Dr. Jeanette F. Kissinger
Associate Professor of Nursing
Virginia Commonwealth University
Richmond, Virginia
December, 1979

DEDICATION

This manuscript is dedicated in memory of Miss Mary Devlin who was my high school clinic nurse. Miss Devlin inspired me to strive for the highest levels of a nursing career.

ACKNOWLEDGEMENTS

The patience and enthusiasm of Dr. Jeanette Kissinger, thesis committee chairman, was greatly appreciated during the preparation of this thesis. Thanks are also extended to Mrs. Ann Hamric for her advice and suggestions and to Dr. John Cardea for his interest in serving on this committee.

Finally, appreciation is extended to my husband, Dave, and my children, Michael and Jennifer, who patiently endured the entire educational process.

Table of Contents

List of Tables

List of Figures

Chapter 1

INTRODUCTION

This study explored the time relationship of life change events in young adult patients with minor injuries for which medical attention was sought in an emergency department (ED). Life change events are those occurrences in life which require an alteration in a person's adaptive and coping responses to ease the discomfort associated with the change. Too much change without an increase in adaptation responses may cause loss of control. The manifestation of loss of control under evaluation in this study was the occurrence of a minor injury.

The nationwide magnitude of the injury problem was revealed by the National Health Survey of 1977. In this survey, 34.8 out of every 100 persons of all ages sustained injuries because of accidents (National Health Survey Series 10, 1978:2). Many of those injured persons probably sought medical attention in an ED even though their injuries were not serious enough to be classified as life-threatening emergencies. Those injured persons needed to be evaluated by a physician and may have required special facilities found in a hospital setting such as X-ray or a clinical laboratory (Klug, Wegryn, and Lernley, 1965; Davison, 1963).

The traditional view of ED care consists of diagnosing and

treating the chief complaint, the illness or injury, and discharging the patient from the ED with follow-up care at a private physician's office or at a clinic. In our mobile society, many persons do not have a private physician until time of need; hence, the ED is utilized increasingly as a primary care center since it is recognized as a source of help and assistance available to all persons 24 hours a day. Either a physician is present or one is available on call. "There are a minimum of administrative and physical barriers to reaching the ED, and it carries the aura of special expertise of the hospital" (Satin and Duhl, 1972:258). To meet the demands for care, the ED must adapt its practices to the community's medical needs (Satin and Duhl).

Many persons entering the ED with injuries and illnesses also come with secondary problems associated with stressful life change events. Life change events are seldom mentioned as the chief complaint since it is generally recognized by the public that physical problems are the "ticket for admission" in an ED (Satin, 1972:125). In his study, Satin confirmed that many patients who used the ED for medical care have experienced recent life stresses associated with change which they did not relate to the ED physician. Illnesses which seemed to be related to life change were often given traditional medical diagnoses which may have obscured the real causes (Satin and Duhl, 1972). As an example, a diagnosis of gastritis might be given for a person suffering from acute alcohol ingestion brought on by problems adjusting to the loss of a loved one. In addition, this same person may have experienced an injury while under the influence of alcohol.

Persons who have experienced injuries have been studied in relation to life change events. Bramwell, Masuda, Wagner, and Holmes in a prospective 1975 study of 78 college football players compared

life change events in the two years prior to a football season to the injury rates of the individual players. One third of the players were identified as being in a high risk group because they had experienced the greatest number of life changes in the previous two years. Seventy-three percent of the players in the high risk group suffered injuries during the playing season which caused them to miss three or more practices and/or one or more games (Bramwell and others, 1975:15). Whitlock, Stall, and Rekhdahl studied 71 hospitalized orthopedic patients suffering from accidental injuries and found that the patients had experienced an increase in life change in the six months prior to injury. Whitlock stated that there was a need for patients to work out their problems by discussion rather than by the use of minor tranquilizers. He saw the need for an understanding health worker to assist patients relative to their coping needs (Whitlock, Stall, and Rekhdahl, 1977:129-131).

Few emergency departments are staffed with health workers to assist patients to adjust to life changes. With ED physicians, in general, being less aware of these problems, the nursing staff is challenged to meet the patient's need by listening and looking for clues to problems associated with life change events. An empathic and knowledgeable nurse can convey much support and comfort to the ED patient who is grappling with life change problems, which may have precipitated the illness or injury. Since many ED patients utilize no other health care facility, this area of need identification can serve as a point of discussion for assistance in problem identification and referral to other helping disciplines relative to life change and coping needs. With a reduction in stress levels associated with life change, the patient may experience fewer future illnesses and injuries

requiring medical attention; there may be an increase in his future state of wellness (Pesznecker and McNeil, 1975).

This investigator's experience as an ED nurse generated an interest in young adults with minor injuries. This group comprised approximately thirty-five percent of the ED population with minor injuries in a retrospective survey of three emergency departments done by the investigator prior to this study. Comments from patients such as, "This is the latest in a series of problems I have had," followed by a recitation of changes to which they have had to adapt led this investigator to believe that minor injuries frequently might be the result of decreased perception of environmental clues suggestive of danger. This decreased perception might be the result of increased anxiety experienced because of changes occurring in one's life.

This study was designed to evaluate the amount of life change that young adults have experienced prior to the time of a minor injury. The problem proposed was:

> What is the time relationship between the occurrence of minor injuries needing medical attention and life change units (LCU) as measured by the Schedule of Recent Experiences (SRE) questionnaire in patients aged 19-39 seeking care in an ED?

The hypothesis proposed was:

> Life change units, as measured by the Schedule of Recent Experiences questionnaire, would be greater in the six month period prior to a minor injury than in the previous six month period in patients aged 19-39 who sought medical attention in an emergency department.

Definitions

Life change units. Life change events with a numerically weighted value. Identified by Holmes and Rahe (1967), these events require a change in one's pattern of living. A list of these events is presented in Appendix A.

Minor injury. "An injury is bodily harm to a person" (National Safety Council, 1978:8). Minor injuries require medical attention but not hospitalization and include skin, eye, and musculoskeletal injuries which are evaluated and treated by a physician.

Emergency department. A medical facility with 24 hour physician coverage. Acutely ill and injured persons in danger of dying as well as persons less acutely injured or who perceive themselves to be ill are treated at this facility.

Schedule of Recent Experiences. A paper and pencil questionnaire consisting of 42 life change events identified by Holmes and Rahe as requiring adaptation to change. A copy of this questionnaire is found in Appendix B.

Methodology

A convenience sample of fifty patients, aged 19-39 with minor injuries not requiring hospitalization comprised the subjects for this investigation. The patients were seen in one of three hospital emergency departments, each serving over 2,000 patients a month in a Virginia metropolitan area. During the month of August, 1979, this investigator approached patients after ED registration. After signing the consent form (Appendix C), they completed the SRE questionnaire during their ED visit.

Assumption

It was assumed that the subjects would respond honestly and accurately to the life change events listed on the SRE questionnaire.

Limitations

1. Convenience sampling was used.

2. No attempt was made to control for the reading comprehension level of the subjects who were from varying socioeconomic backgrounds.

Delimitations

1. Patients who ingested alcohol or other mind-altering drugs in the previous four hours were carefully assessed as to their previous use of the substance and their ability to remember events of the past year.

2. Patients with self-inflicted traumatic injuries or who were the innocent victims of unlawful acts (assaults) were excluded from this study.

3. Only hospital emergency departments with over 2,000 patient visits per month were used.

Data Analysis

The Schedule of Recent Experiences yielded ordinal level data for the subjects sampled. Data from the 50 subjects were tested for a difference in the LCU score in the 0-6 month and 6-12 month intervals prior to injury. The Chi-square one sample test was used to test the null hypothesis.

Chapter 2

REVIEW OF THE LITERATURE

This study sought to investigate the time relationship between the occurrence of minor injuries needing medical attention and life change units (LCU) as measured by the Schedule of Recent Experiences (SRE) questionnaire in patients aged 19-39 who sought care in an emergency department (ED). The hypothesis under consideration was that life change units, as measured by the Schedule of Recent Experiences, would be greater in the six month period just prior to a minor injury than in the previous six month period in patients aged 19-39 who sought medical attention in an emergency department.

Life change events, the time relationship of life change events to illness or injury, factors involved with injuries and accidents, patient age, and the emergency department as a primary care facility are discussed. A summary of the literature relevant to the research question is presented.

Theoretical Framework

Stress and crisis are related to change due to alterations in life style. Holmes and Rahe have designated these changes as "life change events" (1967). Selye, an early leader in stress research, noted that stress was necessary for healthful living. Previous

encounters with stressful situations were noted to have an effect on the body's physical ability to cope with new unexpected stressors. Chronic stressors, however, ultimately reduced the total energy available to resist illness. Selye stated that this reduction of energy was the result of the General Adaptation Syndrome (GAS), which consisted of the following three stages:

1. "alarm reaction" - defensive forces are mobilized
2. "stage of resistance" - full adaptation to the stressor
3. "stage of exhaustion" - adaptation energy is depleted (Selye, 1965:98)

When reaching the "stage of exhaustion," the body can no longer fight off disease.

While Selye has described stress in terms of physical effects on the body, Rapoport and Caplan have described the effects of stress on the psychological aspects of a person's functioning. When psychological effects were considered, the term crisis was used. Crisis in its simplest form was defined as "an upset in a steady state. In a state of crisis, it is postulated that the habitual problem-solving activities are not adequate and do not lead rapidly to the previously achieved balanced state" (Rapoport, 1964:24) Where stress and its effect on the body were rightly assumed to have pathogenic potential, Rapoport stated that crisis was assumed to have a growth producing potential. Rapoport, as did Selye, found that crisis or stress conditions the body for future positive encounters.

Caplan described a crisis as following four characteristic phases (which are comparable to Selye's GAS):

Phase 1 - Inital rise in tension and call for traditional problem-solving approaches.

Phase 2 - Lack of success and continued stimulus gives rise in tension.

Phase 3 - Continued rise in tension provides powerful stimulus to mobilize internal and external resources. Problem may be solved.

Phase 4 - If problem is still unsolved, tension increases beyond the breaking point and major disorganization results. (Caplan, 1964:40)

From Caplan's four phases, the similarities to the GAS are seen. Selye's third stage or the "stage of exhaustion" where adaptation energy is depleted can be compared to Caplan's phase four during which tension increases beyond the breaking point and a major disorganization results. It is at these end points, when a person lacks the resources to cope with a new stressor, that illness or injury may result.

Hinkle, Christenson, Kane, Ostfeld, Thetford, and Wolff (1958) related that the perception of stressful events was more important than the actual life events. "Frequently ill persons perceived their situations as more challenging and more demanding, and more conflict-laden and experienced more disturbances of bodily processes and of mood, thought, and behavior as a result of their efforts to adapt to a greater number of perceived challenges" (Hinkle and others, 1958: 295). Consequently more energy was expended trying to adapt to these events. Under these circumstances, altered perception of the environment became important because there was a decreased sensitivity to environmental clues suggestive of danger (Sedgwick, 1975). A non-stressed person would be more aware of these danger clues and would be able to act upon or avoid them to protect himself from injury.

Stess according to one researcher is produced by changes in

one's life, both desirable and undesirable (Dohrenwend, 1973). Change is part of everyone's life and can be measured. Holmes and Rahe (1967) developed quantitative values to 43 life events known through clinical experience to require a change from the steady state and require some degree of coping or adaptation. This research led to the development of the Social Readjustment Rating Scale (SRRS) which was later modified and renamed the Schedule of Recent Experiences (SRE).

Rahe, Meyer, Smith, Kjaer, and Holmes (1964) noted that an increase in life change events caused increased stress which could lead to a health change. Retrospective studies revealed that life events clustered significantly in the two year period preceding the onset of tuberculosis, heart disease, skin disease, and hernia. This accumulation of life change was also observed by Wildman and Johnson to have an overt threshold effect on the psychological distress level of a person; however, they were unable to explain why some subjects with very high levels of life change had no further increase in psychological distress levels (Wildman and Johnson, 1977:184).

Life Change

Considerable attention has been given to the concept of life change and events causing alterations in man's life style. Holmes and Masuda (1966) indicated that it was the quantity of life change which was the important precursor of illness. A scale of life events, the Social Readjustment Rating Scale (SRRS), was developed by Holmes and Rahe which consisted of 43 events judged to require alteration of a person's life style. These 43 events were ranked by 394 subjects according to the degree of adjustment to marriage. The mean numerical scores for the 43 life events ranged from 11-100; marriage had a

preselected numerical score of 50. The events with the highest numerical value were ascribed to the least desirable events such as the death of a spouse, divorce, marital separation, jail term, death of a close family member, and personal injury or illness. The lowest numerical value events were the least threatening events, such as minor violations of the law (e.g., traffic tickets), Christmas, vacation, and changes in eating habits. The SRRS was later modified by deleting Christmas, which everyone experiences, and renamed the Schedule of Recent Experiences (Holmes and Rahe, 1967).

The numerical values given to each event were termed life change units (LCU) and summation of the LCU scores reflected the total exposure to stressful events. In a study of 88 resident physicians, Holmes and Rahe found that 89 of the 96 major health changes reported were found in association with a clustering of life change events totaling 150 LCU or more in a one year period. "A life crisis was therefore defined as any clustering of life change events whose individual values summed to 150 LCU or more in one year" (Rahe and Holmes, 1966:2).

Further analysis of the resident physicians by Holmes and Masuda revealed that the risk of health change and the magnitude of the LCU were related. Of the 88 subjects, those with LCU between 150-199 LCU had a 37 percent association of life crisis and health change, 200-299 LCU had a 51 percent association, and 300+ LCU had a 79 percent association. "On the average, associated health changes followed life crises by about a year" (Holmes and Masuda, 1966:7). Accidents with associated body trauma were reported by some of the 88 subjects and seemed to appear as well during a life crisis period although this finding was incidental to other reported health changes (Rahe and Holmes, 1966:4).

Other researchers have supported Holmes and Rahe's original work on the concept of life change and its measurability. While Holmes and Rahe's concept of life change was uni-dimensional and involved only the quantitative aspect of the changes, Dohrenwend researched the issue of whether it was life change itself or the undesirability of a particular life change which caused the increased stressfulness. In her investigation, 124 heads of families in a cross cultural area of Manhattan were interviewed concerning life changes in the last 12 months by using the SRE questionnaire. The 42 life change events on the SRE were judged by two independent coders to be desirable, undesirable, or ambiguous events. When the SRE events reported by the 124 subjects were considered in terms of desirability or undesirability, there was a significant correlation between undesirable life events and increased magnitude of summed LCU scores. The relationship between the subjects with low LCU scores and desirable changes and the subjects with high LCU scores and undesirable changes was significant ($X^2 = 40.15$, df = 4, $p < 0.001$; Dohrenwend, 1973:172).

Ruch (1977) sought to use a multidimensional approach to investigate life change to see if the quantitative approach advocated by Holmes and Rahe, the qualitative approach of Dohrenwend, or his own multidimensional method was the significant factor in life change. Ruch investigated a sample of 211 undergraduate sociology students aged 18-19 who evaluated the 43 life change events in Holmes and Rahe's SRRS. The subjects were asked to disregard the desirability of the life events and rate the events according to their estimation of the typical intensity of each event as well as the length of time needed to adjust to each event. The life change data obtained was analyzed

in three dimensions:

1. degree of life change
2. desirability of the events
3. area of life change (life style, interpersonal relations, etc.)

By analyzing his data in those three dimensions, Ruch found that the degree of life change was most important. Desirability and area of life change were second and third place, respectively. Ruch summarized his findings as "although the quantity of life change stressed by Holmes, Rahe, and colleagues is not the sole dimension, it is the most primary dimension" (Ruch, 1977:82).

Some researchers have raised objections to the Holmes and Rahe life change event questionnaire. Hough, Fairbank, and Garcia (1976) and Mechanic (1975) concluded that the SRE was not complete enough and suggested additions of items to the questionnaire. For example, Hough discussed the event listed as "You have had a change in residence." This event requests a response for a change in residence regardless of the condition of the new residence and neighborhood. "Change in residence to a better neighborhood may not be considered as stressful as change in residence to a poorer neighborhood" (Hough, Fairbank, and Garcia, 1976:75). These researchers suggested making separate items for distinguishing the desirability or undesirability of life events. However, the strength of the SRE, as Ruch pointed out, is that the quantitative dimension of the change required is the most important factor.

Sarason, de Monchaux, and Hunt (1975) questioned the value of the SRE as a measure of a person's life change. The SRE is self-administered and interpretation is usually left to the individual. Sarason pointed out that in some instances the subject may be a

"denier" who does not respond to selected items in the questionnaire. Other problems exist with "plus getters" who score well on any test and tend to be more educated and interested in questionnaires. Other factors involved in different SRE measurements, Sarason stated, are the conditions under which the assessment is given. For example, the results of the SRE can be expected to be different if the subject is a volunteer in a college study or if he is completing the SRE as a battery of tests given to job applicants.

Despite some objections to the SRE as a measurement of life change, the concept of life change as a precursor to illness is a valid one and the use of the SRE to measure life change has been well established in the literature. Some researchers have specifically studied the time relationship of life change and illness or injury.

Time Relationship of Life Change and Illness or Injury

Bramwell, Masuda, Wagner, and Holmes (1975) and Cline and Chosy (1972) investigated college-aged men in prospective study designs and found that there was increased risk of illness or injury in persons with increased life change within the time intervals under study. Bramwell sampled 82 male college football players under age 30 who had completed the Social and Athletic Readjustment Rating Scale (SARRS), a modification of the SRE. The SARRS consisted of 57 life change events which included such events as being dropped from the team, entering college, and having troubles with the head coach. Of the 82 males who completed the SARRS prior to the playing season, 36 were injured during the following three months. Injuries were defined as serious enough to miss three or more practices or to miss one game. The mean LCU score for one year in the injured group was 632.

The non-injured group of 46 men had a mean LCU score of 494. A comparison of the mean LCU score was conducted by using the Student's t test. Bramwell reported the difference between the injured and non-injured groups was significant at the .05 level. The t value obtained was not reported (Bramwell, Masuda, Wagner, and Holmes, 1975:17).

Cline and Chosy's prospective study consisted of 134 cadets enrolled in a one year National Guard Officer Training Program. The researchers administered the SRE on entrance to the program and elicited life change events for the previous 18 months. During the first two weeks of the summer phase of the program, cadets responded daily to a Health Check-List, a list of 48 health problems which included injuries. A comparison of the previous 18 month LCU score and the two week illness and injury occurrences was correlated by using Pearson's r. A significant positive correlation between LCU scores and health incidents was reported as .215 with $p < .05$ (Cline and Chosy, 1972:52). The researchers agreed with Holmes and Rahe that the quantity of previous life change was the important factor that correlated with health changes. The first two week training period required a high degree of adjustment and those cadets with previous high life change were found to be especially at risk.

Another prospective study was conducted by Rahe, Mahan, and Arthur with 2,664 Navy subjects aboard three U.S. Navy cruisers. All subjects completed a life change questionnaire prior to a six to eight month cruise. Following the cruise, the researchers investigated the medical records of over 90 percent of the subjects to discover when cruise members had reported to sick bay. Although the study involved

healthy men who only had a mean of one to two illnesses or injuries during the entire cruise, a low order positive correlation was demonstrated between subjects life change intensity for the six months prior to the cruise and their reported illnesses and injuries while at sea. Pearson's r was 0.118 with $p < 0.01$ (Rahe, Mahan, and Arthur, 1970:402).

Garrity, Marx, and Somes (1977) also conducted a prospective study involving life change and health changes. A nine month study was conducted with 1,840 college freshmen subjects. All subjects responded to the SRE on admission to college. At 60 day intervals, a sample of one third of the subject group was interviewed regarding health changes since admission to college. Minor health disturbances were found to follow life change more quickly than major health changes which were indicated by the number of disability days (definition not given). Major health changes, however, were correlated significantly to magnitude of LCU scores with increasing time from the changes. The Chi-square value obtained was 6.13 with 2df at the .05 level (Garrity, Marx, and Somes, 1977:380). Since the investigation only lasted nine months, the researchers could not speculate on the latency period for major health changes.

Wyler, Masuda, and Holmes conducted a retrospective study with 232 patients under treatment for 42 types of illnesses. An investigation of life change using the SRE revealed that thirty-six percent of the life change in the previous two years prior to answering the SRE occurred in the six months prior to the current treatment. "Spearman's rank order correlation coefficient (rho) compared the individuals' three time period SRE scores with the magnitudes of seriousness of

illness. Rho for the 6-month, 1-year, and 2-year periods was 0.302, 0.321, and 0.356, respectively. These were highly significant ($p < 0.005$)" (Wyler, Masuda, and Holmes, 1971:117). When the diseases were separated into acute and chronic categories, the chronic disease categories showed a highly significant positive correlation to life events. The acute categories such as infectious diseases, heart attacks, and strokes did not show this correlation.

The five studies reviewed indicated that events in the last one to two years of a person's life are critical determinants of whether the person will become ill or injured following an accumulation of life changes. The research investigation presented herein of using the time interval of one year and making a comparison of the LCU scores in the previous two six month intervals prior to a minor injury is consistent with what has been revealed in literature on the subject.

Injuries: Factors and Relationship to Life Change Events

The theoretical framework presented earlier in this chapter discussed the relationship of increased stress derived from life change to a decrease in the responsiveness of an individual to the perceptual clues in the environment which can protect him from injury (Sedgwick, 1975). In a non-research report, Susan P. Baker, a noted expert on accidents and an assistant professor in Forensic Pathology at Johns Hopkins University, used an epidemiological approach to describe several factors about the host which increased the possibility of an accident. She stated that the factors involved in minor accidents are not necessarily the same factors important in severe and fatal injuries. Host factors which are most important in determining

the severity of an injury are age, sex, and the extrinsic use of alcohol. Age can be related to the amount of exposure to harmful elements, resistance to injury, and the presence of chronic disease. Baker stated that sex was also a host factor. Death rates from accidents are twice as high for males as for females. That fact suggests that males are involved in activities where there is greater exposure to lethal elements. Alcohol use has been found to be the most important factor related to severe injury and was considered to be an extrinsic host factor. Drivers in the 25-39 age range are more likely to be drinking more heavily than drivers over 39 or under 25 and, consequently, have the highest death rate from automobile accidents due to their more severe injuries (Baker, 1973:993). Two of the host factors described by Baker can also be thought of in terms of decreasing the perceptual responsiveness of an individual to danger clues in the environment. With the very young, the very old, and individuals under the influence of alcohol, there can be decreased perceptiveness to the environmental clues suggestive of danger.

Selzer and Vinokur addressed the alcohol problem in their 1975 study of life events in accident causation. While alcohol abuse was not considered a specific life change, alcohol usage was considered a response to stressful life events. "In effect, alcoholism can be regarded as a response to stress which soon develops into a superstress as a result of the life changes caused by the individual's being an alcoholic" (Selzer and Vinokur, 1975:45).

Brenner and Selzer (1969) in a retrospective study looked at 96 drivers who were responsible for causing an accident with one or more fatality and compared them to 96 matched controls. Brenner and

Selzer found a 21 times greater risk of causing an accident if the driver was an alcoholic; frequent, high users had a three times greater risk. In addition to studying alcohol usage, the researchers probed the subjects or their survivors for three areas of stress production which can be viewed as undesirable life events:

1. serious and disturbing personal conflicts with others
2. personal tragedy such as death or illness of someone close to the driver
3. job and financial stress

Drivers who had recent experience with any of the three areas of stress production had a five times greater risk of causing an accident than the matched controls (Brenner and Selzer, 1969:492).

A later study by Vinkur and Selzer utilized the SRE in a study of 1,059 male drivers to demonstrate that "life events were indeed correlated with such stress related variables such as anxiety, tension and distress, aggression, paranoia, depression and drinking" (Vinokur and Selzer, 1975:335). Furthermore, these researchers concluded that undesirable life events were substantially correlated with these stress-related variables at the $p < .01$ level.

Two retrospective studies of life change events in orthopedic patients were completed by Tollefson and Whitlock, Stall, and Rekhdahl. Tollefson, in a nursing thesis at the University of Washington, investigated life change event scores in 37 male fracture patients who were hospitalized because of trauma. Looking at life change for the past six month, one year, two year, and three year intervals, she found that all mean LCU scores for each time period lay within a moderate life crisis with LCU 200-299 (Tollefson, 1972). The classification of a moderate life crisis was revealed by Holmes

and Rahe as having a 51 percent association with health change (Holmes and Rahe, 1966:4). Whitlock, Stall, and Rekhdahl of New Zealand matched 71 orthopedic patients to controls. Using the SRE, the patients were found to have experienced more life changes in the six months prior to their accidents than the matched controls experienced during a similar period. These changes increased in frequency in the immediate two to three months prior to their accidents. The actual changes were of a stressful nature indicative of undesirable changes such as marital disturbances and unemployment. When the researchers compared the cumulative SRE scores from the matched pairs, men had a Z score of -4.0 with $p < .001$; women had a Z score of -3.3 with $p < .001$ (Whitlock, Stall, and Rekhdahl, 1977:129).

All of these research studies revealed that stress caused by life change events, particularly undesirable events, can be correlated to accidents where injuries occur. The use of alcohol by drivers was also shown to be an important extrinsic factor in accidents where fatalities occurred.

Patient Age

The young adult age group of 19-39 years old investigated in this study fell within the two highest groups of adults injured in accidents in 1971-1972 in the United States. Those groups of ages 17-24 and 25-44 accounted for 24.6 million persons who were injured. By comparison, children under 16, who have traditionally had higher injury rates because of their immaturity, had approximately 26 million injuries and comprised the largest group of injured persons in 1971-1972 (National Health Survey, 1974:13).

Prospective studies of Rubin, Gunderson, and Arthur and Marx, Garrity, and Bowers showed an increase of illness or injury associated with increased life change in the young adult age groups. Rubin and the others correlated SRE scores to illness rates of 121 naval aviators who were officers on an attack carrier during a six month deployment to Vietnam. Total SRE scores were computed for the 18 months prior to the cruise. The subjects with the highest SRE scores had the greatest number of illnesses (7.00 illness rate with the highest scores and 3.84 illness rate with the lowest scores). The findings indicated that fifty-one percent of the officers had experienced all of the illnesses reported. Within that group of officers who experienced illness, the older age groups (over 33) with higher rank had lower illness rates than those aged 23-26 with lower officer rank. This finding led the researchers to conclude that there was an inverse relationship of age, rank, and experience to illness rates in a group of combat aviators (Rubin, Gunderson, and Arthur, 1972).

The prospective study by Marx, Garrity, and Bowers also demonstrated a link between major life change and illness in young adults. Marx and others studied 1,840 college freshmen by using the College Schedule of Recent Experiences questionnaire to record life change events. Later, 314 of this group were interviewed and a record was made of the illnesses experienced during the previous 60 days. A sample of one third of the group was interviewed at 60 day intervals. This young adult age group of freshmen students did have a positive correlation of increased life change to increased illness rates at the 0.001 level. This demonstrated a high risk group who could be aided by early identification of their life stress levels (Marx, Garrity, and Bowers, 1975).

Young adulthood is a time of many life changes: beginning and completing formal schooling, changing jobs, marrying, moving many times, and buying a first car and possibly a first home. The years from 19-39 are by developmental nature a time of much change, and the risk of illness or injury was shown by the studies of Rubin and Marx to be correlated with the amount of life change experienced.

Emergency Department Studies

The emergency department (ED) has been utilized increasingly for primary care by a large segment of the community. The last fifteen to twenty years have shown a doubling and tripling of patients served by the ED. Vayda, Gent, and Paisley (1973) studied the patient use patterns at their ED, which is affiliated with McMasters University. In the ten year period from 1961-1971, the population served per year nearly tripled. This pattern seems to be consistent throughout the United States as well. Canizaro reported a 121.7 increase in ED visits in U.S. hospitals from 1958-1969 (Canizaro, 1971:545).

Researchers, Satin and Andersen, investigated ED patients relative to ED use and association of life stresses. Satin (1972) explored life stresses with ED patients by utilizing psychiatric interviewers to question randomly selected patients about life stresses encountered in the previous six months. The findings indicated that only 3.2 percent of the subjects brought their stresses to the ED as chief complaints. The psychiatric interviewers, however, identified 86 percent of the patients interviewed as experiencing stresses involving emotional, interpersonal, social function, and physical aspects. Of these patients, 16.9 percent had stresses judged by the

interviewers as severe enough to be substantially handicapping or capable of causing considerable anguish (Satin, 1972:122).

Andersen and Pleticha (1974) also used the ED as the focus for their investigation of 52 patients. Using the SRE, the investigators discovered that the mean LCU magnitude score was significantly related to the patient's perception of his presenting medical complaint. The researchers concluded that health professionals should make an effort to understand "the patient's present illness in perspective of his life circumstances" and "to act as a screening agent for life stresses that need therapeutic intervention" (Andersen and Pleticha, 1974:382).

The ED serves as a primary care facility for many persons. Patients enter the ED with various medical complaints which may be manifestations of their life stresses. Patients need the opportunity to explore the relationship of their current medical problem to the stresses associated with change in their lives.

Summary

Numerous research studies reported a positive correlation between an increase in life change events in the one to two year interval prior to a single illness or clustering of illnesses. Some studies on accidents and injuries indicated similar relationships of life change events to injuries. Young adults were especially at risk of illness or injury because of the magnitude of change experienced during this developmental and socially active stage.

Chapter 3

RESEARCH DESIGN AND METHODOLOGY

Introduction

The purpose of this study was to compare the magnitude of life change events experienced by young adult patients in the two six-month time intervals prior to a minor injury. The subjects were selected from three emergency departments in a metropolitan area in the state of Virginia.

Subjects

The subjects of this study were derived from the population of patients with minor injuries who were seen in three emergency departments during the month of August, 1979. The total number of subjects was 50. The subjects were obtained in three groups: patients who received medical attention at a private hospital owned by a religious order (N=10), patients at a proprietary hospital owned by a corporation (N=15), and patients at an urban teaching hospital owned by the state government (N=25). The three emergency departments were used to obtain a representative cross section of the population under study. All subjects were selected using a convenience sampling technique during their emergency department registration.

A retrospective survey conducted by this investigator prior to

the actual data collection established the number of patients to be selected from each of the emergency departments. The emergency department (ED) Log Books for three preselected weeks in 1978 from the three respective hospitals were used to determine the patient age, sex, time of day and day of week of ED visit, and the complaint. The percentage numbers for the sample were based on the respective percentages of ED patient population revealed in the retrospective survey. The young adult age from 19-39 was the largest group (N=1694) of adult patients with minor injuries identified in the retrospective survey of 1978 (Total=2388). This age group was selected for study because of the greater availability of subjects. The subjects were selected in the respective emergency departments between the hours of 2 p.m. and 10 p.m. on the days of Thursday, Friday, Saturday, Sunday, and Monday. In the retrospective survey, these five days were found to have the greatest number of patient visits. Likewise, the evening hours included the highest number of ED patient visits.

Within the 50 subject sample group, there were 32 males and 18 females. The mean age was 26.6 with a median of 25 years. There was nearly an equal number of married subjects (N=20) as there were subjects who had never married (N=21). Divorced subjects (N=5) and separated subjects (N=4) completed the sample. Twenty-six of the subjects had attended high school, and eighteen had attended college although not all graduated from either one. Of the subjects, three had attended only grade school, and two subjects attended technical school.

In the study, all subjects had minor injuries which did not require hospitalization. Injuries were reported as the result of accidental causes incurred at home (N=17), in automobile accidents (N=7), in sports (N=8), at work (N=14), and in other locations (N=4)

such as in movie theaters and on city streets. By injury type, sprains and dislocations accounted for N=24 of the subjects' injuries; lacerations (N=14) were the next highest group. There were nine subjects with other injuries such as dog bites, insect bites, and foreign bodies in the extremities. The remaining three subjects had eye injuries. No assaulted victims were included in this sample. A total of four potential subjects contacted refused to participate in the study.

Setting

The setting for ten subjects was the ED of a private hospital serving an area of primarily middle class residents in a metropolitan area in the state of Virginia. Over 25,000 patients were seen in this particular ED in 1978. The subjects utilizing this ED were contacted in a quiet hallway near the treatment area and away from the ED waiting room. The subjects had their vital signs assessed by the nursing staff and were waiting for treatment when this investigator approached them with the request for participation in the study. Only one subject in this setting refused to participate in the study.

The setting for fifteen subjects was the ED waiting room of the proprietary hospital. The population served by this ED is primarily middle class. The ED served approximately 40,000 patients in 1978. The subjects in this ED were approached by this investigator in the ED waiting room after vital signs were assessed by the nursing staff. Patients were waiting to be called for treatment at this time. Patients whom the nursing staff determined needed an X-ray were sent to the X-ray Department waiting room soon after vital signs were

assessed. The subjects were permitted to take the questionnaire to that department to complete during waiting times. No patients in this setting refused to participate.

The remaining one half of the subjects (N = 25), also selected by convenience method, were patients registered for ED care at a large urban teaching hospital, which served over 75,000 ED patients in 1978. An unknown, but large percentage of this ED patient population is from the lower socioeconomic level. These subjects were contacted in a busy hallway where patients waiting for ED treatment were seated. This hallway was away from the waiting room area. Vital signs had been assessed by the nursing staff; subjects were waiting to see the physician when this investigator approached them for participation in the study. Three patients at this hospital refused to participate in the study.

Instrument

The Schedule of Recent Experiences (SRE) was used to measure the magnitude of life change. This paper and pencil questionnaire developed by Holmes and Rahe consisted of 42 statements of events known through clinical experience to require an alteration of a person's life style. The events deal with "family constellation, marriage, occupation, economics, residence, group and peer relationships, education, religion, and health" (Holmes and Rahe, 1967:216). Each event had a life change unit (LCU) numerical value ranging from 11-100. Summation of the LCU values gave a magnitude of life change score which indicated a quantitative measure of life change. Individual life change event items and LCU values are listed in Appendix A.

The investigator altered the subject response section of the SRE from a computerized answer sheet to a format quickly completed in an ED by checking spaces. The modified SRE answer sheet elicited positive responses to life change events in the last two six month intervals prior to injury. Demographic data on the modified SRE included responses about age, sex, marital status, education level, type of injury, and the setting in which the injury occurred (Appendix B).

The SRE yielded ordinal level data. The instrument has been tested for reliability on many groups differing in age, sex, marital status, education, social class, ethnic group, race, religion, and what generation American by Masuda and Holmes (1967), Komaroff, Masuda, and Holmes (1968), and Mendels and Weinstein (1972). When comparisons were made between the various subject group responses to the numerical values assigned to the 42 life events listed on the SRE, these researchers found consistently high correlation values ranging from the lowest of 0.735 (p=0.001) to 0.975 (p not known). Mendels and Weinstein tested the reliability of the SRE by the test-retest method. Medical student subjects had high group correlation coefficients (Spearman) in excess of 0.90 (p not known) when the rank order of the mean numerical values for each life change event were compared. On retest one year later, the subjects rank order values had a correlation coefficient of 0.94.

Procedure

Prior to approval of the proposal by the Committee on the Conduct of Clinical Research at Virginia Commonwealth University, permission was obtained from the administrative departments in the

three hospitals utilized for this study (Appendix D). Permission to use the SRE was obtained from Dr. Thomas Holmes (Appendix E). After approval by the Committee on the Conduct of Clinical Research, each head nurse in the respective emergency departments was contacted and an explanation of the research proposal was given.

The subjects were approached by this investigator after ED registration and vital sign assessment. The subjects were informed that the investigator was doing a study of young adults who have had injuries. The subject was told that the study consisted of a questionnaire with a list of 42 events which people may experience at one time or another in their lives. The questionnaire was described as taking five to ten minutes to complete while the subject was waiting for treatment. The subject was then asked to read and sign the consent form (Appendix C).

Upon receiving signed permission, the investigator completed the demographic data section for the subject. The investigator then read the questionnaire instructions to the subject and pointed out the months of the year for the two six month intervals. The subject was then given a pencil and the questionnaire form. The subject was told that if he had questions, the investigator would answer them after he had completed the questionnaire. After ten minutes, the investigator returned and checked with the subject to see if he were finished and if he had any questions. The subject was thanked for participating in the study. During the data collection at the urban teaching hospital, two subjects were contacted as they rested on stretchers while waiting to see a physician for back injuries. Also in this setting, two subjects who were unable to read were taken to a private

room where the investigator read the questionnaire to them.

The time taken by the subjects to complete the questionnaire ranged from six to ten minutes. Only two subjects had questions, both of which related to the event described as "You had an outstanding personal achievement." The investigator's response given each time was that "it must have been an achievement recognized by others."

Data Analysis

The Schedule of Recent Experiences yielded ordinal level data for the subjects sampled. Data from the 50 subjects were tested for a difference in the LCU score in the 0-6 month and 6-12 month intervals prior to injury. The Chi-square one sample test was used to test at the .05 level for the statistical significance of the difference between the observed number of subjects who increased their LCU scores in the six months prior to injury and the expected number of subjects with increased LCU scores under the null hypothesis.

Chapter 4

RESULTS AND DISCUSSION

Introduction

The hypothesis tested in this study was that life change units, as measured by the Schedule of Recent Experiences (SRE), would be greater in the six month period prior to a minor injury than in the previous six month period in patients aged 19-39 who sought medical attention in an emergency department during a three week period in August, 1979. Fifty subjects from three emergency departments comprised the sample.

Ordinal level data from the sample were obtained when life change unit (LCU) scores were assigned to the respective life change events that the subjects indicated had occurred to them during the previous two six month intervals. Each life change event had a numerical score ranging from 11-100. If the event occurred more than once during the time intervals indicated by the questionnaire, the LCU score assigned to that event was multiplied by the number of times it occurred. Each subject's LCU scores were totaled for each of the six month intervals under study. High LCU scores indicated an accumulation of life change whereas low LCU scores indicated little or no life change.

Results

A minor injury had occurred to each subject in the population sampled. It was expected that life change unit scores would be higher in the six month period prior to the injury because of similar findings in the literature. The LCU score range for all 50 subjects for the 0-6 month time interval was LCU 0-665 ($\bar{X}$ = 193.78; Median 143). The LCU score range for the 6-12 month interval was LCU 0-538 ($\bar{X}$ = 96.94; Median 64). The LCU ranges, mean values, and median values are indicated in Table 1.

Table 1

LCU Scores for 50 Subjects

Data	Time Interval	
	0-6 months	6-12 months
LCU Range	0-665	0-538
Mean	193.78	96.94
Median	143.	64.

A total of 38 subjects (76%) had an increase in their LCU scores in the six month interval prior to injury, whereas, 12 subjects (24%) had a corresponding decrease in LCU scores. The Chi-square one sample test was used to test the significance of the difference between the observed number of subjects falling into each category and the expected number based on the null hypothesis (Seigel, 1956:43). The Chi square value obtained was 13.52, which was greater than the

critical value of 3.84 at the .05 level with one degree of freedom. The conclusion was reached that there was a statistically significant number of subjects whose LCU scores increased in the six months prior to a minor injury.

The significance of the LCU increase in the six month period prior to injury was further examined by finding the frequency of subjects in both time intervals who had LCU scores higher than the mean score for the 6-12 month period ($\overline{X}$ = 96.94). Table 2 indicates the frequency of subjects in both time intervals with LCU scores higher than the 6-12 month mean value.

Table 2

Subjects with LCU Scores Higher
Than 6-12 Month Mean Value

	Time Interval	
	0-6 months	6-12 months
Number of Subjects	35*	19

$\overline{X}$ = 96.94
N = 50 for each time interval
* included 15 of the 19 subjects from 6-12 months

The number of subjects with LCU scores greater than the 6-12 month mean value was 35 for the 0-6 month interval and 19 for the 6-12 month interval. Of the 35 subjects with 0-6 month LCU scores greater than the 6-12 month mean LCU value, 15 also had 6-12 month LCU scores higher than the 6-12 month mean LCU value. Under the null hypothesis,

25 subjects in each time interval could be expected to have scores greater than the 6-12 month mean LCU score. The Chi-square one sample test was applied to test the significance of the increase in LCU for the 0-6 month interval. The Chi-square value that was obtained was 5.44, which was greater than the critical value of 3.84 at the .05 level with one degree of freedom. The conclusion was reached that the increase in LCU scores in the six month prior to a minor injury was statistically significant.

The fifty subjects came from a cross section of a large metropolitan area. A subject profile was developed based on the findings from the demographic data section of the SRE questionnaire. The race of the individual subjects was not considered in this sample because of the investigator's concern that inclusion of this item on the questionnaire might be offensive to some subjects. The majority of the subjects were males. The mean age was 26.6 years with a standard deviation of 5.9 years. Most subjects were either married or had never married. More than half of the subjects had attended high school although not all had graduated. Home and work sustained injuries accounted for the greatest number of minor injuries, the majority of which were sprains and dislocations. Table 3 shows the mean age, numbers, and percentages of subjects in the respective categories.

Table 3

Demographic Description of Minor Injury Subjects (N=50)

Category	Number	Percent
Sex		
Male	32	64%
Female	18	36
Age		
Mean = 26.6		
Median 25		
s.d. = 5.9		
Marital Status		
Married	20	40
Divorced	5	10
Separated	4	8
Widowed	-	-
Never Married	21	42
Education Level		
Grade School	3	6
High School	27	54
Tech School	2	4
College	18	36
Type of Injury		
Laceration	14	28
Sprain/Dislocation	24	48
Eye Injury	3	6
Other *	9	18
Place of Accident		
Home	17	34
Vehicle	7	14
Sports	8	16
Work	14	28
Other **	4	8

* Dog bites, insect bites, and foreign bodies in extremities
** Theater, city streets

Since forty-eight percent of the sample incurred injuries described as possible sprains or dislocations, an in depth evaluation was done on this group of subjects. A comparison was made between male and female subjects whose LCU scores increased in the 0-6 month interval and the place of accident where the sprain or dislocation occurred. Since only two males and no females with decreased LCU scores in the 0-6 month interval had sprains or dislocations, these subjects were not considered in this evaluation. Table 4 indicates mean LCU scores and the place of accident for the 22 subjects with LCU score increases in the 0-6 month interval who had sprains or dislocations.

Table 4

Male and Female Subjects with Sprains or Dislocations Described According to LCU Mean Scores and Place of Accident (N=22)

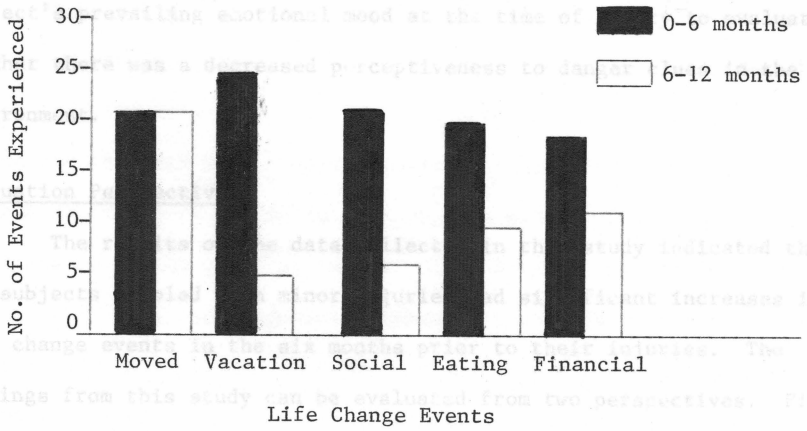
	LCU $\bar{X}$ Score		Place of Accident				
Sex	0-6 months	6-12 months	Home	Vehicle	Sport	Work	Other
Male N=12	231.58	46.5	-	2	3	7	-
Female N=10	154.9	65.0	3	3	2	1	1
Totals N=22	197.72	54.9	3	5	5	8	1

The male subjects (N=12) with sprains or dislocations had the higher mean LCU score ($\overline{X}$ = 231.58) for the 0-6 month interval. The work place accounted for the highest number of this type of injury for the males. Female subjects (N=10) had a lower 0-6 month mean LCU score ($\overline{X}$ = 154.9) and had incurred their sprains or dislocations primarily at home and in vehicle accidents. However, the highest total number of subjects (N=8) incurred sprains or dislocations at work, with men having seven of these occurrences.

Collectively, the subjects experienced 39 of the 42 life change events listed on the SRE. No subjects experienced the death of a spouse, retirement from work, or being fired from their jobs. Figure 1 indicates the five life events most frequently experienced during the one year prior to the minor injury. The five events are presented according to the six month interval when they occurred.

Figure 1

Frequency of Five Life Change Events Experienced in One Year



With the exception of changes in residence, which had an equal frequency of 21 in each six month interval, the other four most frequently occurring life events were experienced by the greatest number of subjects in the immediate six month period prior to injury. Of those four events, taking a vacation had the highest frequency (25 vs. 4). Changes in social activities (22 vs. 6), changes in eating habits (19 vs. 9), and changes in financial status (18 vs. 12) comprised the last three most frequently occurring events.

Discussion

Life change events require an adjustment in one's coping and adaptation functions. Sedgwick stated that the energy expended on adjusting to the changes resulted in a decreased energy supply to respond to environmental clues suggestive of danger (1975). While Sedgwick's statement can be considered a theoretical approach to the occurrence of injuries, the results of this study seemed to partially support her approach. Additional data would be needed regarding the subject's prevailing emotional mood at the time of injury to evaluate whether there was a decreased perceptiveness to danger clues in the environment.

Evaluation Perspectives

The results of the data collected in this study indicated that the subjects sampled with minor injuries had significant increases in life change events in the six months prior to their injuries. The findings from this study can be evaluated from two perspectives. First, the increase in life change events can be considered as interferences with perception of clues indicative of dangerous situations. Clues

were not attended to and the person suffered an injury. Bramwell, Masuda, Wagner, and Holmes (1975) in their study of college football players described the relationship of life change to injuries. "The effect of life change may hinder concentration on environmental clues that are crucial (i.e., sensing the blind side block) and/or to block previously learned adaptive responses when difficult and potentially damaging situations are recognized (i.e., 'freezing up')" (Bramwell and others, 1975:18). The data from Bramwell's study indicated that "the risk of injury to a football player increases in direct relationship to the accumulation of the challenging life events under study" (1975:17). The present study of 50 subjects indicated that there was an increase in life events related to the experienced injury and, therefore, seemed to support the findings of Bramwell and his colleagues.

Another possible factor involved that affected the number of males with sprains and dislocations seen in the ED could be the requirement of employees to notify their employers of injuries incurred on the job regardless of how minor the injuries might be. In this study, eight subjects incurred sprains or dislocations while at work. This group was the largest single group with similar injuries incurred in one specific location. Of these subjects, seven were men. A possible reason for the high number of males with work related accidents could be that men are more likely to work at jobs where muscles and joints are stressed to the point of injury. In addition, present Workmen's Compensation Insurance regulations require that injured employees notify their employers promptly or compensation may be denied to the employee (Industrial Commission of Virginia). Employers without medical departments may send their injured employees to the ED for

medical evaluation to ensure compliance with Workmen's Compensation regulations even though the injury may not require a physician's evaluation. However, documentation of the injury is established by the hospital record; the employer and employee have complied with Workmen's Compensation regulations.

The second perspective considered in the finding of increased life change events in the six months prior to a minor injury was that the subjects were additionally stressed by the injury occurrence and by their presence in the ED, a somewhat stressful area. Under these circumstances, recall of distant life events, i.e., events which occurred 6-12 months ago, might have been reduced. In the sample, nine subjects reported no life change events for the 6-12 month interval prior to injury. Only one subject reported no life change events for the 0-6 month interval. The finding of lower LCU scores reported in the 6-12 month interval seemed consistent with the findings of Jenkins, Hurst, and Rose (1979). In a study of 382 healthy air traffic controllers with a mean age of 36.2 years, Jenkins looked at the mean life change scores for a single specific six month interval as reported on two occasions nine months apart. The researchers found a significant difference between the mean LCU scores reported for the same six month interval when the subject's scores were gathered at two time periods nine months apart. Jenkins had mean LCU scores from the Holmes and Rahe SRE of 118 LCU for the first examination and only 64 LCU for the second examination nine months later ($t = 9.54$, $p < .001$; Jenkins, Hurst, and Rose, 1979:380). Jenkins found that recall of life events was influenced by the passage of time. In this study, the passage of six months since the life change events were experienced, the stressful

conditions of a recent injury which was untreated at the time of data collection, and the environment of an emergency department could have contributed to the subjects' under-reporting of life events experienced 6-12 months ago.

The recall factor can be evaluated in the data indicating the five most frequently occurring life change events found in the minor injured subjects. These five events were changes in residence, taking a vacation, changes in social activities, changes in eating habits, and changes in financial status. Changes in residence occurred equally often in the two six month intervals prior to a minor injury occurrence and was the highest single change reported for the combined six month study interval. Changing residence is a significant event for most persons and the date of a move is not easily forgotten. In addition, the young adult age group of 19-39 is a characteristically mobile group; the data indicating frequent changes in residence was expected. The finding of a high number of subjects who took a vacation in the previous six months was also expected since data was collected during the summer month of August. In addition, vacation is a fringe benefit which is guaranteed to most employed persons; the vacation occurrence is not usually forgotten. The last three life change events, i.e., changes in social activities, changes in eating habits, and changes in financial status were more frequent in the immediate six months prior to injury and seemed to appear in combination on several subject's questionnaires. For these last three events, the questionnaire requested a response to a major change in social activities (e.g., clubs, dancing, movies, and visiting), a major

change in eating habits (a lot more or a lot less food intake, or very different meal times or surroundings), and a major change in financial state (a lot worse off or a lot better off than usual). The life change of improved or worsened financial state could have an influence on social activities and eating habits, e.g., eating out in restaurants or socializing more in relation to an increased financial state. The data indicating a greater frequency of these three events in the immediate six months prior to injury occurrence may have been the result of subject's lack of recall of similar changes in the six to twelve months prior to injury.

Mean Scores Compared

The difference between the mean LCU scores for the 0-6 and 6-12 month intervals was tested for significance by using the t test specific for testing a single group under two separate conditions. The t test was employed with the knowledge that the data was not of interval level. However, other researchers have tested SRE mean LCU scores for significance with the t test (Bramwell and Jenkins). The t test is a parametric test which assumes that the distribution is normal. A larger number of subjects increases the degrees of freedom and the t distribution approaches the normal form (Ferguson, 1966:154). The sample group (N=50) studied yielded N-1 degrees of freedom (49df). The critical value of t at 49 df was 1.678. The t value obtained by testing the difference of the mean LCU scores in this sample was 4.38. The investigator concluded that there was a significant difference between the mean scores from the two six month intervals under study when data were treated as interval scale.

Normative Data Comparison

A comparison of the mean LCU scores in this study to other mean LCU scores from the literature was made to evaluate the minor injured subjects against the findings in studies of non-injured football players, non-accident drivers, and peptic ulcer patients. Since the three literature sources (Bramwell, Masuda, Wagner, and Holmes; Selzer and Vinokur; Wyler, Masuda, and Holmes) used one year mean LCU scores, the two six month LCU scores for each subject in this study were summed. The Bramwell subjects were the non-injured college football players with a mean age of 20 years; the Selzer and Vinokur subjects were non-accident drivers with a mean age of 30.53 years; the Wyler subjects were a group of peptic ulcer patients who were part of a group of 232 subjects with chronic and acute diseases whose mean age was forty-one. All studies were referred to in Chapter 2. Table 5 allows comparison of the subjects mean ages, one year LCU scores, and LCU score ranges.

Table 5

Comparison of 50 Subjects to Normative Data

Source of Data	N	$\overline{X}$ age	$\overline{X}$ 1 year LCU	LCU range
Bramwell and others[1] (57 life events) Non-injured players	46	20	494	150-1552
Selzer and Vinokur[2] (42 life events) Non-accident drivers	150	30.53	142.67	not reported
Wyler and others[3] (42 life events) Peptic ulcer group	17	41	386.	not reported
Present study (42 life events) Minor injured group	50	26.6	290.72	49-1068

[1]Bramwell, Masuda, Holmes, and Wagner, 1975:17

[2]Selzer and Vinokur, 1975:46

[3]Wyler, Masuda, and Holmes, 1971:118

The Bramwell subjects were younger and had higher mean LCU scores than either the present 50 subjects, Selzer and Vinokur's non-accident driver subjects, or Wyler's peptic ulcer patients. The younger age of Bramwell's subjects could have been a factor in the higher LCU mean score since younger persons attending college are going through a period of increased life change (Marx, Garrity, and Bowers, 1975). In addition, the Bramwell life event questionnaire had 57 life event items with consequently higher LCU scores possible to obtain. The Selzer and Vinokur subjects were older and had not incurred an automobile accident. The comparison of their lower LCU mean score to the mean

score of the present sample was made to demonstrate a group of subjects which had neither illness nor injuries and whose older mean age would contribute to lower LCU scores than the minor injury subjects experienced.

The peptic ulcer subjects of Wyler and others had a one year mean LCU score which was higher than the minor injury subjects but lower than Bramwell's non-injured football players. A peptic ulcer condition was considered by Wyler to be a chronic disease; subjects with peptic ulcer conditions showed a highly significant positive correlation with life change events. While minor injuries are not acute illnesses, they are acute conditions which can be considered similarly. The higher mean LCU score of the peptic ulcer subjects shows greater accumulation of life changes in the development of chronic illnesses.

Grouping by Holmes and Rahe's Classification

In an effort to determine how many of the present subjects are at risk of future major illness or serious injury, the one year LCU scores were grouped according to Holmes and Rahe's classification of mild, moderate, and major life crises. As discussed in Chapter 2, Holmes and Rahe defined a life crisis to exist when the LCU score for a one year interval was greater than 150 LCU. Within the intervals, a mild life crisis had a LCU range of 150-199 and persons whose LCU scores came within the interval had a 37 percent associated risk of developing a major health change during the next year. A moderate life crisis had a LCU range of 200-299 and had a 51 percent

association of major health change. The major life crisis interval had a LCU range of above 300 and carried a 79 percent major health change association (Holmes and Masuda, 1966:7). Table 6 indicates the frequency of the fifty subjects within the intervals. Male subjects were also evaluated as a separate group because they comprised 64 percent of the sample.

Table 6

Frequency of LCU Scores in Minor Injury Subjects According to Holmes and Rahe's Life Crisis Intervals

Interval	One yr. LCU	N	% sample	N of males	% males
No life crisis	0-149	15	30%	11	34%
Mild life crisis	150-199	4	8	3	9
Moderate life crisis	200-299	12	24	3	9
Major life crisis	300+	19	38	15	48
Totals		50	100%	32	100%

Nearly fifty percent of the 32 males in the minor injury sample are in the major life crisis interval. If Holmes and Rahe's findings are accepted that the subjects within the major life crisis interval have a 79 percent chance of developing a major health change, which may include a serious injury, then the males with minor injuries in this sample are especially at risk of becoming seriously ill or injured in the next six months.

Recent Change

The subjects of this present study had incurred an injury and the majority of the subjects had indicated an increase in LCU scores during the previous six months. One aspect not explored in this study was how much of that change had occurred most recently although that would have been useful data to have. Whitlock, Stall, and Rekhdahl in 1977 studied 71 matched pairs of orthopedic patients hospitalized because of accidental injuries. Two findings from Whitlock's study are relevant to this study. First, the subjects showed a significant increase over the matched pairs in the frequency of life events of the previous six months prior to their accidents and the subjects indicated that the life events had increased in the previous two to three months. The finding of an increase in life events in the previous two to three months prior to a minor injury could indicate a need for preventive health measures aimed at a heightened awareness of possible dangerous situations encountered in the environment. If data concerning how much life change had occurred most recently had been available in this study, then the eight subjects with sprains and dislocations incurred at work could have been evaluated more thoroughly. Since employers have regulations regarding safe working conditions, much concern is directed towards preventing injuries. However, there exists a need to document the influence of life change on the function of the employee in prevention of an injury in the work setting.

The second and most applicable finding from Whitlock's study to the present study was that "more male cases than their controls

had sustained previous accidental injuries ($X^2 = 6.55$; $p < .025$). Seven (of the 71) subjects had experienced minor accidents during the six months prior to the event which brought them to the hospital, and a further five had sustained more serious accidents" (Whitlock, Stroll, and Rekhdahl, 1977:129). Whitlock's finding of 16.9 percent of his male subject population who experienced previous injuries indicated that a potential group of injury prone individuals could have been assisted by health care workers at an earlier time. Since 64 percent of the minor injured subjects in this study were male, it is conceivable that some of these males may have additional injuries during the next six months.

Summary

The data in this study demonstrated a significant increase in the amount of life change experienced by subjects in the immediate six month period prior to their minor injuries and supported the findings of Whitlock, Stroll, and Rekhdahl. When the mean LCU score for one year was compared to normative data, the sample of 50 subjects had a lower mean LCU score than either non-injured football players or peptic ulcer patients. However, the subjects with minor injuries nearly doubled the mean LCU score of the non-accident drivers.

Males dominated the sample group (64 percent) and accounted for the largest number of injuries sustained at work. Nearly half of all subjects had sprains or dislocations; men received seven of these injuries at work. Males had the highest one year mean LCU scores with 48 percent of the men having LCU scores over 300. At the 300+ level, the men came within the Holmes and Rahe classification of a major life crisis.

The finding of increased life change events in the six months prior to a minor injury was considered as either a contributing factor to the injury, because of decreased perception to danger clues, or the result of decreased memory of events six to twelve months prior to the injury. Passage of time and/or the injured subject's presence in a somewhat stressful ED environment at the time of data collection were considered as factors leading to decreased memory of previous life events. All of these factors, alone or in combination, could have contributed to the findings of this study. However, these factors cannot be considered as the only ones involved in the occurrence or reporting of minor injuries.

Chapter 5

SUMMARY AND CONCLUSIONS

Summary

This study explored the time relationship of life change events in young adults with minor injuries. The hypothesis tested was that life change events as measured by the Schedule of Recent Experiences would be greater in the six months prior to a minor injury than in the previous six month period in patients aged 19-39 who sought medical attention in an emergency department.

A convenience sample of 50 subjects was derived from a population of young adult patients with minor injuries. Subjects were contacted at three different hospital emergency departments located in a metropolitan area during the month of August, 1979. The subjects completed a questionnaire, the Schedule of Recent Experiences, which elicited positive responses to 42 life change events. Each life change event had a numerical score called a life change unit (LCU). The subject's LCU scores were totaled for the two six month intervals prior to the minor injury. The LCU values for the entire sample were compared for the two six month intervals by using the Chi-square one sample test. Statistical significance at the .05 level was found in two areas. First, the number of subjects with an increase in LCU scores in the immediate six month period was significantly greater

than the number of subjects without the increase. Second, the subjects who increased their LCU scores in the immediate six month interval had a statistically significant increase over the LCU scores of the previous six month interval.

Conclusions

Based on the findings of this study, the following conclusions were drawn:

1. Subjects aged 19-39 who came to the ED with minor injuries had higher LCU scores in the last six months than in the previous 6-12 months. This supports the research of Whitlock, Stall, and Rekhdahl (1977).

2. Seventy percent of the minor injured subjects had a significant increase in LCU scores in the six months prior to injury.

3. Approximately fifty percent of the male subjects in this sample were experiencing a major life crisis, according to Holmes and Rahe's criteria, at the time of their minor injury occurrences.

Implications

The literature indicated that persons with an increase in life change are susceptible to major illnesses and injuries. Identification of patients experiencing an increase in life change at the time of a minor injury, or at any contact with the health care system, could result in valuable assistance being provided to the patient. Professional nurses and other health care workers have the opportunity to assist patients relative to their adjustment to life change events by exploring with them the meaning of the changes they are encountering,

who can help them in problem-solving, and what their coping mechanisms are. Health education related to life change and maintenance of health is needed and should occupy a high priority in the care of patients. A study by Nucholls (1975) revealed that the knowledge gained by patients from anticipatory counseling helped reduce the fear of the unknown and contributed to the improvement of the patient's self-esteem. Counseling on the management of life change could reduce stress levels and increase coping techniques. McNeil and Pesznecker, community health nurses, have developed group education seminars for well people undergoing life change such as divorce, death of a spouse, and moving to a new residence. The researchers stated that the strength of the group seminar is that participants identify their coping strengths and by sharing them in a group, they are helped to "make conscious decisions and develop the skills needed to manage change" (McNeil and Pesznecker, 1977:348). A list of preventive measures regarding adjustment to life change was prepared by Holmes (1978) and can serve as a model for nurses who teach and counsel persons regarding adjustment to life change:

1. "Become familiar with the life events and the amount of change they require.
2. Put the Scale where you and the family can see it easily several times a day.
3. With practice you can recognize when a life event occurs.
4. Think about the meaning of the event for you and try to identify some of the feelings you experience.
5. Think about the different ways you might best adjust to the event.
6. Take your time in arriving at decisions.
7. Anticipate life changes and plan for them well in advance if possible.

8. Pace yourself. It can be done even if you are in a hurry.

9. Look at the accomplishment of a task as a part of daily living and avoid looking at such an achievement as a "stopping point" or a time for letting down.

10. Remember, the more change you have, the more likely you are to get sick. Of those people with over 300 Life Change Units for the past year, almost 80% get sick in the near future; with 150-299 Life Change Units, about 50% get sick in the near future; and with less that 150 Life Change Units, only about 30% get sick in the near future. So, the higher your Life Change Score, the harder you should work to stay well."

(Holmes, 1978:754)

Persons with increased levels of life change are at risk of developing future major illnesses or injuries. Nurses and/or other health care workers need to provide health education and counseling at the person's first contact with the health care system. Inclusion of life change levels in the individual's health history would encourage others to build upon the patient's strengths in coping with change (McNeil and Pesznecker, 1977). The ultimate benefit of aiding the patient grappling with a high level of life change is to help prevent future physical and mental disability.

Recommendations

As a result of this research, the following recommendations were formulated:

1. A future research design should explore the relationship of life change events in patients with major injuries requiring hospitalization and should attempt to establish a relationship between high levels of life change in the major injured and the previous incidence of minor injuries in the six months prior to the major injury.

2. Another research design with injured subjects should explore the prevailing emotional mood of the subject at the time of an injury to see if there were a decreased perception to the environmental clues suggestive of danger.

3. Nurses working in emergency departments, doctor's offices, occupational health settings, intake clinics, and other locations for primary care should take every opportunity to screen and counsel patients regarding their increased life change levels.

4. Nurses and other health care workers should develop patient and employee education materials concerning stress management and coping with life change and should employ creative teaching techniques such as posters, pamphlets, and video tape recordings to disseminate the information in busy primary care centers.

5. Nurses and other health care workers should help publicize available community mental health clinics and family and children services and should refer patients to these services when they have an inadequate support network and/or inadequate or inappropriate coping mechanisms. Descriptive lists of these community services should be included in new resident information services such as "Welcome Wagon."

REFERENCES

REFERENCES

Andersen, Marcia DeCann and Jane Marie Pleticha
1974 "Emergency unit patients' perceptions of stressful life events." Nursing Research 23 (September-October): 378-383.

Baker, Susan P.
1973 "Injury control." Preventive Medicine and Public Health, 10th edition, Philip E. Sartwell (Ed.), New York: Appleton-Century Crofts.

Bramwell, Steven, Minoru Masuda, Nathaniel Wagner, and Thomas Holmes
1975 "Psychosocial factors in athletic injuries: development and application of the social and athletic readjustment rating scale (SARRS)." Journal of Human Stress 1 (June): 6-20.

Brenner, Berthold and Melvin L. Selzer
1969 "Risk of causing a fatal accident associated with alcoholism, psychopathology, and stress: further analysis of previous data." Behavioral Science 14 (May): 490-495.

Canizaro, Peter C.
1971 "Management of the non-emergent patient." Journal of Trauma 11 (July): 544-551

Caplan, Gerald
1964 Principles of Preventive Psychiatry. New York: Basic Books, Inc.

Cline, David W. and Julius J. Chosy
1972 "A prospective study of life changes and subsequent health changes." Archives of General Psychiatry 27(July): 51-53.

Davison, Robert A.
1963 "What is an emergency? Broad definition needed for effective community service." Hospital Topics 41 (February): 33-35.

Dohrenwend, Barbara Snell
1973 "Life events as stressors: a methodological inquiry." Journal of Health and Social Behavior 14 (June): 167-175.

Ferguson, George A.
1966 Statistical Analysis in Psychology and Education, 2nd edition. New York: McGraw-Hill Book Company.

Garrity, Thomas F., Martin B. Marx, and Grant W. Somes
1977 "The influence of illness and severity and time since life change on the size of the life change-health change relationship." Journal of Psychosomatic Research 21 (May): 377-82.

Hinkle, L., W. Christenson, F. Kane, A. Ostfeld, W. Thetford, and H. Wolff
1958 "An investigation of the relationship between life experiences, personality characteristics, and general susceptibility to illness." Psychosomatic Medicine XX (April): 278-95.

Holmes, Thomas H.
1978 "Life situations, emotions and disease." Psychosomatics 19 (December): 747-54.

Holmes, Thomas H. and Minoru Masuda
1966 "Life change and illness susceptibility." Seattle, Washington: Department of Psychiatry, University of Washington, School of Medicine, unpublished research report.

Holmes, Thomas H. and Richard H. Rahe
1967 "The social readjustment rating scale." Journal of Psychosomatic Research 11 (May): 213-18.

Hough, Richard L., Dianne Timbers Fairbank, and Alma M. Garcia
1976 "Problems in the ratio measurement of life stress." Journal of Health and Social Behavior 17 (March): 70-82.

Industrial Commission of Virginia
1977 "The Virginia Workmen's Compensation Act of 1977." Pamphlet.

Jenkins, C. David, Michael W. Hurst, and Robert M. Rose
1979 "Life change events: do people really remember." Archives General Psychiatry 38 (April): 379-84.

Kluge, D.N., R.L. Wegryn, and B.R. Lernley
1965 "The expanding emergency department." JAMA 191: 801-805.

Komaroff, Anthony L., Minoru Masuda, and Thomas H. Holmes
1968 "The social readjustment rating scale: a comparative study of Negro, Mexican, and White Americans." Journal of Psychosomatic Research 12 (November): 121-28.

Marx, Martin B., Thomas F. Garrity, and Frank R. Bowers
1975 "The influence of recent life experience on the health of college freshmen." Journal of Psychosomatic Research 19 (July): 87-98.

Masuda, Minoru and Thomas H. Holmes
1967 "Magnitude estimations of social readjustments." Journal of Psychosomatic Research 11 (April): 219-25.

McNeil, Jo and Betty L. Pesznecker
1977 "Keeping people well despite life change crises." Public Health Reports 92 (July-August): 343-48.

Mechanic, David
1975 "Some problems in the measurement of stress and social readjustment." Journal of Human Stress 1 (September): 43-48.

Mendels, J. and N. Weinstein
1972 "The schedule of recent experience: a reliability study." Psychosomatic Medicine 34 (November-December): 527-31.

National Health Survey Series 10 No. 105
1974 "Persons injured and disability days by detailed type and class of accident: U.S. 1971-1972." DHEW Publication No. (HRA) 76-1532. Washington, D.C.: Department of Health, Education, and Welfare.

National Health Survey Series 10 No. 126
1978 "Current estimates from health interview survey: U.S. - 1977." DHEW Publication No. (PHS) 78-1554. Washington, D.C.: Department of Health, Education, and Welfare.

National Safety Council
1976 Manual on Classification of Motor Vehicle Traffic Accidents. Chicago: National Safety Council.

Nuckolls, Katherine
1975 "Life crises and psychosocial assets: some clinical implications." Family and Health: an Epidemiological Approach, Berton Kaplan and John Cassel (Ed.). Chapel Hill, N.C.: University of North Carolina, Institute for Research in Social Science.

Pesznecker, Betty L. and Jo McNeil
1975 "Relationship among health habits, social assets, psychological well-being, life change, and alterations in health status." Nursing Research 24 (November-December): 442-47.

Rahe, R.H., Merle Meyer, Michael Smith, George Kjaer, and T.H. Holmes
1964 "Social stress and illness onset." Journal of Psychosomatic Research 8 (February): 35-44.

Rahe, R.H. and T.H. Holmes
1966 "Life crises and disease onset: qualitative and quantitative definition of the life crisis and its association with health change." Seattle, Washington: University of Washington, School of Medicine, unpublished research report.

Rahe, Richard H., Jack L. Mahan, and Ransom J. Arthur
1970 "Prediction of near-future health changes from subject's preceding life changes." Journal of Psychosomatic Research 14 (February): 401-406.

Rapoport, Lydia
1965 "The state of crisis: some theoretical considerations." Crisis Intervention: Selected Readings, Howard J. Parad (Ed.). New York: Family Service Association of America.

Rubin, Robert E., K.E. Gunderson, and Ransom J. Arthur
1972 "Life stress and illness patterns in the U.S. Navy: environmental, demographic, and prior life change variables in relation to illness onset in naval aviators during a combat cruise." Psychosomatic Medicine 34 (November-December): 533-547.

Ruch, Libby O.
1977 "A multidimensional analysis of the concept of life change." Journal of Health and Social Behavior (March): 71-83.

Sarason, Irwin G., Cecily de Monchaux, and Tim Hunt
1975 "Methodological issues in the assessment of life stress." Emotions - Their Parameters and Measurement, Lennart Levi (Ed.). New York: Raven Press.

Satin, David G. and Frederick J. Duhl
1972 "Help?: the hospital emergency unit as community physician." Medical Care X (May-June): 248-260.

Satin, David G.
1972 "(Help): life stresses and psycho-social problems in the hospital emergency unit." Social Psychiatry 7: 119-26.

Sedgwick, Rae
1975 "Psychological responses to stress." Journal of Psychiatric Nursing and Mental Health Services 15 (May): 20-23.

Selye, Hans
1965 "The stress syndrome." American Journal of Nursing 65 (March): 97-99.

Selzer, Melvin L. and Amiram Vinokur
1975 "Role of life events in accident causation." Mental Health and Society 2: 36-54.

Siegel, Sidney
1956 Nonparametric Statistics. New York: McGraw-Hill Book Company.

Tollefson, DeEtte Joan
1972 "The relationship between the occurrence of fractures and life crisis events." Seattle, Washington: University of Washington, unpublished M.S. thesis.

Vayda, Eugene, Michael Gent, and Linda Paisley
1973 "An emergency department triage model based on presenting complaints." Canadian Journal of Public Health 64 (May-June): 246-53.

Vinokur, Amiram and Melvin L. Selzer
1975 "Desirable versus undesirable life events: their relationship to stress and mental disease." Journal of Personality and Social Psychology 32 (February): 329-37.

Whitlock, F.A., J.R. Stoll, and R.J. Rekhdahl
1977 "Crisis, life events, and accidents." Australian and New Zealand Journal of Psychiatry 11: 127-32.

Wildman, Richard C. and David Richard Johnson
1977 "Life change and Langner's 22 item mental health index: a study and partial replication." Journal of Health and Social Behavior 18 (June): 179-88.

Wyler, Allen R., Minoru Masuda, and Thomas H. Holmes
1971 "Magnitude of life events and seriousness of illness." Psychosomatic Medicine 33 (March-April): 115-21.

APPENDICES

APPENDIX A

Social Readjustment Rating Scale

Rank	Life Event	LCU Value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail Term	63
5	Death of close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sex difficulties	39
14	Gain of new family member	39
15	Business readjustment	39
16	Change in financial state	38
17	Death of a close friend	37
18	Change to different line of work	36
19	Change in number of arguments with spouse	35
20	Mortgage over $10,000	31
21	Foreclosure of mortgage or loan	30
22	Change in responsibilities at work	29
23	Son or daughter leaving home	29
24	Trouble with in-laws	29
25	Outstanding personal achievement	28
26	Wife begin or stop work	26
27	Begin or end school	26
28	Change in living conditions	25
29	Revision of personal habits	24
30	Trouble with boss	23
31	Change in work hours or conditions	20
32	Change in residence	20
33	Change in schools	20
34	Change in recreation	19
35	Change in church activities	19
36	Change in social activities	18
37	Mortgage or loan less than $10,000	17
38	Change in sleeping habits	16
39	Change in number of family get-togethers	15
40	Change in eating habits	15
41	Vacation	13
42	Minor violations of the law	11

From Holmes and Rahe (1967) Christmas was deleted.

CONFIDENTIAL APPENDIX B Code_____

Personal-Social Inventory

Date:_____ Occupation:_____

Age:_____ Employed at present? Yes_____ No_____

Check the information that applies to you

Sex: M_____ F_____

Marital Status:

_____Married
_____Divorced
_____Separated
_____Widowed
_____Never Married

Highest Level of Education:

_____Grade School
_____High School
_____Tech. School
_____College
_____Advanced grad. degree

Type of Injury:

_____Cut(s)
_____Sprain, Dislocation
_____Broken bone
_____Eye problem
_____Burn
_____Other

Type of Accident:

_____Home
_____Vehicle
_____Sports
_____Work
_____Other

Schedule of Recent Experiences

Part A (1 - 12)

Please check one or both boxes if the event described happened to you in the last year. If the event has not occurred in the last year, do not check either box

Event	0-6 months ago	6-12 months ago
1. There has been a lot more or a lot less trouble with your boss.		
2. There has been a major change in sleeping habits (a lot more or a lot less, or change in part of day when asleep).		
3. There was a major change in eating habits (a lot more or a lot less food intake, or very different meal times or surroundings).		
4. There was a change in your personal habits (dress, manner, associations, etc.).		

page 2

Event	0-6 months ago	6-12 months ago
5. There was a major change in your usual type and amount of recreation.		
6. There was a major change in your social activities (e.g. clubs, dancing, movies, visiting, etc.)		
7. There was a major change in church activities (a lot more or a lot less than usual).		
8. There was a major change in number of family get-togethers (a lot more or a lot less than usual).		
9. You had a major change in financial state (a lot worse off or a lot better off than usual).		
10. You had in-law troubles.		
11. You had a major change in the number of arguments with your spouse (e.g., either a lot more or a lot less than usual regarding child-rearing, personal habits, etc.).		
12. You had sexual difficulties.		

Part B (13-42)

If the event happened to you in the last year, please indicate the NUMBER OF TIMES it occurred. If the event did not happen, do not check either box.

Event	0-6 months ago	6-12 months ago
13. You experienced a major personal injury or illness		
14. You lost a close family member (other than spouse) by death.		
15. Your spouse died.		
16. A close friend died.		
17. You gained a new family member (e.g., through birth, adoption, oldster moving in, etc.).		
18. There has been a major change in the health or behavior of a family member.		
19. You have had a change in residence.		
20. You were detained in jail or other institution.		

page 3

Event	0-6 months ago	6-12 months ago
21. You were found guilty of minor violations of the law (e.g., traffic tickets, jay walking, disturbing the peace).		
22. You have undergone a major business readjustment (e.g., merger, reorganization, bankruptcy, etc.).		
23. You were married.		
24. You were divorced.		
25. You had a marital separation from your mate.		
26. You had an outstanding personal achievement.		
27. You had a son or daughter leave home (e.g., marriage, attending college, etc.).		
28. You were retired from work.		
29. There was a major change in your working hours or conditions.		
30. You had a major change in work responsibilities (e.g., promotion, demotion, lateral transfer).		
31. You were fired from work.		
32. There was a major change in living conditions (e.g., building a new home, remodeling, deterioration of home or neighborhood).		
33. Your wife began or ceased working outside the home.		
34. You took on a mortgage greater than $10,000 (e.g., purchasing a home, business, etc.).		
35. You took on a mortgage or loan less than $10,000 (e.g., purchasing a car, T.V., freezer, etc.).		
36. You had a mortgage or loan foreclosure.		
37. You took a vacation.		
38. You changed to a new school.		
39. You changed to a different line of work.		
40. You began or ceased formal schooling.		
41. You had a marital reconciliation with your mate.		
42. You had a pregnancy.		

APPENDIX C

CONSENT FORM

I, _____, hereby give written consent to Janice Keitz, R.N., a graduate nursing student at VCU/MCV, to participate in a study about young adults with minor injuries.

I will complete a questionnaire, the Schedule of Recent Experiences, which will take about 15 minutes while I am in the Emergency Department.

I understand that this study's outcome is to assist nurses to improve their care of patients.

I understand that I may withdraw from this study at any time and my questionnaire will be destroyed. My withdrawal in no way will affect the care received at this facility.

I understand that all information I give will be kept strictly confidential.

I understand that I can receive information about this study when it is completed.

Signed_____

Date_____

Witness_____

APPENDIX D

May 11, 1979

Mrs. Janice E. Keitz
9701 Goodward Place
Richmond, Virginia 23235

Dear Mrs. Keitz:

Hospital would be pleased to participate in the study on Life Change Events in Patients with Minor Injury. We would like to emphasize the importance of obtaining appropriate patient consent to participate in the proposed study. As discussed, we would like to be assured that this will be properly addressed in your methodology.

Maria Harper will be contacting you to make arrangements for your attendance at the Emergency Room Staff Meeting during June or July.

If we may be of further assistance, please do not hesitate to contact us.

Sincerely,

John Dandridge, Jr.
Assistant Administrator

JD/jdn

APPENDIX D

May 8, 1979

Mrs. Janice E. Keitz
9701 Goodward Place
Richmond, Virginia 23235

Dear Mrs. Keitz:

We are pleased to extend to you Emergency Room facilities as one of your data collection hospitals.

I understand your dates of data collection will be between August 2, 1979 - August 21, 1979, days and times as stipulated in your thesis proposal.

I am forwarding this information to Miss Lea Ann Nystrom, E. R. Head Nurse. Please feel free to contact myself or Miss Nystrom if we can be of any assistance.

Sincerely,

Jim Bicking

Jim Bicking
Assistant Director of Nursing

JB/mhc

APPENDIX D

May 2, 1979

Janice E. Keitz
9701 Goodward Place
Richmond, Virginia 23235

Dear Mrs. Keitz:

I hereby grant permission to you to do data collection in the Emergency Rooms during the month of August, 1979, for your Master of Science Nursing thesis.

Sincerely,

Wanda Barth

Wanda Barth
Director
Nursing Services

WB:bew

APPENDIX E

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

School of Medicine
Department of Psychiatry and Behavioral Sciences RP-10

April 18, 1979

Janice E. Keitz, R.N.
9701 Goodward Place
Richmond, Virginia 23235

Dear Mrs. Keitz:

Thank you for your interest in our research. I am pleased to give you permission to use the Schedule of Recent Experience (SRE) in your proposed research on the relationship of life change events and the incidence of minor injuries.

Needless to say we would be most interested to hear further from you as this research proceeds.

Sincerely yours,

Thomas H. Holmes, M.D.
Professor of Psychiatry and
Behavioral Sciences

THH:ma