

AN ANALYSIS OF THE PERCEIVED PHYSIOLOGICAL
EFFECTS OF THE STRESS OF NURSES IN
SAINT FRANCIS TRAUMA EMERGENCY
CENTER

By

SHERRI ELDRIDGE MUSICK

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Tulsa University

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Thesis Approved:

Raymond B. James
Thesis Adviser.

John L. Burch

Leroy H. Davis

Norman D. Durham
Dean of Graduate College

1170308

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CHAPTER I

INTRODUCTION

For decades philosophers and scientists have been trying to relate, then correlate how the effects of stress bring about apparent and measurable physiological changes in the human body. Some of the changes are covert and transient, taking the form of headache, fatigue, heartburn, and transient depression; while other changes, such as stress suffered on a day-to-day basis, are more devastating and permanent.

In study after study one can see that some individuals escape tremendous amounts of stress placed upon them; while other individuals cannot tolerate objectively mild forms of stress. The general finding to date is that stress is a precursor to disease and not a causative entity in and of itself (Gentry and Williams, Jr., 1975).

This paper deals with the transient effects of stress in a particular area that is generally perceived as stressful. The emphasis of this paper will be on individual perceptions of physiological changes occurring when the human organism encounters stress.

Statement of Problem

There is a strong amount of stress related to working in a Trauma Emergency Center, thus the staff must be able to work through the various stressors. There is a need to know the physiological effects and causes of stress as a precursor to disease in order to

effectively identify stressors and to utilize the various approaches to dealing with stress.

Purpose of the Study

The purpose of this study was to identify stressors and their perceived effects on the nursing staff in a Trauma Emergency Center.

Research Questions

The specific questions which this study sought to answer were:

1. What are the perceived stressors in the Trauma Emergency Center?
2. What physiological symptoms of stress can be identified by the nursing staff?
3. Do the numbers of stressors decrease as Trauma Center experience increases?

Scope of the Study

The scope of this study was:

1. The study dealt only with licensed nursing personnel in the Trauma Emergency Center, St. Francis Hospital, Tulsa, Oklahoma.
2. The study did not include Senior Nurse Assistants, Technical Nurses, or nurses in supervisory positions.

Limitations of the Study

The study was limited to one hospital. Due to the size of the Trauma Emergency Center, the patient load, number of staff, and purpose in general, a cross comparison study was not possible for this researcher.

Assumptions

It was assumed that all the subjects, although individualized in their responses, would experience more stress related to nursing functions in the critical care areas of cardiac, medical, and trauma emergencies.

Definitions

The following definitions are provided to clarify terms used in this study:

Adaptive Behavior - Any behavior that helps an individual interact more effectively with his or her environment.

Adaptation Syndrome - Profound physiological changes in the endocrine and other organ systems resultant from stress.

Cope - The way an individual interacts with the environment for the purpose of accomplishing something.

Critical Care Nursing Functions - Highly specialized nursing skills, taught by in-service, skills lab, and on-the-job training. These skills require "hand-on" nursing and do not allow (by the nature of the applied skill) mistakes.

Feeling State - An affective, or emotional state, the primary dimension of which is pleasantness-unpleasantness.

Physiological Stress - A measurable index of the effects of stress - the measurement accomplished by amounts of hormone excreted by the body after onset of stress producing symptomologies such as an increase in pulse, blood pressure or respirations.

Stress - Anything producing great emotion - a state of strain either emotional or physical.

Trauma Emergency Center (TEC) - A facility specific for the treatment of major trauma on a 24 hour basis. This Center contains 16,000 square feet and includes 30 examining rooms, two X-Ray rooms, and a mini-operating suite. It has a full time staff of 12 physicians and has a call list which includes all the specialities. The Center has at its disposal two air ambulances and one intensive care neonatal van. The Center has an ancillary staff of 60.

Organization of Study

Chapter I introduces the study, presenting the problem and the purpose along with the objectives, scope, limitations, assumptions, and definition of terminology. Chapter II serves as a review of related literature concerning the evolution of the study of stress as a science. Included in the review of the literature is information on the importance of physiologically discharging the effects of stress. Conclusions and recommendations are thusly supported by the literature. Chapter III discusses the procedures utilized, including the creation of the instrument, selection of the sample, and collection and analysis of data. In Chapter IV, the responses to each question in the survey are discussed. Chapter V summarizes the study, makes conclusions, and provides recommendations for future practices and future studies.

CHAPTER II

A REVIEW OF RELATED LITERATURE

The review of literature was conducted in order to explain the physiology of stress and thereby answer the proposed need for this particular research: the physiological basis for effects induced by stress.

In this chapter, the review of literature was organized into the following categories:

1. From Darwin
2. History of Stress Theories
3. Adaptation
 - a. The General Adaptation Syndrome
 - b. Catatoxins and Syntoxins
4. Stress without Distress.

From Darwin

Maintenance of the species is assured through the genetic code - which uses only a few letters much like the alphabet. Man is made from the same chemical alphabet as the microbe; the order of the alphabet makes the difference. Nothing can be done to alter the genetic code. It is the genetic makeup that predisposes mankind to many illnesses (Selye, 1975).

So, it is a given fact that the genetic code cannot be altered.

The secret to survival of the species, according to Darwin, was the ability to adapt. Survival of the "fittest" does not mean survival of the strongest; it means survival of the most adaptable. Darwin was said to be most bitter about the misuse of his most famous statement (Smith, 1976).

According to Darwin, primitive man's survival was directly related to the body's response to stress. When faced with a threatening stressor, the mid brain caused, via neurological communication, the adrenal gland to secrete the hormone called norepinephrine which is commonly called adrenalin. This powerful stimulant raced through the body via the blood stream giving the message to the body to fight or flee. The message was relatively simple and was given out for all potentially dangerous encounters. The almost continuous message of fight or flee served as the first simple adaptation tool (Selye, 1956). The option of fight or flight first used by primitive man still exists and is under the control of the autonomic nervous system over which the organism has no conscious control. Nerve cells conduct impulses and consciousness is governed by the summation of the discharge of the nerve endings in the nervous system. Responses are governed by how fast or how slow these impulses come in and go out (Cross, 1980). Eons ago organisms survived by development of a rudimentary form of neurological communication. According to Simon-ton (1978), mankind is analogous to even the simplest of living organisms spending much of his life either avoiding or approaching the environment.

"Through god, nature, evolution, or whatever one chooses to believe, was added the neocortex to serve the unique human condition" (Selye, 1956, p. 5). The cortex filters responses giving the human organism the power of reasoning. The cortex is the cognitive part of the brain. It controls memory, comprehension, perception of environment, and the use of memory in analysis of past and integration of new situations. According to Selye (1956), if too many messages come into the cortex at once, man goes into sensory overload and cannot reason.

History of Stress Theories

As early as 1897 Osler (cited in Genry and Williams, 1975) wrote:

I believe that the high pressure at which men live and the habit of working the machine to its maximum capacity are responsible for arterial degeneration rather than excesses in eating or drinking (p. 5).

The study of stress has its empirical roots in the field of psychology beginning with the behaviorist Pavlov. It has been in the last 40 years that the medical community has had the sophisticated laboratory equipment to test hypotheses born years before their time (Dubos, 1978).

The medical community has been slow to pursue this thought because of its physical orientation to illness (Selye, 1975). In general, in the past, the medical community took the view that all ailments were produced by very specific entities such as bacteria and virus; thus, although stress played an emotional part in the well being of the organism, it did not play a physiological role (Simonton and Simonton, 1978). It has been through research of genetics, neurophysiology, and endocrinology that stress as a precursor to illness has gained

real validity in the medical world (Selye, 1975).

Homeostasis is the coordinated physical effort which keeps the body on an even keel, a steady course. The word comes from the Greek word *homiois*, meaning similar and the Greek word *stasis*, meaning position - similar position. According to Selye, Dubos, and Levi, homeostasis is translated as "staying power". The human organism cannot go too far from the norm of its cells and remain healthy. Medically an aberrant cell is a potentially malignant one (Simonton and Simonton, 1978).

Scientists such as Selye, Dubos, Levi, Holmes, Rahe, and Arthur have long sought to discover the element that keeps the body in a state of homeostasis. It is through their work and research that studies of stress as a science have evolved.

Hans Selye, M. D., Professor and Director of the Institute of Experimental Medicine and Surgery in the University of Montreal, is best known for his work on the body's physiological response to stress, the major subject of his almost 40 years of laboratory research. Tofler (cited in Selye, 1975) refers to Selye as the world's foremost authority on stress.

Selye began his research on endocrinology in 1936, testing the effects of glandular secretions injected to produce immediate physiological effects on animals. Through this beginning research Selye began to hypothesize about man's ability to release these secretions himself when stressed and without any disease process ongoing. Selye does not necessarily take the negative approach to stress, rather he refers to stress as the spice of life (Selye, 1956).

Selye (1975) cited that much progress has been made toward

unlocking the key to hormonal mediation of stress reactions, stating:

It is now generally recognized that the emergency discharge of adrenalin represents only one aspect of the acute phase of the initial alarm reaction to stressors at least equally important in the maintenance of homeostasis - the body's stability - is the hypothalamus - pituitary - adrenocortical axis, which participates in the development of many disease phenomena as well (p. 35).

The hypothalamus is the portion of the brain that lies below the thalamus and forms part of the lateral walls and floor of the third ventricle. The functions of the hypothalamus can be summarized by listing what it controls both directly and indirectly:

1. The autonomic nervous control - regulation of parasympathetic and sympathetic activities,
2. Cardiovascular regulations - stimulation causes a rise in blood pressure and an increase in heart rate,
3. Regulation of temperature,
4. Regulation of food intake,
5. Regulation of water balance,
6. Regulation of gastrointestinal activity,
7. Sleeping and waking activity,
8. Emotions.

If stress causes the hypothalamus to act, as it does, then the implications of stress on the body can be studied.

The axis of the hypothalamus is directly affected by stress. In reaction to stress, according to Gentry and Williams, (1975), the autonomic nervous system works this way: The stressor or stressors excite the hypothalamus which in turn stimulates the pituitary gland to discharge the adrenocorticotrophic hormone (ACTH) thus releasing

ACTH into the body via the blood stream. The ACTH in the blood stream induces the external, cortical portion of the adrenal gland (found on both kidneys) to secrete hormones called corticoids. A typical reaction to stress and too high a corticoid level in the blood stream is the peptic ulcer.

The above reactions to the hypothalamus axis are nonspecific stressor effects that have been postulated for over a century. There is increasing evidence that repeated stimulation of ACTH and adrenalin, leading to a continuing adaptive reaction by the body, can be serious (Simonton and Simonton, 1978). Such excessive activation of the endocrine system leads to sometimes irreversible damage to the body. Dubos, author of Man Adapting, supports Selye's theories through his research on competitive situations and the body's reaction to such environmental induced hormonal changes. Dubos contends that contact with an emotional situation brings about a stimulation of the whole endocrine system. Dubos refers to this as an "overshooting" of stimulation and cites, in his vast research, physiological consequences that last throughout the lifetime of all of the organs.

Further support of Selye and Dubos was offered by Levi (1967), Director of the Clinical Stress Laboratory at the Karolinsk Hospital in Sweden. Levi, through empirical research, verified that minute changes in the emotional milieu and interpersonal relationships can produce dramatic changes in body chemistry. Levi demonstrated that stress could be measured by the amount of adrenalin and noradrenalin (of the corticosteroid and catecholine family) found in the body. Levi's empirical proof lay in the levels of these hormones in the blood stream and urine of subjects used in his numerous studies.

Levi frequently used films to generate emotion; supporting the belief that mere mention of something perceived as a stressor can bring about release of chemical agents.

In the discipline of psychology, the studies of Holmes, Rahe, and Arthur (1975) demonstrated that on-going research in endocrinology and experimental psychology are compatible with research on "life changes". It was their belief that sociological change could not be brought about without marked biological change in the human race. It was through the longitudinal studies constructed and conducted by Holmes, Rahe, and Arthur that stressors as precursors to definitive disease entities have been given validity as cited in Gentry (1975).

Adaptation

The main thrust of stress research to date has been on how a stressor can be specific and the body's adaptation to that particular stressor specific. Selye (1956) refers to the individuality of disease as being controlled by conditioning factors in the body that can selectively enhance or inhibit one or the other stress effects.

This conditioning can either be internal (through genetic predisposition, sex, or age), or external through environmental conditions and dietary habits. According to Selye (1956), Dubos (1965), and Levi (1967), such conditioning factors, which determine sensitivity, can turn a normally well-tolerated degree of stress into a potential pathogen and cause "diseases of adaptation" (Dubos, 1965, p. 60).

Selye (1975) further writes that the body is analogous to a chain, the weakest link breaks down under stress although all parts are equally exposed to it. Thus the disease of adaptation "selectively"

affects the predisposed body area or organ.

According to Dubos (1965), the human organism is highly individualized in respect to stress. Although all stressors have some specific effects they do not elicit the same physiological action and response. The response or responses depend upon the internal and external condition factors in a given organism.

The General Adaptation Syndrome

Much depends on our ability to adapt to stress. Selye (1975) called this the General Adaptation Syndrome (G.A.S.), or the biological stress syndrome. The General Adaptation Syndrome has three states:

1. The alarm reaction,
2. The state of resistance,
3. The state of exhaustion.

The General Adaptation Syndrome, is the personal adaptation energy given to man in a finite amount (Selye, 1975). Selye states that man can use his adaptability recklessly by over-stressing the body, or that man can make this resource last long by using it wisely and knowingly with the realization of certain limitations.

It is thought that every disease causes a certain amount of stress on the body because it calls for adaptation; likewise all stress plays some role in the development of every disease, its effects being added to the specific changes characteristic of the disease in question. When the aggressor is thought to be dangerous, the body must increase its defense mechanisms (Selye, 1956).

Selye's belief was that the message to increase the defense

mechanisms of the body causes the release of "catatoxic substances" which carry the chemical order to attack the invader. The body discharges adrenalin-type hormones in preparation for physiological fight on some level be it an internal or external invader of the hemostatic state and balance of health. In the case of flight the chemicals produced or induced by stress are discharged physically through overt and physical action. With the state of reasoning, the body is often left with the hormonal chemicals in the body and since they are not discharged they must be absorbed or excreted before actual physical damage can occur, i.e. adrenalin left stagnate in the stomach and duodenum burns tiny holes which are classified as "peptic ulcers". Likewise adrenalin racing through the blood stream, pumped by the synergistic heart, can lead to cardiac arrythmias such as tachycardia (rapid heart) or premature ventricular arrythmias (often times fatal); vascular changes leading to hypertension or renal problems; generalized diaphoresis (perspiration) and weakness; vascular headaches; and at least a feeling of "panic" (Gentry and Williams, 1975).

Except in cases of dire emergencies where the body needs great strength, it is by far best to balance or maintain homeostasis in the body by balancing the catatoxic and syntoxic responses (Selye, 1975). The chemical messenger to remain calm is referred to by Selye as the syntoxic stimuli whereby the body is more or less tranquilized into passive tolerance. Levi (1967) elaborates that the body can produce its own calming affect and thereby negate incoming stressors. Handled in a positive way incoming potential stressors are first met then dealt with in the following manner:

1. Stress encounters the individual,

2. Accurate perception and appraisal,
3. Positive conditioning factors (everything but genetic factors within possible reach),
4. Adaptive coping,
5. Homeostasis - A state of well being.

As pointed out in the literature there are three variables that can alter the outcome of potentially stress-producing episodes. To deal with stressors, the individual must 1) be able to identify a stressor or stress producing episodes; 2) use positive conditioning factors; 3) attempt possible re-conditioning by using coping mechanisms.

According to Morris (1979), when patients can modify their adjustment to stress, the patient is more accepting of help in the alleviation and control of diseases that are stress induced. One such helping technique is relaxation. The relaxation technique advocated by Morris is an adaptation of Paul's, as cited in Smith's "Reducing the Negative Effects of Stress" (1979), technique. The "exercise" is conducted by instructing the individual first to tense each group of muscles for ten seconds then to relax them for sixty seconds, going from head to toe. The exercise is explained as a form of mental hygiene that provides the individual with a method of coping with stress (Smith and Selye, 1979).

Summary

The laws of nature dictate that man must learn to live with and adapt to stress. The elimination of all stress is impossible. "Complete absence of stress is death" (Selye, 1975, p.29).

History and science point out that man has evolved from the basic

"fight or flight" method of coping with stress into the age of cognition and reasoning. It is necessary for the human organism to use reasoning and physical action to rid the body of the chemical effects of stress. If no way is found, and if the body constantly secretes chemicals in reaction to every event perceived as a stressor, the body is susceptible to stress induced disease. As the literature indicates, the effects of stress are cumulative.

The experiments and research carried out by Selye, Dubos, Levi, and others has helped to erase the former theories of stress induced symptomology as being strictly psychological in nature. These researchers have led the way to positive thinking in dealing with the effects of stress (Gross, 1980). The knowledge that the body's reaction to stress is chemical as well as mental is more understandable than the former "mysteries of the mind" rationale (Selye, 1956). The research offers scientific evidence instead of myths and assumptions.

There are many approaches in dealing with stress ranging from the medicinal approach to methods of relaxation through training and through simple exercise. The impetus of all approaches is that there are positive ways of alleviating if not eliminating the effects of stress.

In order to utilize the various approaches in dealing with stress there must be a basic understanding of the mechanism of stress as a precursor to disease. Therefore, there is a need to know and understand the basic physiology of stress.

CHAPTER III

METHODOLOGY

This chapter outlines the procedures used to develop and implement the questionnaires used to obtain information regarding stress as it affects licensed nursing personnel in St. Francis Trauma Emergency Center. The procedures used are presented as follows:

1. Development of the questionnaire,
2. Description and selection of subjects,
3. Collection of data,
4. Analysis of data.

Development of the Questionnaire

The questionnaire was developed in three sections (See Appendix A). Each section is described as follows: Section One: the first section listed 30 nursing functions performed in the Trauma Emergency Center. The questions were taken from the orientation packet for new nursing personnel; the job description sheets for both Registered Nurses and Licensed Practical Nurses (each performing identical nursing duties); and, five questions were taken from the Nursing Evaluation for Merit Raise sheet regarding interpersonal skills also considered as nursing functions. Due to the vast number of nursing functions performed in the Center, only critical care nursing functions were listed in keeping with the purpose of the paper and the purpose of the facility in general. Care

was taken to stagger the questions in an attempt to prevent the grouping or clumping of question and answers by area rather than by specifics. For example, nursing functions involving the care of the critical cardiac patient were not listed concurrently (See Appendix B for an explanation of terminology used in the stress scale). Section Two: the second section asked the subject to write how long he or she had worked in the Trauma Emergency Center. Section Three: the third section was a list comprised of eight physiological indices of stress. These statements were taken from research of the literature. The eight selected were listed as possible symptoms of stress over-load in all samples sources.

A field test was obtained by administering the questionnaire to ten Intensive Care Unit nurses. The Intensive Care nurses perform similar critical care nursing duties and work in a probably high stress area.

Description and Selection of Subjects

The population selected for the study included all Licensed nurses who work in the Trauma Emergency Center on a full-time, part-time, and full-time emergency call basis. The population consisted of 26 Registered Nurses and four Licensed Practical Nurses all performing identical nursing functions. Licensed Practical Nurses, by job description, are limited to nursing skills only and do not function in the role of Team Leader, Nurse in Charge of Trauma, or Nurse in Charge of Triage. The leadership positions are rotated through the Registered Nurse staff on a day-to-day basis. The Nurse in Charge of Trauma is a leadership role, also rotated on a daily basis, and the nursing personnel have the "option" to accept or decline rotation

through the Charge Nurse position. In order to give the study more validity, the questionnaire was not given on a day that a nurse was performing a Charge role; thus eliminating leadership as a variable.

Collection of Data

The data were gathered in the hospital at the end of the respective subjects' completion of an eight hour work day. The data were gathered over a one-month period and only on Fridays, Saturdays and Sundays from May 13, 1983 to May 28, 1983. These respective days by the Trauma Emergency Centers 1982 Census Report have the highest patient loads. The data were gathered by this researcher alone.

It was decided that a quiet area would be important thus the subjects would be able to answer the questionnaire without distraction and in a short amount of time. A closed room, the physicians' conference room, was selected for its proximity to the unit, its atmosphere, and its availability.

The subjects were asked to fill out the questionnaire with no discussion and to turn it in immediately. The subjects were informed that the information collected was for research that could possibly benefit the unit.

Analysis of Data

To analyze the data from the questionnaire, the responses to the Stress Scale were compiled and organized according to demographic characteristics: overall stress ratings using frequency and mean; reported indices of stress; and the relation of reported stressor to years of Trauma Center experience. The information was presented in table format.

CHAPTER IV

PRESENTATION OF FINDINGS

The purpose of this study was to identify stressors and their perceived effects on the nursing staff in a Trauma Emergency Center. This chapter presents the findings of the study in this order:

1. Demography of the Population,
2. Responses to Possible Stressors,
3. Responses to the Indices of Stress,
4. Years of Trauma Emergency Center Experience.

Demography of the Population

The data in Table I show the demography of the study area. The 30 subjects are identified according to sex, number of months or years of Trauma Emergency Center experiences, and by the shift worked.

The data in Table I show that 29 females and one male participated in the study. Working experience in the Trauma Emergency Center ranged from four months to 14 years. Of the participants, seven represented the 7:00 a.m. to 3:00 p.m. shift; 16 represented the 3:00 p.m. to 11:00 p.m. shift; and seven represented the 11:00 p.m. to 7:00 a.m. shift.

Responses to Possible Stressors

Data reflected in Table II indicate the frequency and overall mean responses of the 30 subjects to the list of 30 possible stressors.

TABLE I
DEMOGRAPHIC CHARACTERISTICS

Characteristic	N	Percent
Sex		
Female	29	99
Male	1	1
Years Worked in Trauma Center		
0-1	9	30
1-2	6	20
2-4	8	27
4-14	7	23
Shift Worked		
7 a.m. - 3 p.m.	7	23
3 p.m. - 11 p.m.	16	53
11 p.m. - 7 a.m.	7	23

TABLE II
 FREQUENCY AND OVERALL MEAN RESPONSES
 TO STRESSOR ITEMS

Stressor Items	Stressor Levels				X N=30
	Extensive N	Moderate N	Mild N	Calm N	
1. Gastric Lavage	2	1	14	13	1.73
2. 3' Heart Block	7	18	4	1	3.03
3. Open Fracture	1	4	2	15	1.70
4. Bereaved Family	3	16	10	1	2.70
5. Chest Tubes	1	11	15	3	2.33
6. Peritoneal Tap	0	4	8	18	1.53
7. Abused Child	8	9	10	3	2.73
8. Intubation	3	8	13	6	2.26
9. Psychiatric Patient	4	12	12	2	2.60
10. G.I. Lavage	2	10	12	6	2.26
11. Rape Protocol *	0	10	10	9	1.96
12. M.A.S.T. Pants	4	8	13	5	2.36
13. CPR	12	9	8	1	3.06
14. Cancer Patient	3	4	15	8	2.06
15. Asthmatic child	1	8	16	4	2.20
16. Streptokinase	3	11	14	2	2.50
17. Septic Shock	2	16	8	4	2.53
18. Acute M.I.	8	12	9	1	2.90
19. Head Injury	4	13	11	2	2.63
20. Ventilator Patient	0	11	15	4	2.23
21. Meningitis Child	3	8	13	6	2.26
22. Private Physician	1	1	10	18	1.50
23. Trauma Code	11	10	8	1	3.03
24. Nurse Interaction	3	8	15	4	2.33
25. Seizure Patient	1	11	13	5	2.26
26. Nipride Patient	4	11	12	3	2.53
27. Documenting Orders	0	1	3	26	1.16
28. IV's for Children	10	3	9	8	2.50
29. Trauma Assessment	1	13	11	5	2.33
30. SCAN	7	9	10	4	2.63

*N=29 - N/A for male nurses.

The following data are presented according to frequency and mean response: Caring for patients in third degree heart block (3.03); initiating cardio pulmonary resuscitation (CPR) (3.06), assisting in a trauma Code Blue (3.03), care of the patient suffering an acute M.I. (heart attack) (2.9), care of the abused child, (2.73) and care of the bereaved family (2.70), initiating the SCAN of a child (2.63) (legal procedure to medically assess for child abuse), were perceived as the most stressful of the 30 given items. Documentation of orders given by physicians (1.16), and interaction with the private physician (1.5) were ranked lowest on the Stress Scale.

Responses to the Indices of Stress

Responses to the eight indices of stress are summarized in Table III. The data are listed by frequency of response and mean collective response. According to average responses, the following eight indices of stress are presented from most to least frequently encountered: experience a feeling of mental and/or physical exhaustion (2.43); feel agitated or hyper (2.03); feel that I cannot "let down" (1.86); have a headache (1.50); have GI (gastrointestinal disturbances) (1.46); experience tachycardia (rapid heart rate) (1.33); feel that I just have to get away (1.26) and leave in or near tears (1.20).

Years of Trauma Emergency Center Experience

Data in Table IV indicate that the perceived amount of stress encountered while performing nursing tasks decreases as nursing time in the Trauma Emergency Center increases. Responses to 23 out of 30 stressor questions indicated that as nursing experience in the Trauma

TABLE III
 REPORTED FREQUENCY OF PERCEIVED PHYSIOLOGICAL
 SYMPTOMS TO STRESS

Indices of Stress	Frequency of Occurrence			\bar{X} N=30
	Frequently-3 N	Occasionally-2 N	Seldom-1 N	
1. Headache	8	5	17	1.50
2. Cannot let down	7	12	11	1.86
3. GI Disturbances	3	8	19	1.46
4. Leave in Tears	0	6	24	1.20
5. Tachycardia	1	8	21	1.33
6. Exhaustion	13	17	0	2.43
7. Feel Agitated	8	16	6	2.03
8. Have to Get Away	3	22	5	1.26

TABLE IV
COMPARISON OF MEAN RESPONSES TO STRESSORS
BY YEARS OF EXPERIENCE

Potential Stressors	0-1 \bar{X} years N=9	2 \bar{X} years N=6	2-4 \bar{X} years N=8	1-14 \bar{X} years N=7
1. Gastric Lavage	2.11	2.00	1.63	1.57
2. 3° Heart Block	3.56	3.33	2.63	2.71
3. Open Fracture	2.33	1.50	1.63	1.43
4. Bereaved Family	2.78	3.33	2.50	3.00
5. Chest Tubes	2.56	2.50	2.13	2.00
6. Peritoneal Tap	2.00	1.22	1.13	1.57
7. Abused Child	2.78	2.83	2.50	2.86
8. Intubation	2.22	3.00	1.88	1.86
9. Psychiatric Patient	2.56	3.17	2.63	2.71
10. G.I. Gavage	2.33	2.50	2.00	2.43
11. Rape Protocol	2.44	1.80	1.75	2.43
12. M.A.S.T. Pants	3.22	2.67	1.63	2.43
13. C.P.R.	3.56	3.17	3.13	2.57
14. Cancer Patient	2.44	2.00	2.25	2.14
15. Asthmatic Child	2.11	2.33	2.25	2.43
16. Streptokinase	2.78	2.83	2.13	2.43
17. Spetic Chock	3.00	2.50	2.63	2.00
18. Acute M.I.	3.66	3.50	2.63	2.00
19. Head Injury	3.22	3.17	2.13	2.14
20. Ventilator Patient	2.22	2.67	1.75	2.57
21. Meningitis Child	2.44	2.17	2.00	2.14
22. Private Physician	2.22	1.83	1.13	1.29
23. Trauma Code	3.44	3.50	2.88	2.57
24. Nurse Interaction	2.33	2.33	2.25	2.14
25. Seizure Patient	2.22	2.67	1.75	2.00
26. Nipride Patient	2.78	2.83	2.38	2.43
27. Documenting Orders	1.56	1.50	1.00	1.00
28. I.V.'s for Children	2.33	3.33	1.63	2.71
29. Trauma Assessment	2.67	2.33	1.75	2.57
30. SCAN	3.11	2.67	2.00	2.57

Emergency Center increases tasks become perceived as less stressful. The seven items that became more stressful as experience increased were care of the bereaved family, (the range of means was from a low of 2.78 to a high of 3.00), care of the abused child (2.78 to 2.86), care of the psychiatric patient (2.56 to 2.71), performing a G.I. (gastrointestinal) lavage (2.33 to 2.43), care of the asthmatic child (2.11 to 2.43), preparing IV's for children (2.33 to 2.71), and care of the patient on the ventilator (2.22 to 2.51). One possibility for these atypical responses would be as experience increases sensitivity and knowledge of potential problems increases.

The reported frequency of perceived physiological symptoms by years of experience are presented in Table V. This table indicates that the least experienced nurses (0-1 years) experience symptomologies of stress more frequently than the nurses who have worked in the Trauma Center for the longest period of time (4.14 years). In the zero to one year bracket (N=9), the indices of stress were broken down by cumulative frequency as follows: 16 responses to frequently experience symptomologies of stress, 23 responses to occasionally experience the symptomologies of stress, and 25 responses seldom experience the symptomologies of stress. In the most experienced bracket (4-14 years) there were eight responses to frequently experience the symptomologies of stress, 27 occasionally, and 29 responses to seldom experience the symptomologies of stress.

The one and two years of experience group showed a drop in "frequently" reported indices of stress. Research of this group shows that three out of the six respondents transferred to the Trauma Center from Intensive Care Units, a variable not under study.

TABLE V
 REPORTED FREQUENCY OF PERCEIVED PHYSIOLOGICAL
 SYMPTOMS BY YEARS OF EXPERIENCE

Years of Experience	Frequently N	Occasionally N	Seldom N
0 - 1 years N=9	16*	23	25
1 - 2 years N=6	7	22	19
2 - 4 years N=7	9	21	26
4 - 14 years N=8	8	27	29

*Numbers represent more than one representative per person.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter summarizes and discusses the results of the study. Presented first is a summary of the study, followed by conclusions based on these findings. Recommendations for improvement of present practice and future research conclude this chapter.

Summary

The purpose of this study was to identify stressors and their perceived effects on the nursing staff in Saint Francis Trauma Emergency Center. It was thought that critical care nursing functions would indicate stress and that the staff would, while performing critical care duties, experience one or more of eight indices or symptomologies of stress. Care was taken to explain, via research of the literature, the physiological basis for stress to serve the purpose of the study.

The questionnaire method was used to obtain information from 30 Registered and Licensed Practical Nurses identified as eligible for the study at Saint Francis Trauma Emergency Center. The three-part instrument was designed to obtain information on (1) perceived stressors in the Trauma Emergency Center, (2) possible physiological symptoms of stress identified by the staff while working in the Center, and (3) amount of time worked in the Center as a possible variable of stress.

Conclusions

1. The nurses in the Trauma Center could identify perceived stressors from a list of critical care nursing functions.
2. The least experienced Trauma Center nurses experienced the highest average stress level of the subjects studied; while the most experienced nurses in the Trauma Center received the lowest mean scores.
3. All of the nurses taking part in the study experienced at least one of the eight indices of stress "frequently" after the end of an eight-hour shift.
4. The least experienced nurses in the Trauma Emergency Center experienced the physiological symptoms of stress more often than did the most experienced nurses in the Center.

Recommendations for Practice

The following recommendations include activities that would directly benefit the nursing personnel in the Trauma Center.

1. Stress workshops should be conducted for personnel in the Trauma Emergency Center with emphasis on understanding the physiology of stress and management and/or discharge of stress. The hospital has a stress management class for cardiac patients and for the hospital Outreach Program, an adaptation of this program could be utilized for the Trauma Center staff.
2. It is standard hospital policy for each nursing department to be allotted 30 minutes of time each shift for "report," during which

time each patient is discussed and cursory care plans reported. These 30 minutes allotted during each shift for the giving and receiving of report could be utilized in a different way. This time could be spent at the end of each shift so that the shift going off duty could meet and discuss the events of the day, individual feelings, collective happenings, and emotional events in order to discharge feelings before leaving for home.

3. More critical care skill updating would be beneficial for the Department.

4. A Skills Lab--actual hands on activities--would be appropriate for the inexperienced nurses as well as for updating skills of the more experienced staff.

Recommendations for Research

Further studies could be conducted to determine the following:

1. Number of months or years of nursing experience each nurse had prior to working in the Trauma Center and in what area of concentration.
2. The age of the participants to determine if age along could be a variable.
3. How the individual nurse feels about his or her training and/or preparation for joining the unit.
4. Personal feelings regarding stress level and stress management in the Trauma Center, by interview.
5. Comparison of work by shift--to determine if one shift is more stressful than the other.
6. Whether nurses with children at home suffer more or less stress than nurses without families.

7. The cumulative effects of years of experience in a stressful environment.

8. How nurses who have worked in the Trauma Center longer than four years feel about themselves.

9. Why nurses leave the Trauma Center.

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APPENDIXES

APPENDIX A

STRESS SCALE

The form below lists nursing functions performed in the Trauma Emergency Center. Please answer all questions as they relate to you personally. The form is designed to measure "feeling state". Each question could be prefaced by "When I perform this function I feel - 1. Extremely stressed; 2. Moderately stressed; 3. Mildly stressed; 4. Calm. The word "stress" is defined as "anything that produces great emotion". You are not asked to sign the questionnaire, thus anonymity is assured for those who prefer it. Responses should be checked under the headings in the appropriate box.

When I perform this function I feel:	Extremely Stressed	Moderately Stressed	Mildly Stressed	Calm
1. Gastric lavage of the over-dose patient.	()	()	()	()
2. Care of the patient in 3rd degree block.	()	()	()	()
3. Care of the patient with an open compound fracture.	()	()	()	()
4. Care of the bereaved family.	()	()	()	()
5. Assisting the physician with the insertion of chest tubes.	()	()	()	()
6. Assisting with a peritoneal tap.	()	()	()	()
7. Care of the abused child.	()	()	()	()
8. Assisting the physician with intubation of a patient.	()	()	()	()
9. Care of the agitated psychiatric patient.	()	()	()	()
10. Lavage and care of the patient with an acute GI bleed.	()	()	()	()
11. GYN exam using the rape protocol.	()	()	()	()
12. Placement and inflation of the M.A.S.T. pants.	()	()	()	()
13. Initiating CPR.	()	()	()	()
14. Care of the terminally ill cancer patient.	()	()	()	()
15. Management of the acute asthmatic.	()	()	()	()
16. Preparation of the patient for streptokinase.	()	()	()	()
17. Care of the patient in septic shock.	()	()	()	()
18. Care of the patient suffering an acute M.I.	()	()	()	()
19. Care of the patient with a severe head injury.	()	()	()	()
20. Management of the patient on the ventilator.	()	()	()	()
21. Care of the child with meningitis.	()	()	()	()
22. Interaction with the private physician.	()	()	()	()
23. Assisting with the trauma Code Blue.	()	()	()	()
24. Interaction with fellow nurses in a critical situation.	()	()	()	()
25. Care of the patient in seizure.	()	()	()	()

When I perform this function i feel:	<u>EXTREMELY STRESSED</u>	<u>MODERATELY STRESSED</u>	<u>MILDLY STRESSED</u>	<u>CALM</u>
26. Management of the patient on Nipride	()	()	()	()
27. Documentation of orders from private physicians.	()	()	()	()
28. Administering emergency medication and preparation of IV Gtts for children.	()	()	()	()
29. Assessment of the trauma patient.	()	()	()	()
30. Initiating (without physician's approval) SCAN of a child.	()	()	()	()

INDICES OF STRESS
SECTION II

The questionnaire below lists several physiological disorders. You are requested to answer this questionnaire as it relates to you personally. Each question could be prefaced by "At the end of the working day I" - 1. Frequently. 2. Occasionally. 3. Seldom. No signature is required.

"At the the end of the working day I"	<u>FREQUENTLY</u>	<u>OCCASIONALLY</u>	<u>SELDOM</u>
1. Have a headache.	()	()	()
2. Feel that I cannot "let down".	()	()	()
3. Have GI disturbances.	()	()	()
4. Leave in - or near tears.	()	()	()
5. Experience tachycardia.	()	()	()
6. Experience a feeling of mental and physical exhaustion.	()	()	()
7. Feel agitated or hyper.	()	()	()
8. Feel that I just have to get away - unable to cope with the environment any longer	()	()	()

If you experience any other physiological symptoms after working in the T.E.C. please identify - and respond to the requency of occurrence. _____

SECTION III

I have worked in this Center _____ months _____ years

Shift presently working: _____

APPENDIX B

EXPLANATION OF TERMINOLOGY USED

IN THE STRESS SCALE

1. Gastric Lavage - Nursing function. Insertion of a large hollow tube through the mouth into the stomach to "pump" out gastric contents, used in comatose patients who have taken a poison, etc.
2. 3° Heart Block - Care of patient in 3° block. Natural pacemaker is not functioning, the heart is not pumping effectively, patient needs an immediate man-made pacemaker or he will die.
3. Open Fracture - Broken bone protruding through the skin, nurse splints the limb.
4. Bereaved Family - Family has to be told that a loved one has died. Many times a nursing function.
5. Chest Tubes - Assisting physician. Tubes inserted into the chest cavity to drain blood or to reinflate the lung.
6. Peritoneal Tap - Assisting physician. Incision is made into a persons peritoneum. The nurse runs 1,000 ml of saline into cavity and drains it out.
7. Abused Child - Care of infant or child who has been physically abused (by beating or sexual molestation).
8. Intubation - Assisting in the insertion of a tube into the bronchus to breath for the patient.
9. Psychiatric Patient - History taking and care of a decompensated psychotic person.
10. GI Lavage - The nurse puts a tube through a persons nose into his stomach. Instills iced saline and pulls it out.
11. Rape Protocol - Assisting in a rape exam--extra tedious, emotional, involving many legalities
12. M.A.S.T. Pants - Nursing function to put on and inflate pressure pants (resembling a large blood pressure cuff) to literally squeeze blood from the lower extremities and periphery to more vital organs and brain.
13. CPR - Cardio Pulmonary Resuscitation.
14. Cancer Patient - Nursing care of the terminally ill.
15. Asthmatic Child - Child in acute respiratory distress--involves intravenous site and medication.
16. Streptokinase Procedure - Preparing a patient who has suffered a heart attack to go to the Cardiac Catheterization Lab. Involves several IV sites-numerous meds--usually have ten minutes to perform tasks.

17. Septic Shock - Care of patient who has an overwhelming infection. Nursing function, intravenous (IV) therapy, massive antibiotics, catheterization, many times placement of M.A.S.T. pants, assisting in intubation.
18. Acute M.I. - Myocardial Infarction, severe heart attack.
19. Head Injury - Severely injured--usually comatose patient.
20. Ventilator Patient - Care of patient who has to be on the respirator--person cannot breath without assistance.
21. Meningitis Child - Acute illness in children. Involves assisting in spinal tap, IV's-Meds--nurse is at risk for the disease.
22. Private Physician - Assisting physician not employed by the Trauma Center.
23. Trauma Code - Resuscitation effort on an accident victim - in an attempt to restart the heart (extremely high tension).
24. Nurse interaction - working as a "team."
25. Seizure Patient - Nursing care of patient in status epilepticus--constant seizure.
26. Nipride Patient - Nipride is a potentially lethal drug (containing cyanide). It is used to bring dangerously high blood pressure down, it is the nursing function to start IV, Nipride, figure the dose by kilogram weight titrate the drug, and monitor blood pressure every two to five minutes.
27. Documenting Orders - Responsibility for signing and initiating phone orders from a physician.
28. IV's for Children - Difficult to "figure" dosages, nurses in the Trauma Emergency Center usually works with adults.
29. Trauma Assessment - Assessing accident victims and "triaging" them for immediate care--or assessing that they do not need "immediate" care.
30. SCAN - Nurse goes against physician and calls for a special team to assess an infant or child for child abuse--involves dealing with family (many times hostile) and often involves going to court. Involves good judgment and observation.

VITA

Sherri Eldridge Musick

Candidate for the Degree of

Master of Science

Thesis: AN ANALYSIS OF THE PERCEIVED PHYSIOLOGICAL EFFECTS OF THE
STRESS OF NURSES IN SAINT FRANCIS TRAUMA EMERGENCY CENTER

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Dustin, Oklahoma, March 22, 1943, the
daughter of Wolf and Lois Eldridge.

Education: Graduated from Central High School, Tulsa, Oklahoma,
in May, 1961; received Associate Degree in Nursing from
Tulsa Junior College in May, 1977; received the Bachelor
of Science degree in Psychology from Tulsa University in
December, 1979; completed requirements for the Master of
Science degree at Oklahoma State University in December,
1983.

Professional Experience: Registered Nurse, Saint Francis Emergency
Room, June, 1977-October, 1979; Registered Nurse, Hillcrest
Intensive Care Unit, October, 1979-June, 1981; Registered
Nurse, Saint Francis Trauma Emergency Room, June, 1981 to
present.