A COMPARISON OF STRESSORS FOR NURSES AND
TECHNICIANS WORKING ON KIDNEY DIALYSIS UNITS

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Abstract

There is a prolific number of research articles postulating the origins of stress experienced by nurses employed on kidney dialysis units; yet there is little consensus as to these etiologies. Alternatively, there are very few research articles focusing on the origins of stress experienced by dialysis technicians, despite their role in the team approach to patient care. Both of these situations are exacerbated by the apparent absence of an evaluative instrument suitable for such studies.

The purpose of this study was to develop an instrument appropriate for stress related research involving dialysis nurses and technicians. In addition, the study attempted to develop a clearer understanding as to which stressors impact on nurses and technicians, and in particular, to determine whether these stressors were different for the two groups. Specifically, the study examined whether there was any significant group interaction, and whether there were any group differences in the performance of the nurses and technicians on the Sources of Stress Inventory (the measure developed for this study).

The sample consisted of 20 registered nurses and 12 technicians who were employed on kidney dialysis units in two different medical centers/hospitals in Los Angeles. These participants were administered the Sources of Stress Inventory. Statistical procedures used to analyze the data
Profile analysis indicated that overall, there was no significant group interaction and there were no significant group differences between the performance of the nurses and technicians on the Sources of Stress Inventory. The major stressors were identified and found to be similar for both groups.

Psychometric analysis on the Sources of Stress Inventory indicated that with internal consistency based on Hoyt's estimate of reliability of .93, the measure may become a viable tool for those researchers studying the origins of stress experienced by kidney dialysis nurses and technicians.
Table of Contents

Abstract ................................................................. ii
Table of Contents ....................................................... iv
List of Tables ........................................................... vii
List of Figures ........................................................... viii
Acknowledgements ....................................................... ix
Chapter 1: INTRODUCTION ........................................... 1
  Nature of the Problem .............................................. 1
  Purpose of the Study .............................................. 2
  Significance of the Study ...................................... 3
    Aspects of study related to research .................. 3
  Aspects of study related to counselling .................. 4
  Definition of Terms ........................................... 5
  Research Questions ........................................... 6
Chapter 2: LITERATURE REVIEW .................................. 7
  Introduction ................................................... 7
  Nurses: Their Evolving Role and
  and Concomitant Stressors ................................ 8
  The Role of the Nurse ...................................... 8
  Historical Views of Stressors and
  Their Impact on Nurses; a
  Psychoanalytic Approach ................................. 9
  Researchers' Evaluations of
  Historically Based Studies .......................... 17
  Alternate View of Stressors and
  Their Impact of Nurses ............................. 19
Technicians: Their Evolving Role and Concomitant Stressors.................21

The role of the Technician/Technologist...............................21

Research on Stressors Effecting Technicians............................23

Structured Interview and Questionnaire Based Studies: Nurses and Technicians..23

Summary.................................................................29

Chapter 3: METHOD.............................................................31

Design.................................................................31

Population............................................................31

Sample...............................................................31

Variables.............................................................31

Instrument..........................................................32

Data Collection.......................................................32

Research Hypotheses.....................................................32

Research Hypothesis 1..................................................32

Research Hypotheses 2..................................................33

Rationale for Research Hypotheses 1 and 2...............................33

Statistical Hypotheses..................................................33

Statistical Hypothesis 1...............................................33

Statistical Hypotheses 2...............................................33

Analysis of the Data...................................................34

Chapter 4: RESULTS.................................................................36

Psychometric Analysis..................................................36
Profile Analysis of Hypotheses 1 and 2
Results: Hypothesis 1
Results: Hypothesis 2
Summary of Results

Chapter 5: DISCUSSION
Interpretation of research hypotheses
Interpretation of Major Sources of Stress for Nurses and Technicians
Limitations of the Study
Sample limitations
Measurement limitations
Design limitations
Conclusions
Recommendations

References

APPENDIX A: Sources of Stress Inventory

APPENDIX B: Sources of Stress Inventory Test
Item Analysis
List of Tables

Table 1: Group Means on the Items of the Sources of Stress Inventory.......................37
Table 2: Within Group Means on the Items of the Sources of Stress Inventory.................41
List of Figures

Figure 1: Profile of the Mean Responses of Nurses and Technicians on the Items of the Sources of Stress Inventory ..................40
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Chapter 1

Introduction

Health care professionals employed in hospital settings have received considerable attention from stress researchers, due in part to the apparent relationship of stress to burnout. These researchers have focused on the following areas: (a) theoretical models of stress, (b) definitions of stress, (c) origins of stress, (d) effects of stress on staff, and (e) amelioration of such stress (Cronin-Stubbs, 1982; Maslach & Jackson, 1982; Vachon, 1987).

As a result of complexities inherent in stress research, and in medical and technological advances that are changing the work environment for staff, researchers have isolated specific units for study. Frequently, these units have two factors in common: (a) staff care for critically ill patients and (b) staff roles reflect medical/technical advances (Jacobson & McGrath, 1983). The kidney dialysis unit is one such unit that has received considerable attention from stress researchers, and is the subject of this thesis.

Nature of the Problem

Previous stress research on nurses and technicians working on kidney dialysis units is beset with numerous methodological problems. The following synopsis highlights four such problems: (a) Despite the team approach to patient care, of which technicians play an integral role, researchers have focused mainly on nurses to the near exclusion of technicians; (b) Many of the studies suffer from
inadequate conceptualization and operationalization of stress; (c) Principle methods favoured for gathering data have included the use of informal and unstructured interviews, informal observations of staff (a method favoured by early researchers whose interpretations reflected psychoanalytic theory), modified questionnaires from other speciality units or general questionnaires that do not address the stressors specific to a kidney dialysis unit and, (d) Analyses of results have frequently been subjective, anecdotal, and interpretative beyond the scope of the research. Unfortunately, these problems are not just confined to earlier research, but are also prevalent in more recent publications (see Chapter 2 for relevant research analyses and references).

**Purpose of the Study**

This exploratory study attempts to address three of the aforementioned shortcomings of previous research: (a) the apparent absence of a viable instrument applicable to both nurses and technicians employed on kidney dialysis units, (b) the repeated absence of advanced statistical analyses and (c) the general omission of technicians as subjects.

Addressing the first two related shortcomings invoked a three stage process. Initially, an instrument was designed specifically for stress related research involving kidney dialysis nurses and technicians (see Chapter 3). The instrument was then administered to participants of this study. Finally, statistical analysis of the data and psychometric analysis of the instrument were conducted.
The third shortcoming was addressed by including in this study both technicians and nurses employed on kidney dialysis units. The inclusion of technicians provided both an opportunity to obtain information on their group mean responses to items on the instrument, and to compare these responses to the group mean responses of the nurses.

**Significance of the Study**

There are several aspects to this study which may have implications for research and counselling practice. Some aspects are particularly relevant to the methodological problems associated with previous stress related research on kidney dialysis units, while other aspects are more relevant to stress management counselling strategies on these units.

**Aspects of study related to research.**

Information regarding technician job related stressors has been commonly obtained from nursing focused research, informal staff interviews and/or commentaries (articles) written by technicians. Thus, the impact of these stressors on technicians is not fully established. However, the above listed sources of information do suggest that exposure to and subsequent impact of job related stressors may be similar for technicians as those purported by nurses. The team approach to patient care which prevails on kidney dialysis units further lends support to this suggestion. This study's use of an instrument appropriate for both technicians and nurses may provide further insight on this issue.

The use of unstructured interviews and informal
observations as a means of identifying nurse/technician stressors has made replication of studies difficult. The trial administration in this study of an instrument specific to kidney dialysis units and which is amenable to advanced statistical analysis, may be the first step in establishing and providing a reliable instrument which could facilitate replication of these stress related studies.

Aspects of study related to counselling.

From a counselling perspective, information elicited from the study may impact on stress management strategies. For example, the forming of staff support groups has been one strategy adopted by many units. However, the compositions of these support groups varies, and in many cases are composed of nursing staff only (Richmond, 1986; Schaefer & Peterson, 1992). One potential outcome of this study is the acquisition of information that may help determine the feasibility of including technicians in such groups. Considering these two groups for common counselling modalities may depend on whether or not their performance differs on the aforementioned instrument.

In addition, identifying the stressors and their perceived impact is often the first step in stress management (Guillory & Riggin, 1991; Wakefield, 1992). Such information is particularly useful for supervisors and group facilitators who plan and implement strategies related to stress management. This knowledge may also help both staff and supervisors distinguish between those stressors that could
feasibly be eliminated or their impact reduced, versus those stressors which by the very nature of the unit are not amenable to the above manipulations. The distinct nature of these stressors will necessitate different counselling interventions (Dewe, 1987; Lewis & Robinson, 1992).

**Definition of Terms**

"Stress" and derivatives of the word stress are used in the literature as generic terms which can encompass one or all of the following components: (a) stressful situations, (b) physiological and emotional responses, (c) subjects' subjective interpretations of stress, (d) adaptive and maladaptive coping responses, and (e) stress management strategies, etc. For the purpose of this study, and for the convenience of the reader, stress terminology has been articulated accordingly:

- **Stressors.** - the stimuli/situation which produces a stress response.

- **Stress/stressful.** - an individual's global and personal, subjective perception of the stressor(s).

- **Stress response.** - an individual's adaptive and/or maladaptive response(s) to the stressor(s).

- **Stress management techniques.** - strategies aimed at either eliminating or changing the stressor itself and/or its impact through individual or group interventions.

- **Stress related research.** - studies written by stress theorists or researchers which include any of the following components: (a) definitions of stress; (b) identification of
stressors; (c) stress responses and (d) stress management techniques.

Research Questions

This exploratory study addresses the following two specific research questions:

1. Is there any significant group interaction in the mean responses of the nurses and technicians on the instrument designed for this study.

2. Are there any significant group differences in the mean responses of the nurses and technicians on the instrument designed for this study.
Chapter 2

Literature Review

Introduction

The stressors to which kidney dialysis staff are exposed reflect the two types of patient care provided on the unit; chronic care and intensive care. Whereas other specialized hospital units can be generally classified as either chronic care or intensive care, components of both types of care co-exist on a kidney dialysis unit. Leonard (1981) stated, "A nephrology service provides a peculiar cross between intensive care and chronic care. Patients who are medically stable for months suddenly enter a crisis period with some life threatening complication" (p. 37). Based on their research conducted at the Veterans Administration Medical Center, Long Beach, California, Gerber and Nehemkis (1980) described the unit as follows: "The renal dialysis unit is a unique medical setting: it is identified as an intensive care type unit yet it is also a chronic care setting" (p. 249). During dialysis patient cardiac complications can occur requiring staff to implement split-second emergency procedures (Gerber & Nehemkis), illustrating the former care type. However, unlike other intensive care units, these same patients will typically utilize the services of the unit for approximately three times per week for treatment lasting three to four hours over a period of months or years (Barnes, 1980; Highland; 1987), illustrating the latter care type. The literature reviewed in this chapter describing potential stressors on a kidney
dialysis unit reflect these two components.

Nurses: Their Evolving Role and Concomitant Stressors

The role of the nurse

Nurses have played a major role in the planning and implementation of dialysis services since regular maintenance dialysis for chronic patients commenced in the early sixties. The exact nature of this role is often determined by the location, size and type of facility as these factors affect staffing complements (Fortner-Frazier, 1981).

Although there may be some variation in nursing roles from unit to unit, commonalities exist. According to Feiner (1991), "The registered nurse assumes the responsibility for all the professional issues related to patient's care. These duties include patient assessments, care planning, administering intravenous medications and supervising all the technical aspects of direct patient care" (p. 190). Nurses may also be responsible for providing education and support services to patients (Butera, 1988; Kosier, 1988). Related to the above duties is the added responsibility of keeping abreast of technological changes (Carroll, 1991; Tindira, Hong, & McKeivitt, 1985). Other duties may involve scheduling staff and supervising staff nurses and technicians.

As the nurse's role continues to evolve, Jordon (1988) speculates that this role will broaden, resulting in a role which encompasses more than the clinical aspects of nursing. She states, "We're going to see nephrology nurses who are not only clinically experienced, but also experienced in
administration, regulatory agencies, and the political system" (p. 217). The latter, in part, reflects government concerns regarding health care costs. Although nurses have in the past been responsible for providing statistics on basic patient usage and staffing costs, initiatives such as quality assurance programs and increased financial accountability to government will result in additional administrative functions. As more institutions rely on computer programs to facilitate these tasks, nurses will have to become experienced in computer technology. Jordan (1988) predicts that in the future, "More nephrology nurses will fill key combined administrative and clinical decision-making positions (p. 217).

Historical views of stressors and their impact on nurses: a psychoanalytic approach

Research on the stressors to which kidney dialysis staff are exposed commenced in the 1960's. The majority of these early researchers were psychiatrists who were assigned to the unit, and who adhered to a psychoanalytic theoretical framework by which to explain the impact of these stressors and the resulting patient and staff behaviours. The reader should note that when these authors refer to "staff", detailed examination of their studies indicate that they are usually referring to nurses only.

A pioneer in this area of research, Kaplan De-Nour, co-published in 1968 one of the first articles which was based on a two year period of informal observations, detailing the
emotional problems and reactions of the medical team emanating from, "long-term and intensive contact with a comparatively small number of patients, as well as the new responsibilities that must be assumed by various members of the team" (Kaplan De-Nour & Czaczkes, 1968, p. 987). They noted that the following reactions were particularly prevalent among the nursing staff: (a) possessiveness towards patients, (b) overprotectiveness of patients, and (c) withdrawal from patients. 

Evidence for possessiveness towards patients was based on their observations that the nurses resented the psychiatrist who had joined the team, resented new residents assigned to the unit, and argued with the technicians as to who was more important to the patients. The following description was viewed by Kaplan De-Nour and Czaczkes (1968) as evidence of the nursing team's possessiveness towards the patient, "there is a constant latent struggle between the nurses and technicians, occasionally developing into overt fights, about who is more important to the patients, whose recommendations or orders the patients should obey, and in whom the patients confide more" (p. 988). They also described the team as a family, with "the nurses taking up the role of the overprotective mother" (Kaplan De-Nour & Czaczkes, 1968, p. 989). The authors admit that the possessiveness and protectiveness of the nurses is difficult to substantiate based only on their observations, but argue that these reactions can be explained by the underlying hostility and unconscious aggression manifested by the nurses in their arguments with patients.
and other members of the medical team.

Although Kaplan De-Nour and Czaczkes (1968) reported emotional involvement of the nurses with their patients (i.e., possessiveness and over-protectiveness), they also observed withdrawal reactions evidenced by the frequent changes of nurses in the unit. The authors noted that the dialysis unit experienced the highest drop-out rate of any unit in the hospital, yet they further stated that many of the nurses had reasons for resigning supposedly unrelated to the stress of their work.

Kaplan De-Nour, Czaczkes, and Lilos (1972) examined the expectations that hemodialysis teams (nurses and physicians) have of their patients, and whether there was intra-team agreement. Although their primary purpose was to determine what influence the team had on patient behaviour and adjustment to dialysis, the authors also hypothesized that discrepancies in these expectations and subsequent lack of team agreement regarding such patients would be another stressor which could result in decreased job satisfaction, thereby contributing to the emotional problems of the staff.

Three dialysis teams, each including about 10 members, completed a 12-item inventory relating to both the physical and emotional aspects to dialysis treatment. Members of these teams were required to choose descriptions which best described their idea of a "good" patient's behaviour or condition from a list of 12 items, with each item consisting of three or four descriptions. The authors found that
discrepancies in expectations of patients existed within teams and suggested that these discrepancies indicated personal bias, of which the latter was based on staff denial and which contributed to team dissatisfaction (Kaplan De-Nour, Czaczkes & Lilos, 1972).

Unfortunately, there are several methodological problems identified by this writer associated with this study. The inventory consisted of both three-point and four-point scales, yet for the purpose of evaluating agreement in expectations of members of each team, only a three-point scale was used in the statistical analysis. As well, no break down of the number of physicians versus nurses was given. The questionnaire also contained an additional possible answer that the item was irrelevant for assessing a patient. No value was assigned to this option. However, the one team that utilized this option in over 25 per cent of their responses, was viewed as being, "uncooperative in a passive way" (Kaplan De-Nour, Czaczkes, & Lilos, 1972, p. 443). Moreover, the authors claimed that the teams use of this category made statistical analyses difficult. No alternative explanation for the use of this category was examined. In addition, the authors neither defined nor measured team satisfaction. The authors stated, "As we know these teams fairly well from frequent visits and informal talks, we have not used 'scientific' methods for measuring the satisfaction of the teams" (Kaplan De-Nour et al., p. 442). In view of the previously discussed methodological problems, this author finds it difficult to
accept the writers' suggestion that diversity of team opinion reflects personal bias resulting in dissatisfaction of team members, thereby creating a stressor which could contribute to the emotional problems of the staff.

Moore (1972) and Wertzel, Vollrath, Ritz, and Ferner (1977) also identified patient contact as a major stressor for nursing personnel. Moore (1972) argued that such stress stems from close contact with patients who as a result of unresolved dependency issues, often manifest transitory psychiatric symptoms. This observation, as well as his assessment of nurse dependency issues, were based on formal and informal discussions with dialysis nurses over a six-year period. Rather than attempting to verify the existence and/or magnitude of this purported stressor, Moore (1972) speculated on why women chose dialysis nursing and/or nursing in general as a profession:

I think we must ask how a group of nice girls, as these nurses are, got themselves in this position. I suppose it might be useful to ask why these women want to be nurses in the first place. I think it is fair to say that there are probably many significant underlying issues in the decision to become a nurse. Perhaps it is the need to be needed that directs some girls toward nursing. Others may respond to prestige, drama, association with doctors (attractive paternal figures) and special status. Others may take care of others as they wished to be taken care of. I think each nurse must
ask herself what some of her 'real reasons were'. (p. 195)

Unfortunately, his attempts to draw an analogy between the dependency needs of the patients and the possible dependency needs of the nurses, neither addresses the extent to which the dialysis patient is a stressor compared to other potential stressors on the unit, nor do they render themselves to practical solutions.

Wertzel, Vollrath, Ritz, and Ferner (1977) in their study which examined nurse-patient social interactions, suggested that stress resulting from exposure to prolonged intensive contact with chronically ill patients may explain both the high turn-over of nurses and the characterized depression of the nurses as indicated on the Giessen test, a personality inventory based on psychoanalytical principles. They contended that according to psychoanalytic theory, depression is closely related to self-insecurity which stems from the weakness of the ego-self system, and in an effort to compensate for this weakness, the ego seeks other objects for help. The authors suggested that the patients themselves become this object for the nurses which contributed to patient-contact related stress.

Czaczkes and Kaplan De-Nour (1978), Kaplan De-Nour (1980) and Kaplan De-Nour (1983a) again identified patient contact as a stressor and further examined what components of this patient contact were peculiar to a kidney dialysis unit. All three studies cited close contact with patients over a period
of months or years, patient behaviour, patient anxiety, patient adjustment to dialysis and patient death as such components. However, the authors argued these components become sources of stress as the result of staff's emotional needs which are reflected in the staff's reactions to these stressors. For example, Czaczkes and Kaplan De-Nour (1978) reported that staff responded to less grateful and adjusted patients with aggression and that this high level of aggression in the medical staff was in itself the problem. They also noted the following reactions of the staff: (a) withdrawal, indicated by the high dropout rate of nurses; (b) denial, evidenced by staff minimizing the hopelessness of their patient's condition; (c) displacement of anger as indicated by intra-team tensions; and (d) overcompensation, reflecting staff doubts regarding the rightness of dialysis. Kaplan De-Nour (1980) also suggested that the characterized depression of nurses reported by Wertzel, Vollrath, Ritz, and Ferner (1977) represented an introjection reaction. Therefore, the defense reactions exhibited by staff, and in particular the nurses, were viewed as being the issue rather than the patient contact itself. These authors also found that any attempts on their part to increase staff insight with respect to such reactions was met with resistance, increased acting out of aggression, and increased intra-team aggression. Kaplan De-Nour (1983a) concluded:

It is difficult to suggest what should be done to decrease the psychological distress of the staff and
whether anything should be done. I would be inclined to adopt the attitude that the medical staff are 'normal' people who should be able to handle and cope with the stresses of life, including that of working in dialysis units. If some staff members do show symptoms of psychological distress they should get help outside the unit like any other patient in distress...Let us not turn staff members into 'psychiatric patients,' but concentrate all efforts on reactions/attitudes that influence patients' welfare. (p. 403)

Klingenstein (1986) a renal social worker, also observed staff denial and aggression and their negative effect on patients and insists that staff, "have to use other avenues for their own ventilation and support" (p. 402). However, she did not elaborate on what avenues would be appropriate nor whether such avenues existed.

In summary, the earlier studies which attempted to identify stressors peculiar to dialysis units tended to focus on the uniqueness of the dialysis patient and the effect that this uniqueness had on dialysis staff. The studies emphasized a psychoanalytic interpretation of staff behaviours with such behaviours and/or reactions being viewed as sources of stress. The first few published articles on this subject appeared to have set the parameters for some of later studies which have also been included in the above review. However, publication of these studies also resulted in criticism of their theoretical interpretation of staff behaviour and of their
methodology, thereby encouraging further research.

**Researchers' evaluations of historically based studies**

The attempts by early researchers to interpret staff behaviour has been criticized by several authors (Blodgett, 1981; Gerber & Nehemkis, 1980; Manley, 1983). Manley (1983) warned, "however compelling may seem the evident truth of one's insightful observations about staff behavior, lacking the kind of associative data that is available only in the course of an extended exploratory psychotherapy, one is very often wrong" (p. 365). Also, Manley noted that the staffs' resentments to such interpretations were understandable, given that they viewed the liaison psychiatrist as a colleague and certainly did not view themselves as patients. Gerber and Nehemkis (1980) questioned the appropriateness of such interpretations as psychiatrists were originally assigned to dialysis units to work with disruptive patients, and seldom worked directly with the nursing staff. As well, they questioned the usefulness of psychoanalytic interpretations of staff behaviour when no concrete solutions or interventions could be derived from them. Blodgett (1981) focused his criticism on their methodology, and listed the following concerns: (a) imprecise and limited definitions, (b) the use of informal observation which does not lend itself to replication and (c) the tendency of the researchers to focus on psychoanalytic interpretations of staff reactions to stressors to such a degree that the original sources of stress were not adequately studied and that alternative explanations
were not considered.

That alternative explanations for staff behaviour were not considered led researchers to find "pathology" in staff responses where in fact it may not have existed. For example, Kaplan De-Nour, Czaczkes, and Lilos (1972) suggested that discrepancies in staff evaluations of patients were due to professional bias originating from denial of patients' conditions. Alternately, Blodgett (1981) argued that such discrepancies were understandable if the two components of the evaluation, medical (objective) and personal (subjective) were considered separately. The discrepancies occurred only in the subjective aspects of the patient's evaluation which required assessment of the patient's emotional status, tolerance of treatment, etc., for which no objective measures were available. Therefore, he suggested that any discrepancies were due to this subjective aspect and not to staff denial of the patient's condition. His position is substantiated by Abram (1968), Fielding, Grounds, and Mellsop (1974), and Manley (1983) who found that nursing assessments of patients were insightful and reliable and argued for their validity.

The above studies have primarily focused on only one potential stressor, the uniqueness of the kidney dialysis patient and how this uniqueness impacted on staff, and the staff-patient relationship. As a result of this narrow focus however, rather than attempting to substantiate the hypothesis that the kidney dialysis patient and/or staff and patient relationship is indeed a stressor, these studies appear to
place more emphasis in determining who is at fault for the apparent less than "ideal" relationship which requires "concerned" staff and "appreciative" patient. According to Maslach and Jackson (1982):

Whether the brunt of the blame is carried by staff or by patients, blaming allows the contribution made by the properties of the situation to be either minimized or ignored. Such dispositional explanations limit, and even misguide, attempts toward solutions to burnout.

(p. 231)

They also hypothesized that characteristics of patients may be less stressful than the staff's perceived lack of control over their immediate environment, which included such factors as behaviour of physicians, and hours and conditions of their work. While not discounting the role of personality variables or the impact of the kidney dialysis patient upon staff, researchers have broadened their studies to investigate other potential situational stressors.

Alternate views of stressors and their impact on nurses

Several authors have reiterated that the first step in planning any stress management intervention is the identification of the stressors to which staff are exposed (Campbell, 1981; Dickerson, 1980; Guillory & Riggin, 1991; Lawrence & Lawrence, 1987). Jackson (1980) found that weekly staff meetings were not an effective stress management intervention until the staff became aware of the sources of stress, which they were then able to examine objectively.
Pines and Kanner (1982) also argued that by identifying situational stressors, the emphasis is placed on those conditions in the environment that appear to effect all staff, regardless of individual traits, characteristics and dispositions.

Several authors have identified staff shortages as one such stressor (Guillory & Riggin, 1991; Leonard, 1981; Richmond, 1986; Wakefield, 1992). Staff shortages have a rippling effect that creates other stressors such as a heavy patient workload which in turn leads to unplanned overtime (Aguilar, 1991; Lane & Hawkins, 1981) resulting in fatigue (McMinn, 1979). As Pines & Kanner (1982) pointed out, a heavy patient workload results in time constraints preventing nurses from having the opportunity to discuss professional issues, clarify goals, spend more time with patients, and socialize or receive positive feedback. They contend that the absence of these positive environmental conditions may have as much impact on nursing staff as the presence of negative stressors. Related to such absences, Houlihan (1982) noted that there is a conflict for nurses between expectations inherent in their position and what they can realistically accomplish. Aguilar (1991) states that, "Increasing resource constraints, on one hand...demand for quality services on the other;" and "Continuing changes and/or shortages in the number of health-care personnel;" (p. 160) are two of the major stressors that impact on nurses, along with rapid technological changes related to kidney dialysis. This highly technical
environment has also been identified as a potential stressor by Campbell (1981) and Rabin (1982).

Unfortunately, some of the methodological concerns regarding the research presented in the previous sections are relevant to these studies. The principle methods used for identifying the stressors were informal and unstructured interviews and informal observations of staff, albeit some of the articles were written by kidney dialysis staff and thus the stressors listed were based upon their experience. However, as no specific data were objectively gathered in these studies, support for the existence and magnitude of these stressors could not be verified by any statistical analyses.

Technicians: Their Evolving Role and Concomitant Stressors

The role of the technician/technologist

The role of technicians evolved in the early 1960's in part as a result of hospital staff combining their knowledge and expertise in order to understand the complexities of new hemodialysis procedures (Atkins, 1991). The continuing increase in the demand for dialysis services, the shortage of registered nurses, and the increasing sophistication of dialysis equipment have all contributed to the diversity of duties and responsibilities of the technician (Hudson, 1988; Messana, 1991). Depending on the size and locality of the unit, technicians may be involved in one or more of the following aspects of dialysis: (a) direct patient care, (b) water treatment, (c) disease control, (d) monitoring and
maintenance of complex dialysis equipment, (e) teaching technical information to staff or clients, and (f) managerial or administrative activities (Arslanian, 1991; Sharpe, 1985).

This diversity of duties resulted in attempts to establish two distinct positions; technician and technologist, with each position focusing on different components of dialysis (Hover, 1991; Hudson, 1991). The term "technologist" began to refer to technicians responsible, "for the performance of medical devices that are utilized in the delivery of renal-replacement therapies" (Hover, 1991, p. 109), whereas the term "technician" began to refer to those technicians responsible for the clinical and technical aspects of patient care. However, according to Arslanian (1991) and Scrivner (1988), in practice these two positions frequently overlap from unit to unit, with respective duties being shared.

In the United States, technicians became involved in patient care in the early 1970's. The California Nephrology Manpower Study which was completed in 1973, found that most technicians were involved in some level of patient care. This involvement ranged from conducting dialysis procedures under supervision to starting, monitoring and ending treatment and recognizing complications and taking corrective action without supervision (Fortner-Frazier, 1981; Scollard, 1991). Thus, not only do the technician's and the technologist's roles overlap, but also to some extent do those of the technicians and the nurse's.
Research on stressors effecting technicians

A comprehensive literature review revealed that very few articles focus specifically on stressors effecting technicians, but rather on issues relating to licensing and education standards and on defining the roles of the technician and technologist. When such stressors are addressed by authors, they tend to be mentioned within the context of an "opinion paper" or within the confines of a "psychiatric observation study".

Several authors have listed relationships with patients as a major stressor for technicians due to the long hours they spend with such patients and their families (e.g., Bocchino, 1978; Fortner-Frazier, 1981; Halper, 1971). Other authors have identified the technical and educational responsibilities associated with the increasing sophistication of dialysis equipment (e.g., Feiner, 1991; Fortner-Frazier, 1981; White, 1980). However, as in the previous articles reviewed, support for the existence and/or magnitude of these stressors was not verified by any statistical analyses derived from research studies.

Structured Interview and Questionnaire Based Studies: Nurses and Technicians

In an attempt to overcome some of the aforementioned methodological problems associated with observation studies, some researchers have utilized structured interviews and/or questionnaires, albeit with varying degrees of success.

Mabry, Acchiardo, and, Trapp (1977) compared the feelings
and attitudes of staff in 1972 to those found in 1976 with regards to their personal relationships with patients and colleagues. They stated that, "Some responses indicated that nursing staff felt some stress associated with their role. They expressed frustration in caring for the chronically ill" (p. 39). Unfortunately, Mabry et al. do not attempt to quantify "some responses" or "some stress". The format of the questionnaire is also not clear, with the combined number of "yes"/no" responses versus open-ended answers differing between the two samples. In addition, although six technicians participated in the study, they are not mentioned in either the result or discussion sections of the paper.

A longitudinal study based on structured interviews conducted by O'Brien (1983) indicated that lack of adequate staff resulting in technicians and nurses being overworked was a major stressor. Whether or not death was considered a major stressor depended on the age of the patient, the cause of death, and whether or not the death was expected. However, interpretations of the results are mainly anecdotal and appear to stem from unit observation as well as the interviews.

Balck, Dvorak, Speidel, and Aronow (1983) described the results of a study in which the staff (35 nurses and 18 physicians) of eight dialysis units were interviewed by means of a questionnaire. The staff were asked to identify the main stressors that created tension on a dialysis ward. Nurses reported intra-team tensions, death of a patient, deterioration of patient's health, and time pressure as being
major stressors. Balck, Dvorak, Speidel, and Aronow (1983) suggested that, "Time pressure constitutes a link between the patient-originated and team-originated stressors because it results from dealing with acute and critical dialysis situations within the typical constraints of understaffed facilities" (p. 18). This study is atypical in that the staff were asked which stressors they thought created tension on the dialysis ward, and in that the researchers rank ordered the responses. The authors also noted limitations of the study; in particular, that the questionnaire return rate was only 32 per cent which they suggested indicated a selection effect making interpretation of the results difficult. Although these three features are elementary, they have been surprisingly absent in many of the studies reviewed.

Kaplan De-Nour & Czaczkes (1977) theorized that two sources of stress are the high emotional involvement of staff and high levels of aggression which characterizes staff-patient relationships. The researchers administered the Morgan and Cheadler Questionnaire to 9 nurses employed on the same dialysis unit. The questionnaire designed by Morgan and Cheadler in 1972 for use in psychiatric units is composed of 20 items; 10 questions elicit patient preference and 10 questions elicit patient rejection. The nurses were given an alphabetical list of their patients and from this list selected patients they felt were relevant to each of the 20 items. Kaplan De-Nour and Czaczkes found that the number of responses given by dialysis nurses were at least twice that
given by psychiatric nurses. They contended that these results indicated over involvement of nurses with their patients. The authors also stated that due to the fact that the dialysis nurses rejected 37% of their patients while psychiatric nurses rejected only 18% of their patients, their clinical impressions of high levels of hostility and aggression among nurses was supported.

However, the results may be more indicative of methodological problems rather than the authors' clinical observations. Aside from the small sample size, the questionnaire was administered to the nurses in individual interviews, precluding the possibility of anonymity. In order to compare their results to Morgan and Cheadler's whose sample included 54 psychiatric patients, versus 16 kidney dialysis patients, Kaplan De-Nour and Czaczkes multiplied the number of nurses' responses by 3.4. They did not take into account that this mathematical procedure does not necessarily produce data comparable to Morgan and Cheadler's as a smaller list of patients may possibly result in more patients being included under each item due to memory and familiarity factors. As well, the authors mention that some of the items were not applicable to a dialysis unit, yet the appropriateness of using a questionnaire designed for another specialty unit is not discussed. Finally, alternative interpretations for the differences in results between the two studies are not considered. For example, the roles and duties of the nurses may differ greatly between the two different types of units.
In another effort to identify stressors associated with patients, researchers have focused on comparing how patients and staff perceive the social climate on their unit (e.g., Kaplan De-Nour, 1983b; Kroemeke & Nassar, 1980; Rhodes, 1981). These researchers hypothesized that differences in scores between staff and patients on the Ward Atmosphere Scale (WAS) would reflect a source of stress.

The Ward Atmosphere Scale, developed by R. Moos and P. Houts in 1972, measures attitudes and perceptions of patient-staff relationships and ward conditions. The questionnaire contains 100 true or false items which are categorized by three subscales: (a) relationship, (b) treatment, and (c) systems (Rhodes, 1981).

Kroemeke and Nassar's (1980) sample included 32 patients, 7 registered nurses (RNs), 10 licensed practical nurses (LPNs) and 4 technicians. They found two discrepancies: (a) patients perceived less emphasis being placed on dealing with their past and on their expression of anger than did the RNs, and (b) patients perceived less spontaneity on the unit than did the LPNs. According to the authors, the former discrepancy may reflect different stages of patient grieving or adaptation. Although technicians were included in the study, their scores were not given. As the authors did not carry out significance testing for the mean scores of the staff and patients, or provide the return rate for the questionnaires, interpretation of the data is difficult.

Kaplan De-Nour (1983b) administered the WAS
Questionnaire, modified for dialysis units by Rhodes (1981), to 108 physicians and nurses from 8 different units and found that staff believed patients to be more involved in the unit than the patients perceived themselves to be. Kaplan De-Nour interpreted this finding as providing direct evidence for staff denial (Kaplan De-Nour, 1983b, 1984). Unfortunately, the number of nurses in the sample versus physicians was not given.

Rhodes (1981) administered his revised WAS Questionnaire to 18 nurses and 59 patients and found that there was a statistically significant difference in the perception of the social climate of the unit, with patients perceiving the environment more negatively than the staff. However, Rhodes also administered the Beck Depression Inventory and found that depressed patients viewed the dialysis ward atmosphere more negatively than nondepressed patients. Rhodes (1981) suggested the following explanation for this occurrence:

The significant correlation of depression with low ward atmosphere implies that depression does act as a type of filter for interpreting the environment. The depressed patient focusing on the dysfunctional aspects (sic) of his environment filters out positive factors to maintain his negative perceptual set of the dialysis unit. (p. 174)

Although Rhodes stated that the WAS Questionnaire had a credible reputation for reliability and validity, having a retest reliability of .73 for patients and .96 for staff
established up to three years, he does not mention the reliability or validity of his revised WAS Questionnaire, or give any other details regarding his adaptation of the WAS Questionnaire for use on kidney dialysis units.

Devins, Anthony, Mandin and Taylor, (1983) also investigated the impact of depressed patients on nurses. They hypothesized that depressed patients would be more negatively evaluated by the nurses versus nondepressed patients. The sample included 18 nurses employed on their unit. They summarized their findings as follows:

Contrary to prediction, dialysis nurses did not evaluate depressed patients any more negatively than they evaluated nondepressed patients nor did we observe any significant intercorrelations among nurses' expressions of job dissatisfaction, emotional distress, and their evaluations of the patients under their care. (p. 722)

The findings of Devins et al., lend support to Rhode's conclusion that discrepancies in the perceptions of ward atmosphere between nurses and patients may be attributable to depression in some patients, rather than any nursing bias or denial.

Summary

As a result of an aging population, more patients with chronic and degenerative diseases will be utilizing kidney dialysis services (Aguilar, 1991). Increases in user demand for such services will only exacerbate the impact of stressors to which nurses and technicians are exposed.
The studies reviewed in this chapter unfortunately do not provide conclusive evidence as to which stressors, as assessed by technicians and nurses, impact the most on their physical, mental and emotional well-being. Therefore, further investigation is crucial, for without this knowledge appropriate remedial actions to either alleviate or ameliorate such stressors is not feasible.
Chapter 3

Method

Design

The purpose of this exploratory study was twofold: (a) to determine whether the profiles of the nurses and technicians differed on the Sources of Stress Inventory and (b) to conduct psychometric analysis on the Sources of Stress Inventory, an instrument devised specifically for this study (Der, 1986).

The study was a nonexperimental group comparison investigation.

Population

The target population for this study was all registered nurses and technicians who were qualified to work on kidney dialysis units within a hospital setting.

Sample

The sample was obtained from two different medical centers/hospitals located in the Los Angeles area: (a) 14 registered nurses and 2 registered technicians employed at the Long Beach Veteran's Administration Medical Center and, (b) 6 registered nurses and 10 registered technicians employed at the Harbor-University of California Los Angeles (UCLA) Medical Center. Twenty registered nurses (85% female and 15% male), and 12 technicians (67% female and 33% male), for a total of 32 subjects participated in the study.

Variables

The two independent variables were registered nurses and
registered technicians. The dependent variables were the items on the Sources of Stress inventory.

**Instrument**

The Sources of Stress Inventory was devised specifically for this study. Nurses and technicians voluntarily submitted situations pertaining to their jobs which they found stressful. These situations were than categorized into three subscales: Subscale A, Patients, included 13 items (1-13); subscale B, Staff, included 6 items (14-19); and subscale C, Working conditions, included 9 items (20-28).

A self-report 28-item measure with 6-point response scales anchored by "low stress" and "high stress" was designed. The minimum score was 28, and the maximum score was 168 (see Appendix A).

**Data Collection**

Each participant received a sealed envelope which contained the Sources of Stress Inventory and an envelope in which to return the completed document within a two week period. All participants completed the document at home and returned them within the allotted time, resulting in a 100% return rate.

**Research Hypotheses**

Parallel to the research questions in Chapter 1, the following research hypotheses were investigated. The rationale for the research hypotheses concludes this section.

Research Hypothesis 1. The profiles of the nurses and technicians on the Sources of Stress Inventory are parallel.
Research Hypothesis 2  The profiles of the nurses and technicians on the Sources of Stress Inventory are coincident.

Rationale for Research Hypotheses 1 and 2

The two hypotheses concerning the profiles of the nurses and technicians are exploratory. The basis for these conjectures is that the team approach to patient care on kidney dialysis units exposes these two groups to comparable stressors, which may result in similar ratings on the Sources of Stress Inventory. A comprehensive review of the literature elicited numerous journal articles on dialysis nurses and stress, compared to relatively few articles on dialysis technicians and stress. Moreover, to this researcher's knowledge, no research has been conducted in which the same measure was administered to both groups, and in which the measure was specific to the stressors on a kidney dialysis unit. From a counselling perspective, obtaining information on the profiles of the nurses and technicians will enlighten counsellors as to the feasibility of combining these two groups in counselling interventions.

Statistical Hypotheses

The following statistical hypotheses corresponding to the research hypotheses were tested at the .05 level.

Statistical Hypothesis 1.

\[ *H_0: Cu_1 = Cu_2, \text{ vs. } H_1: Cu_1 \neq Cu_2 \]

This is a test of whether or not the profiles are parallel.

Statistical Hypotheses 2.

\[ **H_0: 1'u_2 = 1'u_2, \text{ vs. } H_1: 1'u_1 \neq 1'u_2 \]
Given the profiles are parallel, this is a test of whether or not the profiles are coincident.

Key

* $\text{Cu}_1$  

Bold face letters are used as matrix or vector notations. $\text{C}$ denotes a transformation matrix and $\text{u}$ refers to a mean vector on $p$ variables for Group One. Subscript denotes group.

**1'$u_1$  

1' denotes the transpose of a unit vector. Bold face is used as a matrix notation. Subscript denotes group (Boldt, 1991).

Analysis of the Data

Profile analysis was undertaken to answer the general question as to whether or not the performance of the nurses and technicians differed on the Sources of Stress Inventory and more specifically, to test statistical hypotheses 1 and 2.

The data for the profile analysis was generated from the subjects' ratings of the 28 items on the Sources of Stress Inventory. The scores or responses to these 28 items can be assumed to be observations on continuous variables (Boldt, 1991). One way to analyze multivariate data of this kind is to compare the two groups (nurses and technicians) through profile analysis. Profile analysis is appropriate in situations where a battery of questions is administered to
different groups of subjects, and one wishes to know if the
groups differ in some way on their mean response (Stevens,
1986).

Two assumptions of profile analysis are that the
responses be commensurate, and that the groups be derived from
some criteria other than the profiles themselves (Tabachnick &
Fidell, 1989). Both of these assumptions were met.

In a stepwise fashion, profile analysis addresses and
tests the following questions: (a) Are the profiles parallel?
or, is there any interaction between group times test? and;
(b) Are the profiles coincident? or, are there any significant
group differences? Although these test items are
statistically independent, if the test of parallelism is
rejected, the test of coincidence is usually considered
irrelevant. Only if the above two questions are not rejected
is the third question; (c) Are the profiles level? or, are the
responses to each question the same? addressed (Harris, 1985).

As profile analysis is an application of multivariate
analysis of variance, the SPSSX Manova (profile analysis) was
chosen to analyze the data (Lai, 1986). This program
generates tests of significance pertinent to the tests of
parallism and coincidence. These tests will be discussed and
reported in Chapter 4.
Chapter 4

Results

Psychometric Analysis

Psychometric analysis was conducted on the Sources of Stress Inventory using the Laboratory of Educational Research Test Analysis Package (LERTAP). Reliability co-efficients and discrimination indices were obtained.

Internal consistency based on Hoyt's estimate of reliability was .93. Reliability co-efficients for the subscales were: Patient .90, Staff .80, and Working conditions .78. Item analysis was performed. Appendix B contains the discrimination indices for each of the items on the scale. Except in one instance, the discrimination indices were reasonably high. The mean scores and standard deviations are displayed in Table 1.

As the nurses and technicians were asked to identify situations they considered stressful, the instrument presumably has high face validity.

Profile Analysis of Hypotheses 1 and 2

Profile analysis (SPPSX) was carried out to compare the responses of the nurses and technicians on the Sources of Stress Inventory.

As was discussed in Chapter 3, profile analysis tests two hypotheses relating to the equality of mean vectors; the hypothesis of parallism and the hypothesis of coincidence (Tabachnick & Fidell, 1989). If the hypothesis of parallism is tenable, then the second hypothesis of coincidence is tested.
Table 1

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.47</td>
<td>1.70</td>
</tr>
<tr>
<td>2</td>
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<td>1.25</td>
</tr>
<tr>
<td>10</td>
<td>3.03</td>
<td>1.33</td>
</tr>
<tr>
<td>11</td>
<td>2.44</td>
<td>1.50</td>
</tr>
<tr>
<td>12</td>
<td>3.34</td>
<td>1.58</td>
</tr>
<tr>
<td>13</td>
<td>3.91</td>
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</table>

Subscale B Staff

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<th>SD</th>
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</thead>
<tbody>
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<td>1.37</td>
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<td>18</td>
<td>2.38</td>
<td>1.34</td>
</tr>
<tr>
<td>19</td>
<td>2.22</td>
<td>1.41</td>
</tr>
</tbody>
</table>

(table continues)
<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subscale C Working conditions</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>2.50 (1.24)</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>2.22 (1.16)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>2.97 (1.64)</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>3.53 (1.57)</td>
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</tr>
<tr>
<td>24</td>
<td>2.16 (1.25)</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>1.88 (1.01)</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>2.91 (1.53)</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>2.88 (1.79)</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>3.00 (1.34)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Standard deviations are in parentheses.

N = 32
The Hotelling's $T^2$ (equivalent F-test) procedures were used to test both hypotheses (Harris, 1985). Profiles were generated (see Figure 1) as well as within group means for the 28 items (see Table 2). An alpha level of .05 was set.

The results of the profile analysis of statistical hypotheses one and two are as follows:

**Results: Hypothesis 1**

The result of Hotelling's $T^2$ analysis indicated the hypothesis of parallel profiles was tenable since, $F = 3.73, 27,4$, $p = .104$. The F-ratio was not large enough to reject the null hypothesis of parallelism at the .05 alpha level.

**Results: Hypothesis 2**

The result of Hotelling's $T^2$ analysis indicated the hypothesis of coincident profiles was tenable, since, $F = 2.21, 1,30$, $p = .147$. The F-ratio was not large enough to reject the null hypothesis of coincidence at the .05 level.

**Summary of Results**

The results of the profile analysis of the mean responses of the nurses and technicians on the Sources of Stress Inventory indicate there was no significant group interaction and there were no significant group differences.
Figure 1. Profile of the mean responses of nurses and technicians on the items of the Sources of Stress Inventory.
Table 2
Within Group Means on the Items of the Sources of Stress Inventory

<table>
<thead>
<tr>
<th>Item</th>
<th>Subscale A Patients</th>
<th>Subscale B Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nurses M</td>
<td>Technicians M</td>
</tr>
<tr>
<td>1</td>
<td>2.55</td>
<td>1.58</td>
</tr>
<tr>
<td>2</td>
<td>2.10</td>
<td>2.83</td>
</tr>
<tr>
<td>3</td>
<td>3.00</td>
<td>2.83</td>
</tr>
<tr>
<td>4</td>
<td>4.75</td>
<td>2.65</td>
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<tr>
<td>5</td>
<td>3.70</td>
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<td>3.10</td>
<td>4.15</td>
</tr>
<tr>
<td>8</td>
<td>3.95</td>
<td>2.70</td>
</tr>
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<td>3.00</td>
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<tr>
<td>13</td>
<td>4.15</td>
<td>2.60</td>
</tr>
</tbody>
</table>
| 14   | 2.33                | (table continues)
<table>
<thead>
<tr>
<th>Item</th>
<th>Nurses M</th>
<th>Technicians M</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>2.40</td>
<td>2.41</td>
</tr>
<tr>
<td>19</td>
<td>2.40</td>
<td>2.08</td>
</tr>
<tr>
<td></td>
<td><strong>Subscale C Working conditions</strong></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>2.55</td>
<td>2.58</td>
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<tr>
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<td>22</td>
<td>3.20</td>
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<td>1.58</td>
</tr>
<tr>
<td>28</td>
<td>3.15</td>
<td>3.08</td>
</tr>
</tbody>
</table>

**Note.** Nurses n = 20

Technicians n = 12
Chapter 5

Discussion

Interpretation of Research Hypotheses

The results of profile analysis of the mean responses of the nurses and technicians on the Sources of Stress Inventory indicated that the hypotheses of parallism and coincidence were supported. Therefore, there appeared to be no overall significant group interaction or group differences. However, the profiles generated from the responses on the Sources of Stress Inventory suggested deviations from these results on specific items. In order to investigate these observations further, profile analysis was carried out on each subscale.

The results of such analysis on Subscale A: Patients, supported the overall findings of parallism and coincidence. On the other hand, the results of profile analyses on Subscale B: Staff, and Subscale C: Working Conditions, did not support the findings of parallism, indicating significant group interaction in the mean responses of the nurses and technicians. In other words, responses to a few of the items depended on whether the individual was a nurse or a technician. As the test of parallism was rejected for Subscale B and C, the test for coincidence was not applicable (Johnson & Wichern, 1982).

The two items on Subscale B: Staff, which most strongly indicated group interaction were relationship with physicians, and relationship with administration. The one item on Subscale C: Working Conditions, which most strongly indicated
group interaction, was professional development time available (inservice, resource persons). In addition, nurses reported all three items as being more stressful than technicians (see Figure 1 & Table 2, items 14, 15, and 27). The responses of the technicians and nurses to these three items were the main deviations from the overall findings of parallism and coincidence on the Sources of Stress Inventory's 28 items.

Although relationships with physicians and administration have been noted as sources of stress for nurses, (e.g., De Palma, 1991; Eubanks, 1991), these have not been highlighted in the few studies on technicians and stress. The lack of professional time available for nurses has been mentioned in the literature, usually within the context of staff shortages (e.g., Aguilar, 1991; Wakefield, 1992). Again, this has not been the case for technicians. Thus it appears on the surface that these results are consistent with the literature. However, as the number of stress related studies which include technicians is extremely limited, interpretation of these deviations from either a theoretical or research base is difficult. One can only speculate that the role of the nurse may necessitate more direct contact with physicians and administration. This contact could increase the likelihood of nurses emphasizing this stressor more than technicians as the impact of the interpersonal relationships themselves, and perhaps the impact of physician/administration directives or policies, would be greater.

In summary, although there were deviations on a few
items, the overall results suggested that exposure to and subsequent impact of job related stressors were similar for both nurses and technicians. These findings are consistent with the team approach to patient care which is prevalent on most dialysis units.

Interpretation of Major Sources of Stress for Nurses and Technicians

Upon examination of the within group means of nurses and technicians for each item, and of their profiles, it was found that with the exception of the previously noted deviations, similar stressors were salient for both groups.

In order of severity, technicians placed greatest emphasis on (a) death of a patient, (b) dealing with angry/aggressive patients, (c) time pressure, (d) complications during dialysis, and, (e) salary; whereas the nurses placed greatest emphasis on (a) dealing with angry/aggressive patients, (b) time pressure, (c) complications during dialysis, (d) salary, and (e) death of a patient (see Table 2, items 4, 5, 8, 13, and 23). Thus, both groups identified the same items as major stressors, albeit with a slightly different emphasis on each of the five items (see Figure 1).

Three of the major stressors reported in this study have also been noted by other researchers. In particular, time pressure and death of a patient were identified by nurses in the study by Balck, Dvorak, Speidel and Aronow (1983). Balck et al., linked time pressure to understaffing, an association described by other researchers with regards to nurses (e.g.,
Aguilar, 1991, Guillory & Riggin, 1991; Pines and Kanner, 1982; and Wakefield, 1992). O'Brien (1983) noted that both technicians and nurses regarded being overworked as a major stressor. Further, O'Brien's (1983) study also found that whether the death of a patient was viewed as a major stressor depended on the circumstances surrounding the patient's death. Another factor which could alter the impact of such a stressor is the degree to which the issue of patient death is addressed in formal training. One could speculate that perhaps nurses placed slightly less emphasis on this stressor compared to technicians due to their training.

Interestingly, two major sources of stress for both nurses and technicians, complications during dialysis, and salary, have not been typically reported in the literature. With regards to complications during dialysis, this could be attributable to the various techniques used for gathering data. For example, it is doubtful whether this item would be on stress questionnaires which are, (a) adapted from other specialty units, (b) related to attitudes and perceptions of patient-staff relationships, and (c) related to work stress in general. Further, this item would unlikely be mentioned in structured interviews. Finally, the emphasis of observation studies on patient-staff relationships could preclude the recording of complications during dialysis as a stressor.

The same factors may account for the lack of reporting in the literature with respect to salary; however, additional factors may have contributed to its conspicuous absence. For
example, staff may fear that such a response could be interpreted as not being "dedicated", or not having the "right" attitude towards their work. Therefore, such information would tend not to be elicited from participants in personal interviews, or on questionnaires in which their anonymity was not guaranteed. Despite such a guarantee, even those studies which utilized questionnaires with open-ended questions could have been similarly affected by such fears or perceived stigmas. Unless salary was listed as just one of many other items on a questionnaire, it is doubtful whether this source of stress would have been identified by researchers. As previously stated, although salary was not specifically referred to as a major source of stress in the literature, Pines & Kanner (1982) noted that the absence of positive conditions of work may have as much impact on nursing staff as the presence of negative stressors.

In brief, although there were slight differences in the mean responses on to these particular items, profile analysis of the data suggested that the same stressors were salient for both the group of technicians and the group of nurses. Moreover, there appeared to be no overall significant group differences on the other 23 items of the Sources of Stress Inventory.

Limitations of the Study

Sample limitations

From a statistical point of view, the generalizability of this study to a larger population is limited due to the
absence of randomization, and is only possible to the extent the nurses and technicians who participated in this study are representative of the larger population of nurses and technicians. Therefore, such generalizations should be made with caution. The small sample size of this study (N=32) further limits the generalizability of this study.

**Measurement limitations**

Psychometric analysis indicates that the Sources of Stress Inventory has high internal consistency. However, the instrument is limited to face validity only.

**Design limitations**

This study, a nonexperimental group comparison design, is exploratory and descriptive in nature.

**Conclusions**

The results of this study have confirmed the feasibility of including technicians as well as nurses in counselling interventions, for example, staff support groups. As there was no significant group interaction or group differences in the mean responses of the nurses and technicians, it appeared that both groups shared similarities with respect to the identification and rating of the sources of stress found on a kidney dialysis unit.

Psychometric analysis on the initial trial of the Sources of Stress Inventory suggested that the instrument had high internal consistency and face validity. These results indicated that the measure identified sources of stress and the magnitude of their impact as perceived by nurses and
technicians employed on the kidney dialysis units represented in this study.

In addition to these main conclusions, the inclusion of technicians as well as nurses in this study (in which males and females were represented in both groups), may have theoretical implications. The premise of earlier researchers such as Kaplan De-Nour and Czaczkes (1968), and Moore (1972), that female dependency needs contributed to stressful staff-patient relationships may have resulted from erroneous interpretations of the behaviour of their all female nursing sample.

**Recommendations**

A review of the literature indicates that demand for kidney dialysis services will continue to increase. Consequently, the identification of sources of stress for both technicians and nurses is imperative, for without this information counselling interventions cannot be appropriately selected and initiated. Therefore, the following steps towards achieving this goal are recommended:

1. The Sources of Stress Inventory could be readministered to the nurses and technicians of Long Beach Veteran's Administration Medical Center and Harbor-University of California, Los Angeles (UCLA) Medical Center; and if possible, administered to nurses and technicians of a different hospital within the Los Angeles area.

2. Based on the results of psychometric analysis derived from such studies, a review of the individual items on the
Sources of Stress Inventory be undertaken in order to determine which items, if any, should be eliminated and/or replaced in order to increase the internal reliability of the measure. In addition, the validity of this instrument should be established.

3. This study should be replicated in order that external reliability could also be established.

4. The Sources of Inventory should be administered to nurses and technicians employed on kidney dialysis units in Canadian hospitals in order to determine whether a different system of health care delivery would impact on the hypotheses tested in this study.
References


Der, D. (1986). Sources of Stress Inventory. Unpublished measure, University of British Columbia, Department of Counselling Psychology, Vancouver.


American Association of Nephrology Nurses & Technicians, 14(5), 347.


**Appendix A**

**Sources of Stress Inventory**

Please indicate the amount of stress you experience in the following areas by circling one of 6 numbers in each item (#1 indicating Low stress to #6 indicating High stress).

How much stress do you experience as a result of:

<table>
<thead>
<tr>
<th>A) PATIENTS</th>
<th>Low Stress</th>
<th>High Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Putting patients on dialysis treatment</td>
<td>1 2 3 4 5 6</td>
<td>3</td>
</tr>
<tr>
<td>(2) Taking patients off dialysis treatment</td>
<td>1 2 3 4 5 6</td>
<td>4</td>
</tr>
<tr>
<td>(3) Dealing with depressive patients</td>
<td>1 2 3 4 5 6</td>
<td>5</td>
</tr>
<tr>
<td>(4) Dealing with angry/aggressive patients</td>
<td>1 2 3 4 5 6</td>
<td>6</td>
</tr>
<tr>
<td>(5) Death of a patient</td>
<td>1 2 3 4 5 6</td>
<td>7</td>
</tr>
<tr>
<td>(6) Transfer of patients</td>
<td>1 2 3 4 5 6</td>
<td>8</td>
</tr>
<tr>
<td>(7) Having long-term relationships with patients</td>
<td>1 2 3 4 5 6</td>
<td>9</td>
</tr>
<tr>
<td>(8) Complications during dialysis (ie. seizures, drop in blood pressure, etc.)</td>
<td>1 2 3 4 5 6</td>
<td>10</td>
</tr>
<tr>
<td>(9) Non-compliance (diet)</td>
<td>1 2 3 4 5 6</td>
<td>11</td>
</tr>
<tr>
<td>(10) Non-compliance (fluid)</td>
<td>1 2 3 4 5 6</td>
<td>12</td>
</tr>
<tr>
<td>(11) Dealing with patients' families</td>
<td>1 2 3 4 5 6</td>
<td>13</td>
</tr>
<tr>
<td>(12) Deterioration of patients' condition</td>
<td>1 2 3 4 5 6</td>
<td>14</td>
</tr>
<tr>
<td>(13) Time pressure</td>
<td>1 2 3 4 5 6</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B) STAFF</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(14) Relationship with physicians</td>
<td>1 2 3 4 5 6</td>
<td>16</td>
</tr>
<tr>
<td>(15) Relationship with administration</td>
<td>1 2 3 4 5 6</td>
<td>17</td>
</tr>
<tr>
<td>(16) Relationship with nurses</td>
<td>1 2 3 4 5 6</td>
<td>18</td>
</tr>
<tr>
<td>(17) Relationship with technologists</td>
<td>1 2 3 4 5 6</td>
<td>19</td>
</tr>
<tr>
<td>(18) Workload assignment</td>
<td>1 2 3 4 5 6</td>
<td>20</td>
</tr>
<tr>
<td>(19) Staff turnover</td>
<td>1 2 3 4 5 6</td>
<td>21</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C) WORKING CONDITIONS</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(20) Patient-staff ratio</td>
<td>1 2 3 4 5 6</td>
<td>22</td>
</tr>
<tr>
<td>(21) Number of hours of work</td>
<td>1 2 3 4 5 6</td>
<td>23</td>
</tr>
<tr>
<td>(22) Working conditions</td>
<td>1 2 3 4 5 6</td>
<td>24</td>
</tr>
<tr>
<td>(23) Salary</td>
<td>1 2 3 4 5 6</td>
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</tr>
<tr>
<td>(24) Vacation and holiday time</td>
<td>1 2 3 4 5 6</td>
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</tr>
<tr>
<td>(25) Sick leave time available</td>
<td>1 2 3 4 5 6</td>
<td>27</td>
</tr>
<tr>
<td>(26) Machine problems</td>
<td>1 2 3 4 5 6</td>
<td>28</td>
</tr>
<tr>
<td>(27) Professional development time available</td>
<td>1 2 3 4 5 6</td>
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</tr>
<tr>
<td>(28) Your job in general</td>
<td>1 2 3 4 5 6</td>
<td>30</td>
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</table>
Appendix B

Sources of Stress Inventory Test Item Analysis (N = 32)

<table>
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<tr>
<th>Item</th>
<th>Discrimination Index</th>
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</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>Subscale A Patients</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.68</td>
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<tr>
<td>2</td>
<td>.53</td>
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<tr>
<td>3</td>
<td>.70</td>
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<td>.74</td>
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<td>8</td>
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<td>10</td>
<td>.57</td>
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<td>11</td>
<td>.67</td>
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<tr>
<td>12</td>
<td>.72</td>
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<tr>
<td>13</td>
<td>.58</td>
</tr>
</tbody>
</table>

| Subscale B Staff |
| 14   | .36                  |
| 15   | .60                  |
| 16   | .74                  |
| 17   | .51                  |
| 18   | .66                  |
| 19   | .49                  |

(appendix continues)
<table>
<thead>
<tr>
<th>Item</th>
<th>Discrimination Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Subscale C Working conditions</strong></td>
</tr>
<tr>
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<td>.60</td>
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<td>27</td>
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<td>28</td>
<td>.64</td>
</tr>
</tbody>
</table>

*Note.* With the exception of one, discrimination indices were reasonably high.