

LIFE CHANGE EVENTS OF BURN PATIENTS
AND HEALTHY INDIVIDUALS

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DEDICATION

To Steve for his unending support, encouragement,
and understanding;

To my parents for their love and support; and

To my committee for their guidance and direction.

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CHAPTER 1

INTRODUCTION

More than 10,000 patients die annually of accidental burn injuries and nearly 100,000 are hospitalized (Edlich, 1979). This large number of thermal injuries has been attributed directly to contact with flames, flammable liquids, hot liquids, and chemical and electrical sources. Investigators have called attention to environmental hazards of this industrialized society in an attempt to understand and prevent thermal injuries. Still others (Andreasen, Noyes, & Hartford, 1972; Hinkle, 1974; Noyes, Frye, Slymen, & Canter, 1979) have taken the investigation of thermal injuries a step further and have postulated an association between stressful life circumstances and the occurrence of burn injuries.

Although stress is an area of numerous research studies and investigations, it remains a concept surrounded by confusion and disagreement. Even Selye (1976), who has spent a lifetime studying the stress adaptation response both in the laboratory and the practice setting, continues to find many new areas in which to investigate stress.

Many professionals will agree that recent life changes reflect current environmental demands to which individuals endeavor to adjust. The measurement of life change then, refers to the relationship of environmental events and health changes.

This study explored the difference in life change events of burn patients and "healthy" individuals. If significant differences could be found in the number of life change events between these two populations, the information might be helpful in the areas of burn prevention, management, and rehabilitation. Nurses could help individuals identify and plan for life change events which might help reduce the number of stressors and prevent or lessen the stress response.

Problem of Study

The problem of this investigation was to determine if there is a difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex are controlled.

Justification of Problem

In 1974, 6,500 deaths (approximately 3.1 per 100,000) were due to fires (Accident Facts, 1975). The United States Department of Health Education and Welfare (Reports

on Epidemiology and Surveillance of Injuries, 1972) reported that each year approximately 100,000 persons are hospitalized for a total of 2 million days as a result of burn injuries. Burns are estimated at costing over a billion dollars annually. Burn injuries present not only physiologic and economic crises for the patient and his family, but social and psychological problems as well. With the rising cost of health care and increasing dissatisfaction of consumers with the health-care delivery system, the need for health prevention and maintenance is being identified (Toffler, 1979).

Change traditionally has been found to be a slow process with much resistance. In this era of advancing technology and rapid change, health can be viewed as adaptation to change and illness can be viewed as maladaptation. Toffler (1970) described change as the process by which the future invades man's life. He argued that "unless man quickly learns to control the rate of change in his personal affairs as well as in society at large, we are doomed to a massive adaptation breakdown" (p. 2).

Dodge and Martin (1970) presented the process of change another way when they wrote that the diseases of the times are "etiologically linked with excessive stress and in turn this stress is a product of specific socially

structured situations inherent in the organization of modern technological societies" (p. 3). In their research Dodge and Martin (1970) attempted to show that change was an important factor in accounting for society's mortality rate.

Research relating life stress and illness onset is fairly well accepted today. Dohrenwend and Dohrenwend (1978) discussed current evidence relating illness and life stress as being available in two categories--direct and indirect. The authors classified the indirect evidence as that obtained in the laboratory when healthy animals are exposed to noxious stimuli. Under various stimuli the animals consistently produce the nonspecific response. Most of the original work on stress was done by Selye (1956). The second source of direct evidence comes from the study of the effects of natural and man-made events on individuals (Dohrenwend & Dohrenwend, 1978). Evidence of this nature has been obtained through use of the Social Readjustment Rating Scale showing that life change contributes significantly to the occurrence of illness (Holmes & Masuda, 1973).

Meyer (cited in Lief, 1948), the first to invent the "Life Chart," demonstrated his schema of the relationship of biological, psychological, and sociological phenomena

to the process of health and disease in man. Later, Wolff (1953) in his laboratory utilized the concept of Pavlov, Freud, Cannon, and Skinner with the Meyerian schema. The synthesis of this material presents powerful evidence that stressful life events by evoking psychophysiological reactions, play an important causative role in the natural history of many diseases (Holmes & Masuda, 1973).

One major conclusion from the research of Holmes and Rahe (1967) is that the correlation between stressful life events and illness are not limited to any one particular illness or injury. Although studies of life-change events have consistently shown life change occurring prior to onset of illness or injury, Jenkins, Hurst, and Rose (1979) disclosed that retrospective studies have not included control groups of matched subjects.

Nurses' use of the Social Readjustment Rating Scale could function as a major role in burn prevention. McNeil and Pesznecker (1977) claimed nurses can use knowledge obtained from the Social Readjustment Rating Scale in their efforts to place more emphasis on wellness and the maintenance of good health. With such tools as the Social Readjustment Rating Scale, nurses would be able to help individuals learn how to assess themselves, become aware of the symptoms of excessive change, and develop new

coping mechanisms or strengthen present coping mechanisms (McNeil & Pesznecker, 1977).

Bell (1977), in a study on stressful life events, wrote:

It challenges nursing practitioners, theorists, and educators to consider the relationship of stressful life events to the health maintenance and illness prevention of individuals. People can, in many situations, select changes which occur to them. If the nurse possesses a knowledge of the current stressful life events being experienced by the individual, she can help a person contain present stress within limits and prevent additional stress before he becomes overwhelmed by it. (p. 140)

In summary, if man is to survive this period of rapid growth and change, further research is needed to support and help understand the stress of life events and their relation to the body's response. Nurses need to conduct research in the area of stress to help develop a theory base for practice.

Theoretical Framework

The theoretical framework for this study was Selye's (1956) theory of stress-adaptation and the concept of life events as developed by Holmes & Rahe (1967). Selye (1956) first found a triad of morphological changes induced by stress: (a) adrenal cortical enlargement, (b) atrophy of the thymus and other lymphatic structures, and (c) deep bleeding ulcers in the stomach and duodenal lining which

could be produced in response to virtually all noxious stimuli. Selye called this the "General Adaptation Syndrome." The syndrome is described as three temporal phases. The alarm reaction is the generalized call to arms of the defensive forces in the organism. The second stage, called resistance, occurs when the stressor continues over time; this phase is reflected by full adaptation to the stressor. The third phase, called the stage of exhaustion, occurs when the second phase is expended as the stressor continues over time. Later in 1974, Selye defined stress as "the nonspecific response of the body to any demand made upon it" (p. 27).

If the nonspecific response increases the need for readjustment, the demand placed on the body may be damaging. This adjustment, which must be made by the body as part of the adaptive process, is the basis for the concept of life change events.

Meyers (cited in Lief, 1948) was the first to identify life changes (stressors) and was followed by others attempting to categorize the stressors that lead to the stress response. In the early 1960s Holmes and Rahe standardized life change measurement techniques and initiated scale studies. Typical life change events were weighed by individuals and averaged to obtain the final

scale of life change units (LCU) for the Social Readjustment Rating Scale (SRRS) in their initial scale studies.

The studies by Holmes and Rahe (1967) viewed stressors as life change events that result in a nonspecific response by the body. Following Seyle's (1956) theory that the stress can be either positive or negative, the Social Readjustment Rating Scale lists both positive and negative life events.

A theoretical framework of stress has been described as it lends to the concept of life change as stress, and the human body's nonspecific response as illness. In this study the human response was viewed as occurrence of a burn wound. Life change events for burn patients and healthy individuals were collected as data for analysis to determine if burn patients experience more life change events than healthy individuals.

Assumptions

The assumptions for the study were:

1. All individuals experience stress.
2. Individuals can identify and are willing to recall life events that are stressful.

Hypothesis

The hypothesis for this study, as stated in the null, was that there is no significant difference in life change events, during the preceding 12 months, between burn patients and healthy individuals when age and sex are controlled.

Definition of Terms

The following terms were operationally defined for use in the study.

1. Burn patients--male or female individuals between 18 and 65 years of age admitted to the burn center with the diagnosis of burn injury.
2. Healthy individuals--male or female individuals between 18 and 65 years of age who have not seen a physician for illness or injury within the past 12 months.
3. Life change event--the 43 life events identified by Holmes and Rahe (1967) as requiring some degree of adaptation in the individual's life situation. Numerical values have been assigned to each life event and are termed life change units (LCU) with higher scores signifying the need for greater readjustment.
4. Age and sex--18-65 year-old males and females.

Limitations

Limitations identified for the study were:

1. The time interval after the burn injury varied and all individuals were not interviewed at the same stage of injury.
2. Data collected were by different methods between the two samples: burn patients were interviewed and healthy individuals responded to a written questionnaire.
3. Healthy individuals were obtained through three selection techniques: names received from burn patients, visitors' waiting room, and by a convenience selection of individuals.
4. The possibility of variation in interpreting the criteria for participation by healthy individuals.

Summary

Burns result in more than 10,000 deaths annually and 100,000 hospitalizations. Burn prevention has traditionally been approached by identifying environmental hazards. A recent approach is to look at the association between stressful life events and the occurrence of burn injuries.

The problem of this investigation was to determine if there is a difference in life change events, during the preceding 12 months, of burn patients and healthy

individuals when age and sex were controlled. The study was justified by the high costs with burn recovery, not only economically but physically, socially, and psychologically. The study was also supported by the ever-increasing speed of change in society, and the need for man to adapt if he is to survive without massive breakdown. Nurses are in a position to identify patients in need of assistance in adapting to change, and assist them in coping with change, before, during, and after breakdown or illness occurs.

This research utilized Selye's (1956) theory of stress-adaptation and the concept of life events as developed by Holmes and Rahe (1967) as the theoretical base. The Social Readjustment Rating Scale was used to collect the data.

CHAPTER 2

REVIEW OF LITERATURE

The review of literature will represent research dealing specifically with life change as measured by the Social Readjustment Rating Scale (Holmes & Rahe, 1967). This is not to negate nor ignore the volumes of research on life change that have made modifications to this scale (Dohrenwend, 1979; Hall, Dunner, Zeller, & Fieve, 1977; Horowitz, Wilner, & Alvarez, 1979; Myers, Lindenthal, Pepper, & Ostrander, 1975; Paykel, Prusoff, & Denhuth, 1971), but rather is this author's attempt to focus on the scale used in this investigation.

The review will present research dealing with the development and early use of the Social Readjustment Rating Scale. This will be followed by the results from more recent studies of life change and the multitude of illnesses and injuries. The review will be concluded with a discussion on research dealing with life change and burn patients.

Development of Social Readjustment Rating Scale

Early research leading to the development of the Social Readjustment Rating Scale began by investigating

life change as temporal in occurrence and influence on individuals. The temporal occurrence of stress, seen as change, is believed to be the precipitant of illness onset.

Research conducted by the University of Washington in Seattle directed the early edition of the Schedule of Recent Experiences (Hawkins, Davies, & Holmes, 1957). This scale simply tabulated the number of life events that had occurred. In 1964 a scaling experiment for the degree of life change inherent in the life event was conducted by Holmes and Rahe (1967). Holmes and Rahe in their report gave the results obtained from a convenience sample of 394 subjects who, when given a list of 43 life events, as taken from the Schedule of Recent Experience, were asked to rate the degree of readaptation necessary for the 43 events. Event number 1, marriage, was arbitrarily given 500 points as a starter. From the results the mean score, divided by 10, for each item for the entire sample was calculated and arranged in rank order (see Appendix A).

Results, comparing individual's ratings for the degree of readaptation showed a high coefficient of correlation (Pearson's r) with all above 0.90. The exception was found when comparing White with Negro, 0.82. Kendall's coefficient of concordance (W) for the 394 individuals was 0.477, significant at $p < 0.0005$ (Holmes & Rahe,

1967). The assigned value for the degree of readjustment was then termed life change unit (LCU).

After the original scaling experiment, life change scaling studies were performed in other locations in the United States and several foreign countries. Masuda and Holmes (1967) extended the investigation to a comparative study of Japanese and American middle-class subjects. Comparing four Japanese subgroups to one another, the researchers found that the subgroups ranked the 43 items similar. When comparing the 112 Japanese scaling results to 168 Americans, a high concordance was found regarding the order of magnitude of life events. A similar study by Harmon, Masuda, and Holmes (1970) examined 202 Europeans and showed positive correlation between Europeans (French, Belgian, Swiss) and Americans as they quantified the degree of readaptation for the 43 life events (Kendall 0.908, $p < 0.0005$). More recent (Mendels & Weinstein, 1972; Mules, Hague, & Dudley, 1977; Rosenberg & Dohrenwend, 1975) attempts at obtaining cross-cultural scaling and comparing results have shown further positive results when comparing scaling to the original sample of 394 Americans.

Development of the Social Readjustment Rating Scale was based on years of building upon previous research, from compiling the list of 43 life events in 1957 (Hawkins,

et al., 1957) to obtaining a rank order for the 43 events (Holmes & Rahe, 1967). Researchers worked further to establish the scale cross-culturally before broadening the concept of life change and illness onset.

Early Use of Social Readjustment Rating Scale

Once life change units were established for the Social Readjustment Rating Scale, investigators began utilizing the tool to see if it supported the concept of life change and illness onset. During several early studies, researchers used large military samples of navy men (Doll, Rubin, & Gunderson, 1969; Rahe, 1968; Rahe, Jensen, & Gunderson, 1971; Rubin, Gunderson, & Arthur, 1969, 1971, 1972). Rahe (1968) worked with 2,500 Navy officers and enlisted men over a 6-month period. Rahe obtained life change unit scores prior to a 6-month cruise. He divided the subjects into two groups, the upper 30% life change units being the high-risk group and the lower 30% the low-risk group. The information was then compared with illness reports occurring during the cruise. The first month the high-risk group reported more illnesses and continued to report more than the low-risk group for the entire 6 months. The high-risk group had one-third more illnesses during a follow-up period, also.

Rubin, Gunderson, and Arthur (1971) reported on a sample of 1,005 men on a navy cruise. Life change units were calculated as in the previous study. Subjects were rank ordered according to their life change unit totals and grouped into quartiles. Mean numbers of illnesses were then calculated for each of these groupings. Those subjects with higher life change unit scores based on the original civilian scoring system had a greater number of illnesses. When regression analysis was used, 11 of 18 t-tests between quartile scores reached $p = 0.05$ significant level, of these 5 were at $p \leq 0.005$, suggesting that regression weights derived from this military population were better predictors of illness than the original civilian scoring system.

Studies investigating the significance of life events and disease in children found results suggesting that life change preceded illness onset in this population as well as adults (Heisel, Ream, Raitz, Rappaport, & Coddington, 1973). Heisel et al. found in their sample of 220 pediatric patients, life change events had occurred two to three times more frequent in the hospitalized child than in the nonhospitalized child.

Holmes and Masuda (1973) reported on data collected until 1972, using the Social Readjustment Rating Scale.

Holmes and Masuda were able to show a direct relationship between the magnitude of the life change and the risk of health change. For life change unit scores between 150 and 199 LCU, 37% of the subjects had an associated illness. The association increased to 51% for scores between 200 and 299 LCU, and to 70% for scores of 300 LCU or more.

Early studies were encouraging for those involved in the field of life events and illness onset, but there was still much unknown about the potential for the scale and its usefulness. Life change research continued and began expanding.

Recent Studies on Life Change

Recent research on life change began to branch and to look at various illnesses and injuries. Researchers continued to investigate the belief that the greater the magnitude of life change, the greater the probability that the population at risk would experience disease. The Scale has been researched with such risk populations as psychiatric, cardiac, internal medicine, diabetics, alcoholics, accident victims, and in many other areas.

Several studies have compared life change events with various psychological illnesses (Bell, 1977; Cleghorn & Streiner, 1979; Grant, Sweetwood, Yager, & Gerst, 1978; Harder, Strauss, Kokes, Ritzler, & Gift, 1980; Hong, Wirt,

Yellin, & Hopwood, 1979; Justice, McBee, & Allen, 1977; Lahniers & White, 1976; Leavitt, Garron, & Bieliauskas, 1980; Rahe, 1979; Waring, Weisz, & Grinberg, 1980). Waring et al. (1980) revealed the results of their study using 25 medical patients with psychiatric referrals compared with controls for 18 medical patients and 31 psychiatric inpatients. These researchers claimed the hypothesis that, "consultation referrals would have greater life change scores than the control groups because of combined medical and psychologic illness," was accepted when compared with medical controls but rejected with the psychiatric inpatient controls. The authors suggested the rejection of the hypothesis with consultants ($N = 25$) vs. psychiatric controls ($N = 31$) may have been due to the small sample size and the wide range of life change unit scores of the psychiatric control. The authors also suggested the sample selected for testing may have been inappropriate.

Work by Grant, Sweetwood, Wager, and Gerst (1978) also showed favorable results when they examined their findings of an 18-month prospective study. The study related life events with psychiatric disturbances. The sample of 89 psychiatric outpatients and 107 controls revealed that the patients were consistently more symptomatic than nonpatients ($p < 0.0001$). The results also

reported that patients had far more life change events over time than did nonpatients ($p < 0.001$). Statistical test utilized was not reported.

Lahniers and White (1976) and Harder et al. (1980) used the Social Readjustment Rating Scale to investigate the relationship between life events and severity of pathology. Lahniers and White (1976) claimed the Scale, while showing a mean score of 257 LCU for 116 male and female subjects, could not be used with accuracy to determine the differences between diagnostic groups in terms of severity of illness. Harder et al. (1980) in their larger sample of 217 subjects found similar results.

In a replication study, Cleghorn and Streiner (1979) compared the effectiveness of verbalized depressive themes with the Schedule of Recent Experience. They used 56 first-year nursing students who demonstrated an inter-rater reliability coefficient from $r = .79$ to $.96$ for the original study and from $.75$ to $.99$ for the replication. Life change scores for the first 6 months had a multiple correlation of $.78$ when compared with the verbal depression scale and $.88$ for months 7-12. The authors believed these results

suggest that the more life change the subjects reported the more depressiveness they

verbalized, and that both life change and depressiveness scores predict illness reports and the use of the health services. (Cleghorn & Streiner, 1979, p. 20)

Hong, Wirt, Yellin, and Hopwood (1979) revealed their results with 73 of 246 third-year medical students. The study examined mediating variables which differentiated those people who do and those who do not become ill, although they both had a large amount of life change. The method of data collection utilized 3-year retrospective results of the Social Readjustment Rating Scale, health-change report, and the California Psychological Inventory. Results divided the 73 subjects into two groups: low life change unit group ($N = 39$) and high life change unit group ($N = 34$). The dividing line was 250 life change units. The difference in life change unit scores between low and high groups was significant $F(1, 72) = 8.9764$, $p < .001$, in both year 2 and 3. The mean seriousness of the health changes in year 1 and year 2 and the mean seriousness of the health changes in year 2 were significantly different between the low life change unit group and the high group ($F(1, 72) = 5.2378$, $p < .05$). The sustained high-scores group reported significantly more health changes in year 2, $F(1, 19) = 45.5592$, $p < .001$. The sustained group also reported health changes significantly more serious in both years 2, $F(1, 19) = 7.3440$, $p < .025$

and 3, $F(1, 19) = 7.5407$, $p < .025$ than short-term groups, which had high life change units in year 1 but low in year 2 and 3 (pp. 277-278). Similar findings have been reported by Rabkin and Struening (1976).

Leavitt, Garron, and Bieliauskas (1980) reported on life change of patients with back pain with no diagnosable organic disease ($N = 33$), patients with back pain with organic disease ($N = 38$), and those patients with both psychological and organic classifications ($N = 25$). One-way analysis of variance revealed significant differences between subject groups (for the Social Readjustment Rating Scale scores) $F(3, 111) = 5.382$, $p = .0017$. Mean life event scores between groups, analyzed by a prior t -ratio contrast were significantly higher in patients with psychological disturbance, both with and without evidence of organic disease.

Finally in the review of psychological studies and life change are results reported by Bell (1977) in which she proposed the hypothesis:

Persons who exhibit mental-illness behavior will have experienced more stressful life events within the last six months than people who exhibit wellness behaviors. (p. 137)

The study utilized 30 experimental subjects and 30 matched controls (matched for age, sex, and county of residence). Bell reported mean life change unit scores of 335.90 LCU

for the experimental group and 158.97 LCU for the control group. The difference was found to be significant when using chi square test to compare total life change units, $p < .003$ (χ not reported). The hypothesis was accepted. The experimental group did experience more stressful life events.

A look at life change and myocardial infarction patients again showed positive results. In a New Zealand study, 40 myocardial infarction patients reported two and one-half times as many changes as the control group of surgical patients (Bianchi, Fergusson, & Walshe, 1978).

A report from Helsinki (Rahe, Romo, Bennett, & Siltanen, 1974) on 166 myocardial infarction survivors, 61 sudden-death subjects, and 35 delayed-death subjects who reported no illness during the 2 years prior to their cardiac crises will be discussed first. Myocardial infarction survivors indicated 6-month quartile life change unit total elevations from 23 to 39 (69%) between year 1 and 2 ($p < .005$). Sudden-death subjects indicated a life change unit rise from 35 to 42 LCU, a 20% increase. The second group, who reported illness during the 2 years prior to their infarction, reported a rise in life change units from 52 to 74 LCU, a 42% increase ($p < .025$) for survivors ($N = 113$); sudden-death ($N = 65$) 43 to 77 LCU,

a 79% increase ($p < .005$); and delayed death ($N = 49$) 56 to 96 LCU, a 71% increase ($p < .025$). Inter-group comparisons with counterparts were equally significant ($p < .05$) (pp. 224-225).

Mendel (1978) conducted a study utilizing the Social Readjustment Rating Scale "directed toward identifying the client's perceptions of stressors encountered up to 2 years prior to a diagnosis of essential hypertension" (p. 2). A sample of 18 hospitalized subjects (9 diagnosed with essential hypertension; 9 without signs, symptoms, or suspicion of essential hypertension) were questioned. Life change unit scores for the two groups were totaled and applied to statistical analysis. The results would not allow rejection of the null hypothesis. This author noted that all members of the control group had an average of two chronic illnesses for which they were presently hospitalized.

Moody (1978) conducted a study to determine the relationship of recent life change scores to the level of cigarette use in a group of patients hospitalized for diseases of the circulatory system. Three samples were used: smokers--one pack per day; former smokers--a previous smoker, and nonsmokers--a person who had never smoked or used tobacco. Moody hypothesized that smokers

would experience a significantly greater increase in life change units than either former smokers or nonsmokers. Results showed mean life change unit values for 149 patients significantly greater for the 1-6 month period than the 7-12 month period ($\underline{t} = 2.532$, $\underline{p} < .001$). Moody found the nonsmokers to be the only group showing a significant increase in LCUs for the 1-6-month period as compared with the 7-12-month period, $\underline{t} = 2.520$, $\underline{p} < .01$. Comparisons of the life change unit means showed the mean for the smokers to be higher than that for the nonsmokers for each period (1-6 months, $\underline{t} = 1.508$, $\underline{p} < .10$, and 7-12 months, $\underline{t} = 2.656$, $\underline{p} < .01$). No differences were found between the life change unit means of the former smokers and the nonsmokers for either period. Results of other circulatory and cardiac investigations supporting life change and illness onset are reports by Rahe and Lind (1971), Rahe et al. (1974), Theorell, Lind, Froberg, Karlsson, and Levi (1972), and Theorell and Rahe (1975).

Yet another group of life change studies have looked at life change units and subsequent illness as a general category (Goldberg & Comstock, 1976; McNeil & Pesznecker, 1977; Rahe, McKean, & Arthur, 1967; Wershow & Reinhart, 1974). Of the studies reviewed, only one, Wershow and

Reinhart (1974), found no correlation between life change units and illness.

A look at alcohol addiction and life change presented interesting findings for Mules, Hague, and Dudley (1977). Alcoholics reported high life changes consistently over a 3-year period with 6-month quartile scores from 292 to 404 LCU for the 68 men studied. In addition to scoring, subjects were asked to rate the degree of readjustment. The group of alcoholics rated the readjustment lower than an equal group of normal individuals.

Not only has the Social Readjustment Rating Scale been utilized with navy men and children but also with athletes. One report of such studies was submitted by Bramwell, Masuda, Wagner, and Holmes (1975). These researchers found athletes who began the season with high life change scores reported a greater number of injuries. The mean scores for the injured group of 36 players was 632 LCU for 1 year and 1,008 LCU for 2 years. The noninjured group of 46 players reported a mean life change unit of 494 for 1 year and 797 LCU for 2 years. Both of these time intervals were found to be significant.

Cardona (1978) reported on a sample of 35 hospitalized drivers from traffic accidents. The study attempted to answer the question: "is there an increased number of

life change events occurring in the lives of drivers within a year prior to their involvement in a traffic accident" (p. 2). Subjects in the study were interviewed in the hospital setting to obtain yes/no answers for the Social Readjustment Rating Scale. Results were obtained from 26 males and 9 females. Cardona found from the sample, 28 subjects (77%) experienced life crisis (> 150 LCU) within the year prior to their involvement in a traffic accident. A major life crisis was experienced by 15 subjects (43%). After statistical analysis, the author concluded, $\chi^2 (1, 34) = 13.8, p = .01$, that a significant number of life change events had occurred in these drivers to constitute a life crisis.

A study on stress and accidental injury by Greenfield (1978) tested the hypothesis, "there will be no significant difference in the mean Life Change Unit scores of the accidental injury population and the healthy population" (p. 8). From the sample of 36 accident subjects and 20 healthy subjects, the null hypothesis was rejected on the basis of significant ($p \leq .05$) differences existing between the mean life change unit scores of the two populations.

In summary, life change event studies have been reported to show significant results when looking at the

magnitude of life change units prior to illness onset. The magnitude of life change events has been investigated in a multitude of illnesses and disciplines.

Burn Patients and Life Change

Investigators seeking to understand and prevent burn injuries have investigated the association between stressful circumstances, life change, and the burn injury. Burn injuries and life event studies are limited. Strong findings of increased life events prior to the burn injury does encourage further research in the area of burns and life change.

Life change events and burn patients are discussed in a study by Noyes, Frye, Slymen, and Canter (1979). The study was designed to

assess the significance of life change in the development of burn injuries in adults, and examine the relationship in burn victims among environmental stress, predisposing disorders, and social circumstances existing at the time of injury. (p. 141)

At the burn unit, University of Iowa, 67 adults admitted consecutively over a 1-year period were interviewed. The group consisted of 51 men with a median age of 34 years and 16 women with a median age of 52 years. Burn size ranged in surface area from 1% to 95% (median involvement 22%). The Social Readjustment Rating Scale was used to

collect information regarding the 2-year interval preceding the burn injury. Life change units were then calculated. In addition to life change data, information was collected regarding the physical condition of the subject at the time of injury. Subjects were also rated as to whether the burn injury was an accident, not an accident, or a questionable accident.

Results of the study by Noyes et al. (1979) showed a substantial increase in life change units during the year preceding the burn injury. A mean of 213 LCU was reported for the 12-month interval preceding the injury, compared with a mean of 133 LCU for months 13-24. The difference was significant (t not given, $p < 0.005$) when examined by the Wilcoxon matched-pairs signed-rank test. The relationship of stressful events and social variables was examined and showed a positive correlation between life change units and annual income. The study also found positive correlation between life change units and age.

While the study of life change events and burn injuries found significant results to the onset of the burn injury, the area of burns and life change research is limited. Replication of the burn study presented as

well as studies utilizing control groups are essential to understanding stress and the stress response.

Summary

Studies and results reported in the review of literature on the varied effects of stressors have found statistically significant relationships between life change events and a wide assortment of physical as well as mental illnesses. The health problems faced by the burn-injured patient calls for further research in order that the full significance of life change and burn injuries can be fully understood. Finally, knowledge of such information is important to the quality of care provided by nurses who participate in burn prevention, treatment, and rehabilitation.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

The study was an ex post facto, retrospective research design. Polit and Hungler (1978) referred to studies in which the independent variable is not directly manipulated by the researcher, but the phenomena has already occurred in the past as ex post facto, retrospective research. They stated that the basic purpose of this type of research is to determine the relationship among variables. The variables for this study were life change events that occurred in the 12 months prior to the subject's inclusion in the study and the burn injury. Since the investigator did not manipulate these events in any way, merely recorded them after they had occurred, the study used ex post facto, retrospective design. This study was further identified as a descriptive-correlational study. Polit and Hungler (1978) stated, "the aim of descriptive correlational is to describe the relationship among the variables rather than to infer cause-and-effect relationship" (p. 185). In this study the relationship between life change unit scores, during the preceding 12

months, and burn injury or no burn injury was investigated.

Setting

The setting for the study was a Southern state of the United States, with a regional population of 3.5 million. Both healthy individuals and burn patients were obtained from this 3.5 million regional population. The facility for burn patients was a 13-bed acute-care burn center that treats approximately 700 inpatients per year.

Population and Sample

The population for this study were adults. The convenience sample of burn patients included all patients admitted to the burn center during a 2-month period. Written permission was obtained from all burn patients that participated in the study. During the 2-month period, 39 patients were admitted to the burn center, 34 of these met the established criteria. Of the 34 who met the established criteria, 4 declined to participate in the study. The following criteria were met by 30 burn patients.

1. Subjects were hospitalized patients receiving treatment for burn injuries at the burn center.
2. The sample included both male and female subjects.
3. The sample was limited to those patients between 18 and 65 years of age.

4. The subjects were able to understand and speak English.

5. Subjects were considered by their physician as stable for the purpose of being interviewed.

The convenience sample of healthy individuals was originally to have been obtained completely from a list of names provided by the burn patients. Names included were friends and relatives (other than those sharing the same dwelling as the burn patient) living in the same community. Burn patients provided the names of 22 healthy individuals; addresses were unobtainable for 4 names. The questionnaire was mailed to 18 subjects, 3 were returned by mail due to insufficient addresses, and 9 were returned complete.

In order to obtain a larger sample of healthy individuals, an envelope containing packets identical to those mailed to healthy subjects (packets included cover letter, questionnaire, and stamped, self-addressed return envelope) was placed in the burn center visitors' waiting room. A total of 13 questionnaires were completed and returned from the visitor waiting room. To complete the data collection of 30 healthy individuals, 11 questionnaires were distributed and returned from an accidental sample group. The accidental sample group were individuals

the researcher had access to, such as maintenance men and clerical help from the college and friends.

Criteria for selection of healthy individuals were:

1. Subjects were not seen by a physician for illness or injury in the past 12 months.
2. The sample included both male and female subjects.
3. The sample was limited to individuals 18 to 65 years of age.
4. Subjects were able to read and write English.

Subjects were obtained through an accidental or convenience sampling using readily available subjects. There are biases in this sampling technique in that subjects are hand-selected rather than by some randomized method. The investigator attempted to maintain homogeneity of the sample by obtaining healthy individuals geographically representative of the sample of burn subjects.

Protection of Human Subjects

Permission to conduct this study was obtained from the Human Subjects Review Committee (Appendix B), the agency utilized (Appendix C), and verbally from the director of the burn center. Permission was obtained

verbally for each individual patient on a daily basis from the physician on call.

Steps were taken to protect individuals' human rights. No names were placed on any of the questionnaires. Burn patients' consent and questionnaire were kept separately. All collected data remained under lock and key at all times and were treated as confidential and released as group data for the study. Names of healthy individuals were destroyed after mailing the questionnaire. Burn subjects' names were not associated with the mailing of questionnaires to healthy individuals.

Interviews with burn subjects were conducted in the privacy of the subject's hospital room. Burn subjects were informed in the verbal explanation (Appendix D) that no changes would be made in their treatment related to participation or nonparticipation in the study. Staff of the burn unit were not informed of who was participating in the study. Results of those participating in the study were shared with staff only at the patient's request.

The interviews were conducted by the investigator only after receiving permission from the physician to approach the patient regarding the study. Subjects were informed of their right to withdraw from the study at any time.

The investigator informed the subjects of the nature, risks, and benefits of the study as found in the verbal explanation (Appendix D). Explanation to healthy subjects was provided in a cover letter (Appendix E). Informed consent was obtained in writing from burn patients (Appendix F). Consent from healthy subjects was assumed by the return of the questionnaire, and was so stated in the cover letter.

Instrument

The instrument that was used to collect data for the study was the Holmes and Rahe (1967) Social Readjustment Rating Scale. Permission for use of the Scale was obtained (Appendix G). The Social Readjustment Rating Scale is a list of 43 desirable and undesirable life events (Appendix A). The events reflect major areas in the American social structure. There are two categories of items within the Scale, the first category includes those items indicative of the life-style of the individual, i.e., a major change in eating habits, detention in a jail or other institution, major changes in social activities. The second category includes items indicative of occurrences that involved the individual, i.e., marriage, death of a close family member, return to school, paying off a mortgage.

More than 5,000 patients were initially used to study the quality and quantity of life events that were empirically observed to cluster at the time of illness onset. The value and scores are referred to as life change units (LCU). The scores range from 100 for death of a spouse to 11 for a minor violation of the law (for complete scoring, see Appendix A). Subjects for this study were asked to provide a yes or no answer; subjects replied yes if the event had occurred in their life in the past 12 months and no if it had not. Numerical conversion of yes answers was made and totaled, giving each subject a numerical conversion of life change units for their life change events.

Reliability and validity studies with the Social Readjustment Rating Scale have shown relatively consistent results. Three reliability estimates which utilized college subjects and allowed a week between test and retest all had high correlations between 0.87 and 0.90 (Hawkins, Davies, & Holmes, 1957; Rahe, 1974). In validity studies, spouses separately agreed with their mates' scoring of his recent life changes with correlations ranging between 0.50 to 0.75 over 1 to 2 years prior to testing (Rahe, Romo, Bennett, & Siltanen, 1974). Life change

date over the past years has been shown in validity studies to be of acceptable veracity.

Demographic data, age and sex, were collected. These two variables served as covariants for statistical treatment.

Data Collection

Collection of data from burn patients proceeded after the interviewing registered nurse determine that the subjects met the established sample criteria. Potential burn subjects were approached in the privacy of their hospital room and given a verbal explanation of the study (Appendix D) discussing benefits, risks, and time involved. Permission was obtained from subjects by written consent as approved by the Human Subjects Review Committee (Appendix F). When consent was obtained, the registered nurse conducted the interview in which the items on the Social Readjustment Rating Scale were read to the subject. No further explanation was given other than what was on the questionnaire (Appendix H). A yes/no answer was recorded for each of the 43 questions. Interview results were then stored and scored for life change unit scores at a later time.

When the verbal explanation was being given subjects, they were asked to contribute names and addresses of friends or relatives in their community who were healthy individuals living in the same community but not the same dwelling. The list of names then made up part of the healthy sample to which a written explanation (Appendix E), the questionnaire (Appendix H), and a self-addressed, stamped envelope were mailed. The same material was placed in the visitors' waiting room at the burn center, and given to the accidental sample. When the questionnaires were returned, the life change unit scores were recorded for yes answers and totaled.

Treatment of Data

There were two sets of data in this study, life change unit totals for each burn patient and life change unit totals for each healthy subject. The statistical treatment that was applied to these sets of data was the analysis of covariance. Although collected data were ordinal level "the majority of writers believe that the distortion introduced by treating them as interval measures is too small to warrant an abandonment of powerful statistical analysis" (Polit & Hungler, 1978, p. 415).

The analysis of covariance was used to remove the effects of variance in age and sex from the dependent

variable (life change events), thus increasing precision. Age and sex were selected as covariants after reviewing the present literature and the scale, noting that the Social Readjustment Rating Scale is representative of all ages while not being as broad for sex. Considered also was the greater number of males treated for burn injuries than females yearly.

Age and sex as covariants were supported in a study done by Hull (1977) in which he reviewed the content and methods of research on the topic of life circumstances and physical illness of 329 disciplines over a 10-year period. The top two out of three antecedents totaling 221 disciplines were considered to be age and sex. More recent research by Webb, Sorodgrass, and Thagard (1978) specifically studied the relationship between sex and life events experienced. These investigators were using chi-square statistics and found there was no difference in overall life event scores for men and women.

The analysis was computed using the University of Pittsburgh SPSS-20 program. Level of significance for the study was set at $p = .05$.

CHAPTER 4

ANALYSIS OF DATA

This retrospective, descriptive correlational study was conducted using an oral and written interview, in order to determine if there was a difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex are controlled. The Social Readjustment Rating Scale was completed by 30 burn patients and 30 healthy individuals. The data from the questionnaire were collected over a 2-month period and subjected to statistical analysis.

In this chapter the sample will be described. The results of the statistical method utilized to test the hypothesis will be presented and explained. Any additional findings or trends will be included and discussed.

Description of Sample

The sample consisted of two groups, burn patients and healthy individuals. Interviewed for the study were 30 burn patients. The age of burn patients ranged from 19 to 65 years of age, with the mean age 37.6 years. The group of burn patients consisted of 24 males (80%) and 6 female (20%) subjects.

Questionnaires were returned and analyzed for 30 healthy individuals. The age range for the healthy group was from 21 to 59 years of age, with the mean age of 37 years. The healthy group consisted of 18 males (60%) and 12 females (40%).

Findings

Life change unit scores were calculated and recorded for each completed questionnaire for the burn patients and the healthy individuals. The life change unit scores for burn patients ranged from 12 to 770 LCU with the mean score 250.3 LCU. Life change unit scores for the healthy group ranged from 12 to 337 LCU with the mean score 141.66 LCU. The means and standard deviation for age and life change unit scores for both groups are presented in Table 1.

Analysis of covariance was used in this descriptive correlational study to test the null hypothesis that there is no significant difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex are controlled. Table 2 represents the statistical results obtained.

Statistical results revealed in Table 2 that there was a significant difference between the scores of the two groups $F(1, 59) = 11.867, p < .001$. The null

Table 1

Mean and Standard Deviation for the Covariant
Age and the Variable Life Change Unit Score

	Burn Patients		Healthy Individuals	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Age	37.6	16.30	37.03	12.16
LCU score	250.3	180.37	141.67	84.59

N = 30 for both groups.

Table 2

Statistical Results when Applying Analysis of
Covariance to Life Change Unit Scores with
Age and Sex as Covariants

Source of Variation	Sum of Squares	<u>df</u>	Mean Square	<u>F</u>	Signifi- cance of <u>F</u>
Age	291,751.300	1	291,751.300	19.245	0.001
Sex	6,601.798	1	6,601.798	0.435	0.512
Group	179,906.940	1	179,906.940	11.867	0.001
Error	848,962.330	56	15,160.042		
Total	1,327,989.000	59	22,508.288		

hypothesis was rejected. Results showed burn patients to have a significantly greater number of life change events, during the preceding 12 months, than healthy individuals when age and sex were controlled.

Additional findings reported in Table 2 revealed sex was not a significant covariant, $F(1, 59) = .435$, $p = .512$. Age was revealed to be a significant covariant, $F(1, 59) = 19.245$, $p < .001$. When looking at age healthy individuals below the mean age of 37.03 years ($N = 17$, $M = 27.7$ years), showed 8 subjects to have life change unit scores greater than 150 LCU, and 9 less than 150 LCU. Life change unit scores greater than 150 are believed to have a 37% change of illness onset (Holmes & Masuda, 1973). Healthy individuals above the mean age of 37.03 years ($N = 13$, $M = 49.1$ years) showed 2 subjects to have life change unit scores greater than 150 LCU and 11 subjects than 150 LCU. Of those burn patients below the mean age of 37.6 years ($N = 17$, $M = 24.4$ years), 14 subjects reported life change unit scores greater than 150 LCU while 3 subjects were less than 150 LCU. Of the burn patients above the mean age of 37.6 years ($N = 13$, $M = 54.8$ years), 5 subjects reported life change unit scores greater than 150 LCU while 8 subjects were less than 150 LCU. These findings are further described when age and life change unit scores are compared using linear regression. Linear regression showed a negative relationship, $R = -0.469$, $p < .001$. The regression line is $Y = 378.7 + (-4.934)(\text{Age})$.

Table 3 provides the frequency of each item scored by the two groups analyzed. Aside from Christmas, a given yes answer for all subjects, major change in financial state which is scored 38 LCU was most frequently checked for the burn patients with 16 of 30 subjects responding yes to this question. Major change in financial state was reported by 7 of 30 healthy individuals. From the healthy individuals, vacation, 13 LCU, was the most frequently occurring event with 17 responding yes, while only 7 burn patients responded yes.

Summary of Findings

The null hypothesis was rejected. There was a significant difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex were controlled. Additional findings revealed that sex was not a significant covariant. Age was found to be a significant covariant revealing a negative correlation to life change unit scores. For both groups as age increased, life change units decreased. Subjects below the mean age of 37 years had more life change unit scores above 150 LCU than those subjects above the mean age.

Table 3
Item Analysis for Frequency of Occurrence of Life Events
for Burn and Healthy Subjects

Life Event	Burn Patients	Healthy Individuals
1. Death of spouse	0	0
2. Divorce	2	0
3. Marital separation from mate	5	1
4. Detention in jail or other institution	3	1
5. Death of a close family member	6	2
6. Major personal injury or illness	10	0
7. Marriage	6	0
8. Being fired at work	2	0
9. Marital reconciliation with mate	3	0
10. Retirement from work	1	1
11. Major change in the health or behavior of a family member	7	6
12. Pregnancy	1	2
13. Sexual difficulties	4	1
14. Gaining a new family member	5	6
15. Major business readjustment	9	2
16. Major change in financial state	16	8
17. Death of a close friend	5	3
18. Changing to a different line of work	10	3
19. Major change in number of arguments with spouse	3	3
20. Taking on a mortgage greater than \$10,000	4	3
21. Foreclosure on a mortgage or loan	4	0
22. Major change in responsibilities at work	5	10
23. Son or daughter leaving home	3	3
24. In-law troubles	3	4
25. Outstanding personal achievement	1	3
26. Wife beginning or ceasing work outside home	8	5
27. Beginning or ceasing formal schooling	4	2
28. Major change in living conditions	6	6
29. Revision of personal habits	12	3
30. Troubles with the boss	2	0
31. Major change in working hours or conditions	9	4
32. Change in residence	9	9
33. Changing to a new school	2	3
34. Major change in usual type and/or amount of recreation	5	5
35. Major change in church activities	7	5
36. Major change in social activities	7	2
37. Taking on a mortgage less than \$10,000	5	6
38. Major change in sleeping habits	6	7
39. Major change in number of family get-togethers	5	6
40. Major change in eating habits	6	9
41. Vacation	7	17
42. Christmas	30	30
43. Minor violations of the law	12	4

N = 30 for both groups.

Major change in financial state was the most frequent yes answer for burn patients. Vacation was the most frequent life event for healthy individuals.

CHAPTER 5

SUMMARY OF THE STUDY

This study was conducted to determine if there was a difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex were controlled. This chapter presents a summary of the preceding chapters. A discussion of the findings is presented. Conclusions reached, based on the data analyzed, and implications for appropriate nursing use of the outcomes are suggested. Recommendations for further study are made.

Summary

More than 100,000 patients are hospitalized annually for treatment of burn injuries. In an attempt to understand and prevent burn injuries, investigators have postulated an association between stressful life events and the occurrence of burn injuries. Research findings have observed life change to be related to time of disease onset.

Selye's (1956) theory of stress-adaptation and the concept of life events as developed by Holmes and Rahe (1967) was the theoretical framework for this study. The

hypothesis for this study was stated in the null that there is no significant difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex are controlled.

Data were collected from 30 hospitalized burn patients and 30 healthy individuals utilizing the Social Readjustment Rating Scale. The time frame for life change was to have been the 12 months prior to the burn injury for burn patients, and the 12 months prior to inclusion in the study for healthy individuals. The data were collected over a 2-month period.

Data analysis showed a significant difference between group life change unit scores for the preceding 12 months, when analysis of covariance was used as the statistical method and age and sex were the covariants, $F(1, 59) = 11.867$, $p < .001$. The null hypothesis was rejected. Burn patients did have a greater amount of life change events, during the preceding 12 months, than healthy individuals when age and sex were controlled.

Additional findings revealed that sex was not a significant covariant. Age was found to be a significant covariant. When observing life change unit scores of both groups, a majority of subjects whose age was below the mean age of 37 years presented scores above 150 LCU

(scores of 150 LCU are believed to have a 37% chance of illness onset). Linear regression for age and life change units showed a significant negative correlation to life change units. Major change in financial state (38 LCU) was found to be the most frequent event occurring in the burn group. Vacation (13 LCU) was the most frequent event for the healthy group.

Discussion of Findings

This study tested the null hypothesis that there is no significant difference in life change events, during the preceding 12 months, of burn patients and healthy individuals when age and sex are controlled. The hypothesis was rejected and the results of life change unit scores of the two samples showed burn patients to have significantly more life change events than healthy individuals.

The results of this study support the findings of Noyes, Fryes, Slymen, and Canter (1980). These investigators found substantial increases in life change units of their sample of 67 burn patients during the year preceding injury. The study by Noyes et al., however, did not use a control group. Findings of the present study being reported here support research on other illnesses where control groups were utilized to compare life change

events between diseased and healthy individuals (Bell, 1977; Heisel, et al., 1973; Leavitt, et al., 1980).

The methodology of the present study may have had influencing results. Also the means of selecting healthy individuals for inclusion in the study may have influenced the findings. Two methods of data collection were used--the questionnaire and interview. The possibilities are considered as to whether the questionnaire technique was less successful in obtaining correct answers or if the interviewer's influence encouraged subjects to bias the response. Both methods of data collection have inherent advantages and disadvantages that when used together compound their influence on the final results.

The method for selection of healthy individuals should also be considered when discussing the results. The three methods used may have presented a bias to the results. The investigator also recognized that there was no way of accurately determining if the healthy sample did in fact meet all the selection criteria for inclusion in the study.

Results showing sex not to be significant agrees with results obtained by Webb, Sorodgrass, and Thagard (1978). These researchers studied the relationship between

sex and life events and found no difference in overall scores for men and women.

Results obtained revealing age to be a significant negative correlate to life change units when applying linear regression is of interest. Previous research looked at life change units and illness and less frequently to age. Cross-comparisons between age and life change units have not previously been reported in the literature. Based on these findings one can only speculate the reason for such findings. Is the Social Readjustment Rating Scale age selective or has the validity of the scale over age groups changed with the rapid change in technology? Are younger people coping with more stress today than their parents or grandparents? Again, one can only speculate at this point as to why the negative correlation existed between age and life change units.

Conclusions and Implications

Findings revealed that the sample of 30 burn patients experienced a significant difference in life change events, during the preceding 12 months, than healthy individuals when age and sex were controlled. The difference showed that burn patients experience a significantly greater number of life change events. The reader is cautioned, however, not to jump to the erroneous conclusion

that the relationship is of a causal nature. The conclusion is drawn from these findings that life change events tended to cluster during the year prior to the burn injury for the burn patients. The burn patients were attempting to adjust to more life stress than were those healthy individuals who had not seen a physician for illness or injury in the previous 12 months.

Implications drawn from the conclusions indicate the need for intervention and assistance in the adjustment process involved when life change events occur. Implication towards prevention is identified. By instructing individuals to plan for change, the adjustment process is begun making the change less stressful when it does occur. Appropriate intervention by nurses could aid in minimizing future life change and contribute towards favorable outcomes. The implication for further research then is presented to evaluate the effectiveness of such interventions.

The findings also present the need for further research investigating age and life stress as well as coping levels or methods of various age groups. Is age the sole factor influencing the negative correlation found in this study or are there other variables not yet identified

influencing the results of this correlation? Further research is necessary to answer such questions.

Recommendations for Further Study

Recommendations for replication of the present study are:

1. Future studies should utilize one data collection method.
2. The present study should be performed with a larger sample population.
3. Improvement in the randomization of both samples is recommended for future studies.
4. The recommendation to perform the study in other geographical settings is suggested.

Recommendations for future studies based on the findings are:

1. A future study should be performed with a larger population, looking specifically at age and life change units of individuals.
2. An investigation of life change events of a previously high score sample and their health status following nursing intervention to improve coping mechanisms and planning life change is recommended.

3. Studies looking at validity of the SRRS comparing age groups should be considered.

4. A prospective study of age and life change events is recommended.

5. A study to elicit variable effecting life change events other than age is recommended.

APPENDIX A

The Social Readjustment Rating Scale

<u>Life Event</u>	<u>Mean Value</u>
1. Death of spouse	100
2. Divorce	73
3. Marital separation from mate	65
4. Detention in jail or other instituion	63
5. Death of a close family member	63
6. Major personal injury or illness	53
7. Marriage	50
8. Being fired at work	47
9. Marital reconciliation with mate	45
10. Retirement from work	45
11. Major change in the health or behavior of a family member	44
12. Pregnancy	40
13. Sexual difficulties	39
14. Gaining a new family member (e.g., through birth, adoption, oldster moving in, etc.)	39
15. Major business readjustment (e.g., merger, reorganization, bankruptcy, etc.)	39
16. Major change in financial state (e.g., a lot worse off or a lot better off than usual)	38
17. Death of a close friend	37

<u>Life Event</u>	<u>Mean Value</u>
18. Changing to a different line of work	36
19. Major change in the number of arguments with spouse (e.g., either a lot more or a lot less than usual regarding child-rearing, personal habits, etc.)	35
20. Taking on a mortgage greater than \$10,000 (e.g., purchasing a home, business, etc.)	31
21. Foreclosure on a mortgage or loan	30
22. Major change in responsibilities at work (e.g., promotion, demotion, lateral transfer)	29
23. Son or daughter leaving home (e.g., marriage, attending college, etc.)	29
24. In-law troubles	29
25. Outstanding personal achievement	28
26. Wife beginning or ceasing work outside the home	26
27. Beginning or ceasing formal schooling	26
28. Major change in living conditions (e.g., building a new home, remodeling, deterioration of home or neighborhood)	25
29. Revision of personal habits (dress, manners, associations, etc.)	24
30. Troubles with the boss	23
31. Major change in working hours or conditions	20
32. Change in residence	20

<u>Life Event</u>	<u>Mean Value</u>
33. Changing to a new school	20
34. Major change in usual type and/or amount of recreation	19
35. Major change in church activities (e.g., a lot more or a lot less than usual)	19
36. Major change in social activities (e.g., clubs, dancing, movies, visiting, etc.)	18
37. Taking on a mortgage or loan less than \$10,000 (e.g., purchasing a car, TV, freezer, etc.)	17
38. Major change in sleeping habits (a lot more or a lot less sleep, or change in part of day when asleep)	16
39. Major change in number of family get-togethers (e.g., a lot more or a lot less than usual)	15
40. Major change in eating habits (a lot more or a lot less food intake, or very different meal hours or surroundings)	15
41. Vacation	13
42. Christmas	12
43. Minor violations of the law (e.g., traffic tickets, jaywalking, disturbing the peace, etc.)	11

Source: T. H. Holmes & R. H. Rahe. The social readjustment rating scale. Journal of Psychosomatic Research, 1967, 11, 213-218.

APPENDIX B

TEXAS WOMAN'S UNIVERSITY
Box 23717, TWU Station
Denton, Texas 76204

1810 Inwood Road
Dallas Inwood Campus

HUMAN SUBJECTS REVIEW COMMITTEE

Name of Investigator: Suellen Smith Center: Dallas
Address: 1810 Inwood Rd. #405 Date: 7/17/80
Dallas, Texas 75235

Dear Ms. Smith:

Your study entitled Life Change Events of Burn Victims and Healthy
individuals.

has been reviewed by a committee of the Human Subjects Review Committee
and it appears to meet our requirements in regard to protection of the
individual's rights.

Please be reminded that both the University and the Department of
Health, Education, and Welfare regulations typically require that
signatures indicating informed consent be obtained from all human
subjects in your studies. These are to be filed with the Human Sub-
jects Review Committee. Any exception to this requirement is noted
below. Furthermore, according to DHEW regulations, another review by
the Committee is required if your project changes.

Any special provisions pertaining to your study are noted below:

Add to informed consent form: No medical service or com-
ensation is provided to subjects by the University as a
result of injury from participation in research.

Add to informed consent form: I UNDERSTAND THAT THE RETURN
OF MY QUESTIONNAIRE CONSTITUTES MY INFORMED CONSENT TO ACT
AS A SUBJECT IN THIS RESEARCH.

The filing of signatures of subjects with the Human Subjects
Review Committee is not required.

 Other:

XX No special provisions apply.

Sincerely,

Estelle D. Kutz
Chairman, Human Subjects
Review Committee

at Dallas

APPENDIX C

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE _____

GRANTS TO Suellen M. Smith
a student enrolled in a program of nursing leading to a
Master's Degree at Texas Woman's University, the privilege
of its facilities in order to study the following problem.

Life Change Events of Burn ~~Patients~~ and Healthy Individuals.

The conditions mutually agreed upon are as follows:

1. The agency (~~may~~) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (~~may~~) (may not) be identified in the final report.
3. The agency (wants) (~~does not want~~) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other _____

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

APPENDIX D

Verbal Explanation to Burn Subjects
Prior to Signing Consent Form

Hello, my name is Suellen Smith. I am a nurse from Texas Woman's University, College of Nursing. My major area of interest is burn nursing and prevention. I would appreciate it if you would assist me in research in this area by answering a questionnaire.

The purpose of this study is to identify the events in your daily life which may or may not have been stressful to you within the 12 months prior to your burn injury. This same questionnaire will be presented to a group of healthy individuals. By examining the results of data collection from each of these two groups, I hope to gain insight into factors which may contribute to burn injuries. This information will also be valuable in planning burn prevention as well as improving nursing management of burn patients.

I will read the questionnaire to you. It contains 43 yes/no questions and takes 10 minutes to complete. No names will be placed on the questionnaire at any time during the study. However, it will be necessary for you to sign a consent form if you agree to participate in the study. Consents and questionnaires will be stored separately to avoid loss of anonymity. All collected data

will be treated as confidential and released only in the context of the written research report as group data. There will be no alterations in your care as a result of participation or nonparticipation in the study. Burn staff will not be informed of any information exchanged unless you so request. If at any time you become tired or uncomfortable and wish to delay the interview, you may do so. Your closest next of kin may sign the consent if your injury prevents you from doing so yourself. I will be happy to answer any questions about the study or your part in it. If at any time during the study you wish to withdraw you may do so. I hope that you will choose to be a part of my study. A copy of the completed study will be available at Texas Woman's University library if you are interested in the results.

If you wish to further help me in my study I would appreciate your assistance in obtaining the names of healthy individuals from your community. You could help by providing the names and addresses of 3 or 4 of your friends or relatives who live in the same community as you, but are not living with you. A blank questionnaire identical to the one which will be read to you will be mailed to them, along with an explanation of the study similar to the one you have just received. Your name will

not be used in any way. Names and addresses provided by you will be destroyed after the questionnaire is mailed. You are not obliged to provide names to answer the questionnaire yourself, it would merely be helpful. Again, thank you for your participation and help.

APPENDIX E

Written Explanation to Healthy Subjects

Dear _____:

Hello, my name is Suellen Smith. I am a nurse from Texas Woman's University, College of Nursing. My major area of interest is burn nursing and prevention. I would appreciate it if you would assist me in research in this area by answering the enclosed questionnaire and returning it to me in the self-addressed envelope which is also enclosed.

I am interested in those individuals between 18 and 65 years of age who have not seen a physician for illness or injury within the past 12 months. If you do not fit this description it is not necessary to complete the questionnaire; it would be appreciated, however, if you could give this to someone who does fit this description.

The purpose of this study is to identify the events in your daily life which may or may not have been stressful to you during the past 12 months. This same questionnaire will be presented to a group of burn patients. By examining the results of data collection from each of these two groups, I hope to gain insight into factors which may contribute to burn injuries. This information

will also be valuable in planning burn prevention as well as improving nursing management of burn patients.

The questionnaire contains 43 yes/no questions and takes only 10 minutes to complete. Please place no names on the questionnaire to ensure your anonymity. The return of this questionnaire will be construed as informed consent. A copy of the completed study will be available at Texas Woman's University library if you are interested in the results. I hope that you will choose to be a part of this study. Thank you for your time.

Sincerely,

Suellen Smith, R.N., B.S.N.

APPENDIX F

Texas Woman's University
College of Nursing

Consent to Act as a Subject for Research and Investigation:

1. I hereby authorize Suellen Smith to perform the following procedure:

Review 43 life events described in the Social Readjustment Rating Scale and indicate the appropriate "yes" or "no" response.

2. The procedure listed in Paragraph 1 has been explained to me by Suellen Smith.
3. (a) I understand that the procedure described in Paragraph 1 involves the following possible risks or discomforts: loss of anonymity, change in treatment, improper release of data, physical or psychological harm or distress, public embarrassment. However, no names will be on the questionnaire and it will be kept separate from my consent form. Collected data shall be treated as confidential and released only as group data. If I volunteer names of healthy individuals, in no way will my name be associated with the study. Information I provide will not be conveyed to the burn staff unless I so request. The questionnaire will be completed in the privacy of my hospital room. I may delay the interview at any time if I become too tired to complete it. I may also withdraw from the study at any time.

(b) I understand that the procedures and investigation described in Paragraph 1 have the following potential benefits to myself and/or others: the results of this study will be helpful in gaining more insight into factors which may contribute to burn injuries. The information may also be valuable in helping to plan better burn prevention as well as improve nursing management of burn patients.

(c) I understand that no medical service or compensation is provided to subjects by the University as a result of injury from participation in research.

4. An offer to answer all of my questions regarding the study has been made. If alternative procedures are more advantageous to me, they have been explained. I understand that I may terminate my participation in the study at any time.

Subject's Signature

Date

(If subject is unable to sign, complete the following):

Subject is unable to sign because:

APPENDIX G

UNIVERSITY OF WASHINGTON

SEATTLE, WASHINGTON 98195

May 30, 1980

School of Medicine

Department of Psychiatry and Behavioral Sciences RP-10

Suellen Smith B.S.N.
1810 Inwood 405
Dallas, Texas 75235

Dear Ms. Smith:

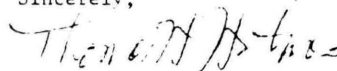
Thank you for your interest in our research. I am enclosing several reprints which I hope will be of assistance to you.

The Social Readjustment Rating Questionnaire (SRRQ) is the questionnaire used in the original research to obtain the Social Readjustment Rating Scale (SRRS), or the list of values for the various items. The Schedule of Recent Experience (SRE) is the questionnaire which the subject completes to obtain his life change score.

I am sending two versions of the SRE for your consideration. The Opscan version is the booklet and answer sheets and can be purchased from us. The typed version is easier for most subjects to complete and I recommend that for your use. You have my permission to duplicate the typed form if you decide to use that.

If we can be of further assistance, please let us know. We would be most interested to hear further from you as the research proceeds.

Sincerely,



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

THH:td

Encl.

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DEPARTMENT OF THE NAVY
NAVAL HEALTH RESEARCH CENTER
P.O. BOX 85122
SAN DIEGO, CALIFORNIA 92138

IN REPLY REFER TO

3 June 1980

Suellen Smith, B.S.N.
Graduate Student T.W.U.
1810 Inwood 405
Dallas, TX 75235

Dear Ms Smith,

In regards to your letter of 24 May 1980 I have enclosed a packet of information for researchers interested in my Recent Life Change Questionnaire (RLCQ). The packet explains the derivation of this form from its parent instrument the SRE (the form I worked on with Dr. Holmes in Seattle some years ago). In addition, I've enclosed a copy of an editorial which I wrote on the subject of life change measurement.

In regards to your research plan, I suggest you follow the wound healing of the burn patients with the plan to assess if those that have had the greatest recent life change also have the highest incidence of wound complications, infections, delayed healing, and so forth. This changes your study from a retrospective to a prospective one and may heighten its importance for burn victims' medical and nursing management. I would be delighted to be kept informed on the progress of your study.

Sincerely yours,

RICHARD H. RAHE
Captain MC USN
Commanding Officer

Encls.

APPENDIX H

The Social Readjustment Rating Scale

Directions: Please read each numbered item. Place an "X" in the "No" box if this event has not happened to you in the past year. Place an "X" in the "yes" box if the event has happened to you in the last year.

	No	Yes
1. Death of spouse	_____	_____
2. Divorce	_____	_____
3. Marital separation from mate	_____	_____
4. Detention in jail or other institution	_____	_____
5. Death of a close family member	_____	_____
6. Major personal injury or illness	_____	_____
7. Marriage	_____	_____
8. Being fired at work	_____	_____
9. Marital reconciliation with mate	_____	_____
10. Retirement from work	_____	_____
11. Major change in the health or behavior of a family member	_____	_____
12. Pregnancy	_____	_____
13. Sexual difficulties	_____	_____
14. Gaining a new family member (e.g., through birth, adoption, oldster moving in, etc.)	_____	_____
15. Major business readjustment (e.g., merger, reorganization, bankruptcy, etc.)	_____	_____

	No	Yes
16. Major change in financial state (e.g., a lot worse off or a lot better off than usual)	_____	_____
17. Death of a close friend	_____	_____
18. Changing to a different life of work	_____	_____
19. Major change in the number of argu- ments with spouse (e.g., either a lot more or a lot less than usual regard- ing child-rearing, personal habits, etc.)	_____	_____
20. Taking on a mortgage greater than \$10,000 (e.g., purchasing a home, business, etc.)	_____	_____
21. Foreclosure on a mortgage or loan	_____	_____
22. Major change in responsibilities at work (e.g., promotion, demotion, lateral transfer)	_____	_____
23. Son or daughter leaving home (e.g., marriage, attending college, etc.)	_____	_____
24. In-law troubles	_____	_____
25. Outstanding personal achievement	_____	_____
26. Wife beginning or ceasing work outside the home	_____	_____
27. Beginning or ceasing formal schooling	_____	_____
28. Major change in living conditions (e.g., building a new home, remodel- ing, deterioration of home or neighborhood)	_____	_____
29. Revision of personal habits (dress, manners, associations, etc.)	_____	_____

	No	Yes
30. Troubles with the boss	_____	_____
31. Major change in working hours or conditions	_____	_____
32. Change in residence	_____	_____
33. Changing to a new school	_____	_____
34. Major change in usual type and/or amount of recreation	_____	_____
35. Major change in church activities (e.g., a lot more or a lot less than usual)	_____	_____
36. Major change in social activities (e.g., clubs, dancing, movies, visiting, etc.)	_____	_____
37. Taking on a mortgage or loan less than \$10,000 (e.g., purchasing a car, TV, freezer, etc.)	_____	_____
38. Major change in sleeping habits (a lot more or a lot less sleep, or change in part of day when asleep)	_____	_____
39. Major change in number of family get-togethers (e.g., a lot more or a lot less than usual)	_____	_____
40. Major change in eating habits (a lot more or a lot less food intake, or very different meal hours or surroundings)	_____	_____
41. Vacation	_____	_____
42. Christmas	_____	_____
43. Minor violations of the law (e.g., traffic tickets, jaywalking, dis- turbance of the peace, etc.)	_____	_____

Demographic Data:

Age: _____

Sex: _____

Please go back and make sure that you have checked either "yes" or "no" for each of the 43 items.

Thank you for completing the questionnaire.

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