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Psychological sequelae following treatment in intensive care

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CHAPTER ONE

INTRODUCTION AND OVERVIEW

1.1 INTRODUCTION

In this chapter an overview of the study is provided. This includes the background to the study, the problem statement, the purpose of the study, research objectives, significance of study, the research question, meta-theoretical assumptions, theoretical framework, operational definitions, an overview of the research methodology and the ethical considerations and finally, the summary.

1.2 BACKGROUND TO THE STUDY

Progress in critical care has led to decreased mortality rates among those admitted to Intensive Care Units (ICU's). However, for many survivors the ICU hospitalisation can lead to a life of severe limitation, obstacles, cognitive dysfunction and psychological sequelae (Jackson, Mitchell and Hopkins 2009). The Intensive Care Unit (ICU) is a stressful environment and patients may be left with long standing psychological symptoms which impair their quality of life (Scragg, Jones & Fauvel 2001). Patients in ICU all have one commonality: their condition is life threatening. Coping with both the critical illness, and the stressors of the ICU environment can have both long and short-term psychological consequences that can affect both the recovery from the illness and their mental health status. Anxiety symptoms have been reported in between 11.9% and 43% of patients and depressive symptoms by between 9.8% and 30% (Scragg, Jones and Fauvel 2001). Estimates of post-traumatic stress symptoms in critically ill cohorts are reported to be as high as 63% and exceed or rival those of traditionally "high risk" populations, as well as populations with

medical disorders such as cancer and myocardial infarction (Jackson, Hart, Gordon, Hopkins, Girard and Ely 2007). Importantly, post-traumatic stress symptoms do not appear to decrease over time after ICU discharge (Jones, Griffiths, Humphris and Skirrow 2001, Rattray, Johnston and Wildsmith 2005) and indeed may endure for a number of years (Kapfhammer, Rothenhausler, Krauseneck, Stoll and Schelling 2004). Lifetime prevalence for anxiety disorders in South Africa is reported to be 15,8%, depression 9.8% and post-traumatic stress disorder lifetime prevalence of 2.3% (Stein, Seedat, Herman, Moomal, Heeringa, Kessler and Williams 2008).

Intensive Care Nursing is becoming increasingly technologically advanced. Many machines, monitors and apparatus are being used to provide nurses with information about the physiological status of the patient, but the machinery provides no information about the human experience of distress, whether mental, or physical (Barker 2002:99). The physical needs of the patients are addressed in the modern ICU's, where the main outcome measure is survival status, but the psychological needs of these patients are often ignored, despite the possibility of leaving the patients with deep emotional scars (Roberts and Chaboyer 2004:179). The stressors that the patients are exposed to in the ICU are numerous. "Stress" may be defined as any event that is perceived as a potential source of physical and emotional harm. It has been well established by Psychoneuroimmunology (PNI), that stress can lead to illness both directly, by its effect on physiological functioning, and indirectly, by affecting the health related behaviour of an individual (Baron and Byrne 2000:558).

On a psychological level, the perception of a threat causes a narrowing of the perceptual field, increased rigidity of cognitive processes and the resultant difficulty

to perceive a situation objectively or to see available alternatives, and the person may suffer a lowering of tolerance for, or resistance to, other stressors (Schlebusch 1997:6). In the face of severe psychological stress dissociation may occur. On a physiological level, severe stress may compromise the immune system, as well as other physiological functions, resulting in the impairment of the body's ability to fight off disease and invading infections - processes that are vital in the critically ill patient.

Experiences of critically ill patients are an important aspect of the quality of care in the ICU. In a recent study done in the USA, patients characterized the health care system as "impersonal and cold," and a third of them stated that their emotional needs were not met. The patients felt abandoned, frightened and alienated from physicians and nurses alike (Hofhuis and Bakker 2004:21). Among the major sources of threat in a hospital for patients are fear of the unknown and the loss of perceived control (Baron & Byrne 2000: 557). Other stressful, unpleasant experiences that patients may experience are: pain, lack of sleep, fear, nightmares, bewilderment, isolation and loneliness (Rotondi, Chelluri, Sirio, Mendelsohn, Schultz, Belle, Im, Donahue and Pinsky 2002:746).

Currently in South Africa, the majority of ICU staff has little or no contact with the patient once they have been discharged from the ICU, and are thus denied the opportunity to observe the full impact of a critical illness on the patient and their families. Debriefing of patients and their families on ICU discharge is not routinely done.

South Africa at present is struggling with a shortage of Intensive Care qualified staff. A recent study noted that only 26% of the nurses working in ICU are suitably trained, whilst the majority have less than 5 years experience in the Intensive Care environment (Scribante, Schmollgruber and Nel 2004:111). Inexperienced nurses find it easier to focus on the technical equipment as well as the technological aspects of care at the expense of meeting the psychological needs of the patients. This element of care is crucial for maintaining the well being of the critically ill (Mollerup and Mortensen 2004:70). Hupcey and Zimmerman (2000) stated that patients found that staff in whom they lacked confidence made them more panicky and paranoid.

1.3 PROBLEM STATEMENT

Patients who experience a critical illness and require treatment in an ICU may be vulnerable to developing short and long-term negative psychological sequelae such as symptoms of anxiety, depression and post-traumatic stress. This has been established in other countries, but requires investigation in South Africa. It cannot be assumed that our multi-cultural population that holds both African and Western world-views will experience Intensive Care in the same way as British, American or Australian patients do. However, if there is a problem area in which patients are prone to developing mental illness, this should be identified so that preventative, supportive and rehabilitative psychological measures can be put in place. Currently in South Africa, once a patient has been discharged from an ICU, they often have no further contact or communication with the ICU staff. This usually results in no continuity of care for the patient, as ward doctors and nurses become responsible for their care. The patients may feel abandoned, confused and frightened, as they are not debriefed on

discharge from the ICU. If nursing care is to be holistic, the psychological as well as the physical needs of the patients need to be addressed.

The researcher sought to answer the following question: What is the prevalence of the symptoms of anxiety, depression and post-traumatic stress in patients following treatment in ICU as elicited at their first return visit to outpatients post-discharge.

1.4.PURPOSE OF THIS STUDY

The purpose of this research was to determine whether anxiety symptoms, depressive symptoms and post-traumatic stress symptoms, were experienced by a sample of patients following discharge from Intensive Care Units within a level 1 academic hospital in Johannesburg, South Africa The patients were interviewed by the researcher at their first follow-up visit post-discharge, in the speciality outpatient department clinics. Anxiety symptoms and depressive symptoms were identified and measured using the Hospital Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (1983), and the post-traumatic stress symptoms were identified and measured using the Experience after Treatment in Intensive Care-7 scale (ETIC-7) developed by Scragg, Jones and Fauvel (2001).

1.5 RESEARCH OBJECTIVES

The research objectives for this study are to investigate and determine: the prevalence and severity of anxiety symptoms, the prevalence and severity of depressive symptoms, and the prevalence and severity of post-traumatic stress symptoms, in patients following discharge from an Intensive Care Unit at a level 1 academic hospital which is a major tertiary referral centre in Johannesburg, South Africa. This

hospital has 1190 beds and the ICU patients comprise approximately six percent of the total patient admission. The patients who utilize the hospital facilities are usually those that have no private medical aid coverage and many foreign patients use the facility too. Patient's who participated in this study had been discharged from one of four adult Intensive Care Unit's (ICU) in the same hospital. The nurse to patient ratio in these ICU's is 1:1. A preliminary record review of patient admission to this hospital's ICU's over a three-month period was 306, and the mortality rate in ICU over this period was 28% (Schmollgruber 2008). The patients were interviewed at their first follow-up visit, post-discharge, in the speciality clinics in the outpatient department (OPD) at the hospital.

1.6 SIGNIFICANCE OF THIS STUDY

Nursing Professionals have a duty to protect the rights of ill, distressed, vulnerable patients and also to be involved in the early detection and prompt and effective rehabilitation of those at high risk. This research was undertaken so that a potential problem area could be assessed and recommendations made on the basis of the results. There is a gap in the literature in South Africa with regards psychological sequelae following treatment in ICU. To date, the researcher is not aware of any research that has been undertaken in South Africa on this topic.

Nursing care and the treatment milieu should be assessed frequently to ensure that patients are receiving quality, holistic care that is benefiting the patients and their recuperation in the most effective way. Nursing units are frequently organized and run according to set rules or traditions which may not be effective or efficient. Often these traditions are neither questioned nor changed because they have existed for years,

facilitate the routine organization of tasks and are frequently supported by people with power and authority (Burns & Grove 2003:14). Nursing's body of knowledge needs to have an empirical rather than a traditional base if nurses are to have a powerful impact on health care and health outcomes (Shields 2005:3).

Concern about post-traumatic stress (PTS) symptoms in ICU survivors is growing (Combe 2005:31) and has led, in some cases, to changes in the delivery of care in the management of patients in response to the perception that PTS symptoms are a common outcome (Jackson et al 2007). ICU delirium, which is a known predictor of post-traumatic stress following treatment in ICU, may be as emotionally devastating as intraoperative awareness during anaesthesia (Schelling et al. 1998). In a landmark study done by Hopkins, Weaver, Pope, Orme, Bigler and Larson-Lohr (1999), it was noted that 100% of ICU survivors experienced cognitive impairment at hospital discharge. All patients had problems with memory, concentration and attention. At the one-year follow up, 30% remained globally impaired and 78% impaired in one of the domains assessed. This needs further investigation. Rosenhausler, Ehrentraut, Stoll, Schelling & Kapfhammer (2002) noted however, that after 6 years post ICU, cognitive impairments had improved or were mild.

Professional nurses should empower patients to ensure that they may cope better, and adjust to the stressors that illness and the intensive care environment create. Psychiatric nursing may serve as a useful focus, and an additional tool to be used by the ICU's for assistance with empowering patients (Barker 2002:99). Patients in the ICU experience many physical and emotional stressors, which may cause short and

long term difficulties. These should be investigated and addressed to improve patient care and rehabilitation.

The majority of prior studies measuring psychological sequelae were done using postal questionnaires, resulting in small sample groups due to the poor response rate. This research study was conducted using face-to-face structured interviews. The studies also suggest that PTS symptoms in ICU patients may be overestimated because of the broad screening tools used and they recommended that tools specific to PTS and ICU be used (Jackson et al 2007, Adamson 2004, Scragg, Jones and Fauvel 2001). This study used the Experience After Treatment in ICU-7 (ETIC-7), which determines PTS symptoms relating specifically to memories of ICU. Research needs to be done early post discharge to determine whether it is components of the critical illness (for example coping with physical ailments, pain and the possibility of a foreshortened life), or treatments and experiences rendered in ICU that cause PTS symptoms (Girard, Shintani, Jackson, Gordon, Pun, Henderson, Dittus, Bernard and Ely 2007).

It has been noted in previous systematic reviews of PTS symptoms that very few patients were asked if they had prior mental health problems, or had been on psychiatric medication (Cuthbertson et al 2004). The majority of previous studies also failed to determine if there was a major stressful event just prior to admission to the ICU, or post-discharge from it, that could be confounding results. Furthermore, there is little information regarding the use of physical restraints in ICU, and whether memories of the restraints are a predictive factor in developing adverse psychological symptoms. Cognisance of all of the above was taken in this study.

Mental illness has always been a neglected part of health care, because its economic and other results are not immediately visible. Once a person has developed a mental illness, they are more difficult to rehabilitate in terms of vocational activity than those with physical illness. There is also a stigma attached to mental illness, which is almost universal and this greatly increases the suffering of the patient and their families (Byrne 2000).

People who would benefit from this research include ICU patients, ICU nurses and Intensivists. There is a gap in the literature in South Africa with regards the psychological sequelae of ICU treatment.

1.7 RESEARCH QUESTION

What is the prevalence of anxiety symptoms, depressive symptoms and post-traumatic stress symptoms in patients following ICU treatment, as elicited at their first return visit post discharge in the Out Patient Department (OPD). Two instruments, The Hospital Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (1983) and the Experience After Treatment in ICU-7 (ETIC-7) developed by Scragg et al (2001) were used to collect and interpret the data, and to supply answers to the question above.

1.8 META-THEORETICAL ASSUMPTIONS

The following concepts have been identified as being central to nursing and nursing theories: person, environment, nursing and health / illness (Nicoll 1997).

The person in this study is the ICU patient. Each patient is unique with various capacities for health and vulnerability to illness and psychological distress (Curley 1998). Viewed holistically, the person's physiological, psychological, socio-cultural, spiritual and developmental aspects should be taken into consideration by the nurse. The critically ill patient in the ICU is vulnerable and requires expert continuous care in order to have their needs met. The individual or person cannot be seen as being separate from the environment, their family or community as they are an open system in constant interaction with and affected by all these factors (George 2002).

The environment can be described as all the internal and external forces surrounding the person (patient) at any given point in time. Consideration of the environment is crucial as it varies as to needs, drives, perceptions and goals of all living organisms (Newman and Fawcett 2002). In this study the environment is the Intensive Care Unit and the stressors associated with receiving treatment in that environment. These stressors (intrapersonal, interpersonal, physical and external environmental factors) and how each person perceives and reacts to them are pertinent to this study.

Nursing is a 'unique profession' that has the total person as it's central concern (George 2002). Nursing, according to Neumann (George 2002) concerns itself with all the variables affecting human response to stressors. The person is seen as a whole, and it is the task of nurses to address the whole person. Nursing assists individuals, families and groups to attain and maintain a maximum of total wellness by purposeful

interventions aimed at reduction of stress factors and adverse conditions that affect optimal functioning in any given patient situation (George 2002). In this study, the nursing process occurs in the ICU environment.

Health / Illness

Health and wellness may be seen as a dynamic composite of physical, psychological, socio-cultural and developmental balance that is flexible and yet maintains an unbroken ability to resist disequilibriium (Neuman and Fawcett 2002). Health can be viewed in a continuum rather than as a dichotomy of health or illness. The patients in this study were critically ill and therefore at the far-end of the continuum, in a state of severe disequilibriium.

1.8.1 Theoretical Framework

Burns and Grove (2003) state that a theoretical framework is an abstract, theoretical basis for a study.

Psychoneuroimmunology (PNI), a relatively new field of psychiatric research will provide the platform from which this research is done. Acute stress can alter immunocompetence; conversely, immunological alterations can be associated with stress (Caine 2003). Critical illness and their requisite ICU therapies expose patients to extreme stressors, including respiratory insufficiency, pain with endotracheal intubation and suctioning, release of inflammatory cytokines, strain on the hypothalamic-pituitary-adrenal axis, all in the context of a limited ability to communicate and reduced autonomy (Davydow et al 2008:421). This theory is applicable to this study as the effect of stress and the response of the body and its

coping mechanisms (immune system), is of particular relevance to nurses and in the long held belief in the connection between mind and body (Caine 2003).

The multiple stressors associated with critical illness and treatment in the ICU reduces a person's perception of control, resulting in a stress response which will cause the release of epinephrine, which leads to increased heart rate and heightened awareness and therefore increased levels of anxiety (O'Brien, Moser, Riegal, Frazier, Garvin and Kim 2001). This stress response is associated with altered immune function, decreased immunity and therefore a weakened and vulnerable patient both physiologically and psychologically (Caine 2003). This weakened state could slow the recovery process and leave them susceptible to developing psychological sequelae such as anxiety, depression and post-traumatic stress symptoms.

Psychoneuroimmunology is pertinent to this study as nurses can reduce the amount of stressors that a patient has to deal with by taking cognisance of basic nursing care modalities such as ensuring effective pain relief, providing uninterrupted sleep, promoting comfortable positioning, reducing environmental sounds and lights, encouraging relaxation techniques, ensuring patient privacy, and effective reassuring communication (Dyer 1995). Research has been undertaken regarding the stress response of patients in ICU and the healing effects of music. Music was reported to lessen the stress response in ICU patients (White, 1999), and was shown to bring about mental, emotional and physical calmness, reduce heart rate, respiratory rate and myocardial oxygen demand, demonstrating that interventions can be used to decrease the stressors that patient's contend with in ICU.

1.8.2 Operational Definitions

An operational definition is developed so that the variables can be measured or manipulated in a study (Burns and Grove 2003:40).

- **Sequelae**

This term refers to any disorder or pathological condition that results from a preceding disorder or accident. It can also be the consequences of a particular condition or therapeutic intervention (Anderson 2001).

- **Mental Illness**

This can be explained as a state of being in which an individual has difficulty in handling and coping with situations and feelings of an everyday nature. It will cause subjective distress, and disrupt normal functioning in personal, social and vocational environments. Mental illness can be defined as various psychiatric conditions, usually characterized by impairment of an individual's normal cognitive, emotional, or behavioural functioning, and caused by physiological or psychosocial factors (Baron and Byrne 2000).

- **Anxiety and symptoms of anxiety**

This is a universal emotion. It is experienced by everyone in the mild form at some time or another, but when it is experienced in more extreme forms it leads to fears of impending death or catastrophe. Most definitions agree that it occurs in response to a stimulus (event, object or person), that individuals perceive as threatening to their physical, social or psychological integrity (Uys & Middleton 2004:270). According to The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV TR) Fourth

edition (2000), the presence of the following symptoms are indicative of anxiety; feeling wound-up, tense or restless, easily becoming fatigued or worn-out, experiencing concentration problems, irritability, significant tension in muscles and difficulty with sleeping. These symptoms cause clinically significant distress for the patient and cause problems with everyday functioning (American Psychiatric Association, 2000). In this study, the presence of anxiety symptoms will be defined as a score above the recommended threshold of eight on the Anxiety subscale of the Hospital Anxiety and Depression Scale and a "probable clinical case" of anxiety will be defined by a score equal to or above 11 (Scragg, Jones and Fauvel 2001).

- **Depression and depressive symptoms**

This is a mood characterized by feelings of sadness, dejection, despair, discouragement & hopelessness. (Uys & Middleton 2004:750). The Diagnostic Manual of Mental Disorders (DSM-IV TR) states that in order for a diagnosis of depression to be made, the following symptoms must be present: depressed mood, feeling tearful, loss of interest or pleasure in activities, weight loss or gain, insomnia or hypersomnia, recurrent thoughts of death or suicide, psychomotor agitation or retardation and fatigue. These symptoms must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning (A.P.A. 2000).

In this study, the presence of depressive symptoms will be defined by a score above the recommended threshold score of 8, and a 'clinical case' of depression as a score of 11 or above on the depression subscale of the Hospital Anxiety and Depression Scale (HADS) (Scragg, Jones and Fauvel 2001).

- **Post-traumatic stress disorder (PTSD) and post-traumatic stress (PTS) symptoms**

According to the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV), post-traumatic stress disorder is a potentially debilitating psychiatric condition that develops as the result of being exposed to a traumatic occurrence 'in which a person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others' and which generates 'intense feelings of fear, helplessness, or horror' in those exposed to the trauma. This condition is characterised by a constellation of symptoms in three domains:

- Symptoms of re-experiencing (for example, intrusive thoughts and upsetting recollections of the trauma, recurrent dreams or nightmares, and flashbacks).
- Symptoms of avoidance and emotional numbing (for example, efforts to avoid conversations, places, and thoughts associated with the trauma; detachment from others and a restricted range of affect).
- Symptoms of increased arousal (for example, sleep disruption, hypervigilance, and exaggerated startle response).

These symptoms must cause significant impairment in social, occupational, or other important functional domains (A.P.A. 2000).

In this study, a score of zero to seven on the Experience of Treatment in ICU – 7 scale (ETIC-7) defines no symptoms of post-traumatic stress (PTS), a score of eight and above defines that there are symptoms of post-traumatic stress (PTS). The higher the

score on the ETIC-7, the more problematic the stress symptoms and therefore the possibility of developing Post Traumatic Stress Disorder (PTSD).

1.8.3 Methodological Assumptions

Methodological assumptions are statements that are taken for granted or considered true, even though they have not been scientifically tested (Burns and Grove 2003:41).

The researcher believes in holistic patient care and that nurses should incorporate all aspects of the patient's life such as the physiological, psychological, socio-cultural and spiritual factors when planning nursing care.

The researcher believes that there is a need for evidence-based practice. Evidence-based practice involves using research findings to promote the understanding of patients' experiences with health and illness, and enables nurses to provide quality, cost-effective care within the health system. The knowledge that is gained from research provides a basis for improving the quality of care that nurses deliver in practice (Burns and Grove 2003:4).

The researcher undertook this study with the aim of generating knowledge that is useful and can be used to improve nursing practice and therefore patient care. The researchers role is objective and to report honestly and without alteration all data that was collected.

1.9 OVERVIEW OF THE RESEARCH METHODOLOGY

1.9.1 Research design

The purpose of this study is to investigate the prevalence of symptoms of anxiety, depression and post-traumatic stress in patients, at their first follow up visit in the outpatient department at a level one academic hospital in Johannesburg, South Africa. A prospective, quantitative, cross-sectional, descriptive format was used to investigate these variables. The total sample number was 98 and the instruments used in the structured interview were the Hospital Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (1983) and the Experience After Treatment in ICU –7 (ETIC-7) developed by Scragg, Jones and Fauvel (2001). The research methodology will be discussed in further detail in chapter three.

1.9.2 Validity and Reliability

Validity is the extent to which an instrument accurately reflects the abstract constructs being examined (Burns and Grove 2003). Reliability can be described as the extent to which an instrument consistently measures a concept (Burns and Grove 2003).

Reliability was maintained by:

The use of reliable instruments with published psychometric properties (discussed further in Chapter three). Ensuring consistency with the data collection, which was achieved by using the same instrument, administered by the same researcher at each structured interview. The data was verified by the statistician for accuracy.

Validity was maintained by:

The use of valid instruments with published psychometric properties (discussed further in Chapter three). Ensuring a heterogeneous sample from different ICU types to exclude ICU specialty bias, excluding patients whose admissions to ICU were as a result of trauma or violence to exclude precipitating extraneous variables that could compound post-traumatic stress results. A pilot study was carried out prior to the main study to ensure that patients understood the wording in the information letter and the main instrument. Patients were assured of anonymity and that their participation in the study was voluntary and that they could withdraw at any stage without consequence. Patients names were checked against an ICU register to ensure that they had been in the Intensive Care Unit and the assistance of an expert statistician was sought during data analysis.

1.9.3 Ethical Considerations

The following steps were taken to ensure that ethical considerations were observed: Approval for the study was sought from the Faculty of Health Sciences Postgraduate Committee and the Human Research Ethics Committee (Medical) of the University of the Witwatersrand. Written approval and clearance to proceed with the study was obtained from both the Faculty of Health Sciences Postgraduate Committee (see **Appendix A**) and the University Human Research Ethics Committee (M060455) (see **Appendix B**). Permission to conduct the research was obtained from The Deputy Director of Gauteng Health Department (see **Appendix C**) and also from the Chief Executive Officer of the Hospital.

Permission was obtained from the Director of Intensive Care Units, from physicians and surgeons of the outpatient clinics and the nursing managers in charge. An

information letter (see **Appendix D**) was sent to all of the above and was also given to each prospective participant to read before agreeing to participate in the study. The information letter contained details regarding the purpose of the research, the data collection procedure, the researchers contact details and also the assurance of the anonymity of all participants. The researcher included her contact details as consideration was given to the fact that there was a small risk that patients might have felt distress after answering questions regarding their ICU experience. An experienced psychiatric registered nurse was available to debrief the patients if the need came about.

The researcher kept in mind that the ICU patient is classified as a "vulnerable patient" by the Helsinki agreement and followed the advice of the Human Research Ethics Committee (Medical) of the University. The patients were informed that their participation was voluntary and that they could refuse to participate. If they chose to participate after reading the information letter, they were asked to sign an informed consent form (**Appendix E**). The patients were informed about their rights to withdraw their participation from the study as and when they wished to, and at the same time assured that if they chose to withdraw from the study, they would not be prejudiced in any way whatsoever. The anonymity of the participants was ensured, as the names of the participants were not written on any of the questionnaires, which were assigned a number only. Their names were kept in a separate notebook by the researcher, which was kept on her person or in a locked drawer at all times. This information was collected to crosscheck names with the ICU register, to ensure that the participants had been discharged from the ICU in the hospital. Care was also taken that no harm came to the patients, by ensuring privacy whilst completing the

interview and by giving them an opportunity to ask questions after the interview was completed.

Permission was sought from the publishers of the instruments that were used (Medal ™, www.medal.org.) and granted (see **Appendix G**).

1.10 LIMITATIONS OF THIS STUDY

Patients who did not return for their outpatient visit were not interviewed. These patients were therefore omitted from the study, and their psychological response to the Intensive Care environment could differ to those who attended the clinics post discharge. Patients may have been affected by the presence of the researcher and this may have caused the participants to answer the questions differently to how they might have if they were completely anonymous. Generalising the research results will be limited as South Africa has many unique cultures, each with their own belief systems and worldviews.

1.11 SUMMARY

In this chapter an overview of the study was provided to introduce the reader to the study. This included the background to the study, the purpose, the objectives, the significance of the study, the research question, an explanation of the meta-theoretical assumptions, the theoretical framework and the operational definitions were described. A brief overview of the research methodology was given along with the research design, validity, reliability and ethical considerations which guided the researcher through the research process.

In the following chapter, the literature review will be presented. It provides an overview of the current literature regarding psychological sequelae following treatment in ICU. The researcher views the patient in a holistic manner and as such the literature review will include stressors in the Intensive Care Unit (ICU), the effects on the family members of ICU patients, ICU nursing staff, 'transfer stress', a short description of previous qualitative findings and current South African research. The remaining chapters will include the research design and methods, data analysis and results and finally, a summary and discussion of the main findings, recommendations, conclusions and reflections.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

In the previous chapter a general overview of the study was provided. It included the background to the study, the problem statement, purpose of the study, research objectives, significance of study, research question and meta-theoretical assumptions. It also described the theoretical framework, operational definitions and methodological assumptions. It provided a brief overview of the research methodology, ethical considerations and limitations of this study.

In this chapter, a summary of the research that has previously been done on this topic will be discussed under the headings of: stressors in the ICU environment, including physical stressors, environmental stressors, interpersonal and intrapersonal stressors. To present a broader and holistic view of the far-reaching effects of psychological sequelae following treatment in ICU, the family members of the ICU patients, the ICU nursing staff, transfer stress, and qualitative findings will be discussed.

2.2 BACKGROUND TO STUDY

In 1995, Dyer noted that staff working in ICU's had been aware of the psychological trauma that patients might have experienced for almost four decades and yet in spite of this, it continued to occur. Dyer went on to describe the emotional stressors experienced by patients in ICU as a 'type of torture'. She went so far as to use

publications from Amnesty International - which described methods of psychological torture - to support her suggestion (Dyer 1995:223).

Schelling (1998) found that four years post-discharge, Acute Respiratory Distress Disorder (ARDS) ICU survivors continued to show signs of mental health impairment. Rattray, Johnston & Wildsmith (2005) reported that advances in life supportive therapy result in many patients now surviving acute severe illnesses, which in the past would have meant certain death. However, the combined effects of critical illness and the ICU experience together with often-unrealistic expectations of an uncertain recovery period have been linked to both long and short term psychological consequences. Anxiety symptoms have been reported in between 11.9% and 43% of patients, and depressive symptoms by between 9.8% and 30% (Scragg et al 2001). Estimates of post-traumatic stress symptoms in critically ill cohorts are reported to be as high as 63% and exceed or rival those of traditionally “high risk” populations, as well as populations with medical disorders such as cancer and myocardial infarction (Jackson, et al 2007). Post-traumatic stress symptoms may persist for a number of years (Rattray, Johnston and Wildsmith 2005). The severity of illness has consistently been reported not to be a predicting factor in PTS symptoms (Girard et al 2007 & Boer, van Ruler, van Emmerick, Sprangers, Rooij, Vroom, de Borgie and Reitsma 2008).

The researcher identified several factors during the literature review that are known causes of psychological distress and post-traumatic stress symptoms in ICU patients. Factors that reduce the risk of PTS were also noted. Please refer to Table 2.1 overleaf

Table 2.1 Factors known to cause psychological distress in ICU as well as factors known to reduce the risk of developing PTS symptoms in ICU

FACTORS KNOWN TO CAUSE PSYCHOLOGICAL DISTRESS IN ICU	
FEMALE GENDER Eddlestone et al 2000 Girard et al 2007	**YOUNGER AGE** Cuthbertson et al 2004 Boer et al 2008 Girard et al 2007
SEDATION AND ANALGESIA Benzodiazepines and Fentanyl Nelson et al 2000	**PRIOR PSYCHIATRIC TREATMENT** Cuthbertson et al 2004 Nickel et al 2004
LENGTH OF MECHANICAL VENTILATION AND LENGTH OF STAY IN ICU Schelling et al 1998	**PRESENCE OF FACTUAL TRAUMATIC MEMORIES** Boer et al 2008 Girard et al 2007 Roberts and Chaboyer 2004
AMNESIA AND DELUSIONAL MEMORIES Girard et al 2007 Roberts and Chaboyer 2004 Margarey and McCutcheon 2005	**NIGHTMARES** Strahan et al 2003
SUBJECTIVE INTERPRETATION OF MEMORIES IN ICU Rattray et al 2008 Schelling et al 2004	**MEMORY OF PHYSICAL RESTRAINTS**
A factor **consistently** found to be **non-predictive** in the development of post-traumatic stress symptoms is **severity of illness** (Girard et al 2007, Jackson et al 2007 and Boer et al 2008).	
FACTORS KNOWN TO REDUCE THE RISK OF DEVELOPING POST-TRAUMATIC STRESS SYMPTOMS	
1. Perceived social support (Deja et al 2006)	
2. Administration of Hydrocortisone in ICU (Schelling et al 2001)	
3. Increased factual memories of ICU (Jones et al 2001; Cuthbertson 2003)	
4. Interruption of sedative infusions and mobilising patients early in ICU (Kress et al 2003)	
5. Patient diaries (Backman and Walther 2001)	
6. Age above 50 years (Girard et al 2007)	

Known risk factors for the development of PTS symptoms in the ICU, according to a recent systematic review conducted by Jackson et al. (2007) are longer duration of stay in the ICU, longer time span of mechanical ventilation, greater levels of sedation in ICU, female gender, younger age, pre-existing psychiatric history, greater number of traumatic memories / frightening recollections and the presence of delusional memories. The fact that younger patients have a better factual recall of ICU, in addition to more memories of discomfort and pain, may in part be due to a decreased sensitivity to sedation and analgesia relative to the older patients (Lavery 2004).

2.3 STRESSORS IN THE ICU

Factors considered to be severe stressors for the patient in the ICU are numerous, but can be classified into 4 groups: 1) Physical stressors. 2) External environmental stressors 3) Intrapersonal stressors and 4) Interpersonal stressors. (Please see Figure 2.2 on page 31 for an overview).

2.3.1. Physical Stressors in ICU

Physical stressors may include severe muscle wasting and weakness, including reduced cough power and pharyngeal weakness. Patients in ICU can lose about 2% of muscle mass in a day due to catabolism and atrophy secondary to neuropathic degeneration (Griffiths & Jones 1999:428). Patients may also suffer joint stiffness, numbness, paraesthesia, taste changes, disturbance to sleep rhythm and cardiac and circulatory decompensation resulting in postural hypotension. Patients may have reduced pulmonary reserve, causing breathlessness on mild exertion. Patients who are in ICU for extended periods may lose up to half their muscle mass, resulting in severe physical disability (Griffiths & Jones 1999:428). Rebuilding the muscle can take over

a year. Initially patients may be weak to the extent where they struggle to feed themselves, and may also have poor control of their swallowing and upper airways with a risk of aspiration (Broomhead & Brett 2002:412). Nurses in the step-down units and the wards should be made aware of these factors to help them better understand the needs of patients they receive from the ICU's. 'Relocation Stress', which is discussed later in this chapter, is transient anxiety experienced by patients when they are discharged from ICU and taken to a normal ward. This phenomenon requires further research (Field, Prinjha and Rowan 2008).

2.3.2. External Environmental Stressors in the ICU

The environment is stressful for the patients as most suffer from sleep deprivation due to continual disturbance. The unit is constantly illuminated, merging day and night for patients. Disturbance occurs by means of noise experienced due to monitors and alarms, by staff talking, as well as distressing sounds made by other patients. They may even witness a cardiac arrest and attempted resuscitation of another patient (Dyer 1995). The patient may be attached to a ventilator and have sensations of suffocation and paralysis due to the neuromuscular blocking agents, which are given to ease the ventilation process. They also have to endure the suctioning that is a necessity whilst ventilated. They may also be aware of mechanical restraints that are applied to their arms to prevent them from removing the endotracheal tube and the many invasive (urinary catheters, inter-costal drains, naso-gastric tubes etc.) and non-invasive equipment (pulse oximeter, cardiac leads etc.) for monitoring purposes, as well as a variety of intravenous lines for administration of fluids and drugs. Certain drugs (Benzodiazepines) that are given routinely in ICU to sedate patients may increase the

risk for delirium or amnesia (Granja, Lopes, Moreira, Dias, Costa-Pereira and Carniero 2005).

2.3.3 Interpersonal stressors in the ICU environment

Interpersonal factors that can cause stress reactions include: not being able to communicate because of an inserted endo-tracheal tube, unempathetic nurses and sensorial isolation as there is little human contact or touch. The nurses are not required to touch the patients to do observations, as vital signs are all displayed on monitors (Dyer 1995). The patient's family are often wary of touching them in case they displace any monitors, tubes or intravenous lines. Furthermore the patients experience feelings of shame and loss of dignity when they are exposed with other patients present in the ward (Broomhead & Brett 2002:415). Many patients report that they had experienced constant worry regarding financial issues in addition to the concern about the stress and anxiety that their illness was causing their loved ones. Patients felt panic-stricken when they lacked confidence in the nursing staff who were attending to them, as well as when procedures were not explained to them (Price, 2004).

2.3.4 Intrapersonal stressors in the ICU

Intrapersonal factors are numerous and may include: amnesia, memory difficulties, paranoia, delusions, anxiety symptoms, traumatic stress reactions, panic attacks, constant fear of death, shame, terror, depressive symptoms, guilt, anger, recurrent nightmares, concentration difficulties, reduced confidence, irritability, hopelessness and extreme despair (Chaboyer, James & Kendall 2005:5).

During the immediate post-ICU period, when patients become aware of their physical status and appearance, they are often horrified and depressed by their physical appearance as well as their emotional state. They may also have bedsores, in addition to suffering from severe hair-loss and dermatitis. Many patients have vivid memories of pain, suctioning and tracheal intubation (Broomhead and Brett 2002).

2.3.4.1 Memories, Dreams, Delirium and Amnesia

The prevalence of delirium in ICU within surgical intensive care patients was reported to be 40% - 60% (Jones, Griffiths, Humphris and Skirrow 2001), although it has been reported to be as high as 70 – 80% (Roberts and Chaboyer, 2004). Delirium may lead to disturbed memories, vivid dreams and unreal experiences, all of which have been linked to PTSD symptoms. In their study of **p**atients dreams and unreal experiences following intensive care unit admission, Roberts and Chaboyer (2004) reported that 5% of patients had no recall of ICU at all, 20% had factual memories, and a fifth of the patients had poor or no memories of factual events, but rather remembered definite dreams, hallucinations and nightmares. They concluded in their study that signs of delirium during the ICU stay were not predictive of development of dreams or unreal experiences. ICU delirium may be as emotionally devastating as intraoperative awareness during anaesthesia (Schelling et al 1998).

It has been suggested by a number of studies (Schelling et al 1998 and Girard et al 2007) that the number of adverse frightening and traumatic factual memories that patients can recall of the ICU is predictive of PTSD. Conversely, Boer et al (2008), Kress et al. (2003) and Jones et al (2001), found that factual memories of the ICU experience - rather than delusional memories or amnesia for the time - was a

protective factor against developing PTSD. Using previous evidence-based information from Griffiths and Jones (1999) regarding the protective function of factual memories, patient diaries were introduced in various institutions for long-term ICU patients. These were implemented in an attempt to reduce periods of amnesia and unpleasant recall (Backman and Walther 2001). The diaries were found to be beneficial to patients in helping to 'fill in the gaps' of 'lost' time in ICU. Furthermore, they proved to be a considerable source of comfort to bereaved family members. The use of prospective diaries as a rehabilitation tool has been highly recommended following a pilot study done in the United Kingdom (Combe 2005). This is an area that requires further research.

Critically ill patients who are mechanically ventilated often require sedative drugs to ensure their comfort whilst in the ICU. Sedative and analgesic drug infusions e.g. Midazolam and Remifentanil Hydrochloride, may lead to prolonged periods of altered mental status and amnesia. Research has been conducted into the daily interruptions of the sedative infusions to allow patients to awaken to a conscious state, and it was concluded that there was a significant reduction in the development of PTSD symptoms in these patients (Kress, Gehlbach, Lacy, Pliskin, Pohlman and Hall 2003). The daily interruption of sedation was also found to improve the overall psychological and physiological outcomes for patients when compared to routine sedation management (O'Connor, Bucknall and Manias 2008).

Many factors were mentioned in the literature regarding ICU and the development of PTSD and procedures and experiences that patients found stressful and frightening in

ICU. Curiously there was no mention of the vigorous physiotherapy that patients in ICU often have to endure.

Please see Table 2.2 overleaf for a summary of factors that have been identified as stressors in the Intensive Care Unit. They are listed under the headings: External stressors, Intrapersonal stressors, Interpersonal stressors and Physical stressors.

Table 2.2 Identified stressors in the Intensive Care Unit

EXTERNAL STRESSORS	INTRAPERSONAL STRESSORS	INTERPERSONAL STRESSORS	PHYSICAL STRESSORS
NOISE: Alarms Machinery Other patients Staff Telephones Artificial Lighting 24/7 Staff constantly present / disturbance Exposure Ventilator Suctioning and discomfort Painful procedures Physical Restraints Attached to many: IV Lines Drains Monitors	Loss of autonomy Dependency Helplessness Fear Anxiety Pain Hallucinations Loss of control of basic body functions Delirium Realisation of one's own mortality Depression Amnesia Paranoia Worry over financial matters and family Memory lapses Panic attacks Guilt Irritability Restlessness Hopelessness	Inability to communicate Dependency Unempathetic nursing staff Sensorial deprivation (Lack of human touch) Busy, stressed health professionals Realisation that their illness is causing anxiety + worry for family Shame Loss of dignity Relocation stress	Severe muscle Wasting Weakness Decreased cough power and pharyngeal weakness Joint stiffness Changes to sleep pattern / insomnia Taste changes Bedsores Cardiac and Circulatory decompensation ~ postural hypotension Hair loss Skin changes Decreased pulmonary reserve ~ resulting in breathlessness on mild exertion

2.4 FAMILY MEMBERS OF THE ICU PATIENT

It is apparent that an ICU patient should not be seen in isolation, but should be viewed holistically. This is evident, as recent studies have discovered that family members of the patient are also at high risk for developing symptoms of anxiety, depression, post-traumatic stress and complicated grief (Anderson, Arnold, Angus, Bryce 2008; Azoulay, Pochard, Chevret, Lemaire, Mokhtari, Le Gall, Dhainaut and Schlemmer 2005). It was discovered in these studies that up to 33.1% of family members had symptoms consistent with a moderate to major risk of PTSD. Family members have been seen to be highly significant in assisting with identifying changes in patients' behaviour and emotional state. Small amounts of familiar, comforting talk from family members has also been noted as a calming and reassuring factor for the ICU patients (Price, 2004); further research is necessary in this area.

2.5 ICU NURSING STAFF

It became evident in a qualitative study by Price in (2004) that ICU nurses were lacking in awareness about psychological issues relating to ICU patients. Price noted that nurses are often a constant presence for patients in the ICU. This should enable them to identify early signs and symptoms of psychological distress, as well as predicting factors which prevent or improve their patient's distress. However, ICU nurses felt that dealing with agitated patients was time-consuming, especially if they were showing signs of disorientation, hallucinations and confusion. Lack of time and under-staffing left staff feeling unsupported and disinclined to deal with patients' psychological needs. In addition to this, nurses felt that the ICU training was geared

towards the technical side of care and that they had limited opportunities, time and experience to explore the patients' psychological needs and care. Many of the nurses felt that the psychological needs of the patient should be dealt with after the patient has left the ICU and moved to the ward (Price 2004). In South Africa at present there is an ongoing exodus of trained ICU nurses and qualified registered nurses. Trained ICU nurses are in great demand; however, due to poor salaries and working conditions, they are leaving the country at an alarming rate. Currently only 26% of nurses staffing ICU's are registered as critical care nurses (Scribante, Schmollgruber and Nel, 2004). Staffing ratios and the staff ratio mix are matters of concern and moves are afoot to increase the staff compliment by including sub-professional categories of nurses in units to address the paucity of registered ICU nurses (Langley and Schmollgruber 2006). Over-worked and highly stressed ICU nurses are prone to burn out, which warrants further investigation and has been the focus of many studies in South Africa (Odendaal and Nel 2005, Kyriacos and Mayers 2006).

2.6 TRANSFERS OR 'RELOCATION' STRESS

Research is also being conducted with regards to 'Transfer Anxiety' or 'Relocation Stress', which is transient anxiety experienced by patients when they are discharged from the ICU and taken to a normal ward. This anxiety is seen to be inevitable resulting from leaving a protected, highly technological environment with constant nursing care and monitoring to a general ward environment with less supervision. Recommendations from these studies include that nurses in the wards which receive patients from ICU, should be able to recognise and cope with the physical and emotional fragility of former ICU patients and their families, as well as being

prepared to engage with patients and attend to their needs (Field, Prinjha and Rowan 2008; Gustad, Chaboyer and Wallis 2008).

2.7 QUALITATIVE STUDIES

There have been a number of qualitative studies done recently which explore the ICU patient's experience and the psychological distress that they experience (Corrigan, Samuelson, Fridlund and Thome 2007; Fredrikson and Ringsberg 2007; Field, Prinjha and Rowan 2008). Qualitative studies have noted that the suffering of post-traumatic stress (PTS) symptoms of these individuals is substantial, emphasizing the need for empathetic care in , as well as after, time spent in ICU. The post-ICU period has been characterized by 'moving on' or leaving behind the ICU experience (Maddox et al 2001). This does not seem to apply those suffering from the PTSD symptoms, as the traumatic memories hinder this 'moving on'.

2.8 SOUTH AFRICAN RESEARCH

As far as the researcher is aware, there is a distinct lack of literature from a South African perspective, in both quantitative and qualitative research into this subject. Research has been undertaken in England (Combe 2005, Griffiths et al. 2007), Ireland (Strahan et al. 2003, Lavery 2004), Scotland (Rattray et al 2005), Europe (Deja et al. 2006, Boer et al. 2008)), USA (Kress et al 2003, Davydow et al. 2008), Canada (Misak 2004), Scandinavia (Corrigan et al. 2007, Backman & Walther 2001) and Australia (Maddox et al 2001,Roberts and Chaboyer 2004). It appears that countries with more sophisticated infrastructures have been actively researching this phenomenon, whereas there is a dearth of research on this topic in South Africa.

South Africa is a multicultural society and cognisance should be taken of the numerous and diverse worldviews. Ethnomedicine – or the study of how cultural viewpoints, and differences in perception, impact on illness and the recovery period following illness, was kept in mind whilst conducting this research.

2.9. SUMMARY

From the above literature, it can be concluded that adverse psychological sequelae and the 'ICU syndrome' have been a known consequence following treatment in ICU for almost four decades and yet in spite of this, it continues to occur (Dyer, 1995). Concern regarding post-traumatic stress symptoms, anxiety and depression following treatment in ICU is growing (Combe 2005:31), and has led in some instances to changes in the delivery of care in the management of patients in response to the perception that these adverse psychological sequelae are a common outcome (Jackson et al 2007). The National Health Service in the United Kingdom has recommended that all hospitals in the UK should provide a rehabilitation service for the critically ill (Combe 2005).

In South Africa at present, ICU staff have only 'death' or 'discharge alive from ICU' as clinical outcomes from which to judge practice performance and limited evidence exists on which to base decisions about improvements to critical care practice.

The literature points to a 'gap' in the current knowledge of psychological sequelae following treatment in ICU. To the researcher's knowledge, no prior studies have been conducted in South Africa regarding this topic.

Interventions to manage post-traumatic stress symptoms and psychological sequelae have been instituted in a few countries (e.g., patient diaries, follow up ICU clinics and early mobilisation of patients), but no interventions have been instituted in South African ICU's as the prevalence of the symptoms of anxiety, depression and post-traumatic stress symptoms are unknown.

The findings from this study can be used as a platform from which other research can be undertaken and interventions recommended and implemented.

This chapter presented a review of the literature so that a comprehensive picture of the knowledge surrounding the topic was discussed and enabled this research study to be succinctly 'nested'. The following chapter will present the research methodology.

CHAPTER THREE

RESEARCH DESIGN AND RESEARCH METHODOLOGY

3.1 INTRODUCTION

In the previous chapter a review of the literature was presented and discussed. This chapter describes the research methodology used in this study including the research design, the study setting, sample criteria, the sampling process, data collection procedures, the pilot study and the instruments used for data collection. It also describes ethical considerations that have been taken into account with this study.

3.2 PURPOSE AND OBJECTIVES

For consistency, the purpose and the objectives of this study are repeated here.

The purpose of this study was to determine whether anxiety symptoms, depressive symptoms and post-traumatic stress symptoms, are experienced by a sample of patients following discharge from Intensive Care Units within a level 1 academic hospital in Johannesburg, South Africa.

The research objectives for this study are to administer two instruments to investigate and determine: the prevalence and severity of anxiety symptoms, the prevalence and severity of depressive symptoms, and the prevalence and severity of post-traumatic stress symptoms, in patients following discharge from an Intensive Care Unit.

3.3 RESEARCH DESIGN

A quantitative, prospective, descriptive, cross-sectional design was used to investigate the prevalence of the symptoms of anxiety, depression and post-traumatic stress in the sample population using two instruments, the Hospital Anxiety and

Depression Scale (HADS) (Zigmond and Snaith 1983)) and The Experience After Treatment In ICU –7 Scale (ETIC-7) (Scragg, Jones and Fauvel 2001).

Quantitative study: A quantitative study is a formal, objective, systematic process which involves rigor in implementation and generates scientific knowledge for nursing practice (Burns and Grove 2003:18).

This method of data collection enabled the researcher to describe and examine variables, to examine the relationships between the variables and to determine cause-and-effect relationships between the variables collected using two instruments, the Hospital Anxiety and Depression Scale (HADS) and The Experience After Treatment In Intensive Care-7 (ETIC-7).

Prospective design: A prospective design was chosen for this study as it would enable the researcher to collect information from the patients' during the structured interview, which would enable the researcher to identify the variables anxiety symptoms, depressive symptoms and post-traumatic stress symptoms, as they occurred in each participant to identify patients who had psychological sequelae following treatment in an ICU at their first return visit in the outpatient department.

Descriptive design: According to Burns and Grove (2003:480) it is a design used to identify phenomena of interest, identify variables and examine relationships that exist and to determine the frequency with which something occurs and to describe variables.

Cross-sectional design: A cross sectional design is used to examine groups of subjects in various stages of development simultaneously, with the intent of inferring trends over time (Burns and Grove 2003: 479). This study examined patients psychological sequelae at their first return visit post hospital discharge. Although this study examined patients at their first return visit post hospital discharge, the time ranged from four weeks to four months.

Two instruments: The two instruments that were used to collect the data were the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith 1983) and The Experience After Treatment In Intensive Care-7 scale (Scragg, Jones and Fauvel 2001).

Research methodology describes how the study was conducted and includes the sample, the setting, the instruments and the data collection process (Burns and Grove 2003:51). The objectives of this study were used to provide order to the process of data collection.

3.3.1 Research Setting

The site for the collection of the data was the outpatient clinics at an academic level one hospital, which is a major tertiary referral centre in Johannesburg, South Africa. This public sector hospital has 1190 beds and the ICU patients comprise approximately six percent of the total patient admission. The patients who utilize the hospital facilities are usually those that have no private medical aid coverage and many foreign patients use the facility too. Patient's who participated in this study had been discharged from one of four adult Intensive Care Unit's (ICU) in the same

hospital. The nurse to patient ratio in these ICU's is 1:1. A preliminary record review of patient admission to this hospital's ICU's over a three-month period was 306, and the mortality rate in ICU over this period was 28% (Schmollgruber 2008).

3.3.2 Sample population

After consultation with a statistician, it was decided to use a sample size of ninety-eight participants to ensure that a power of at least 95% accuracy was acquired for the 0.05 level of significance testing.

3.3.3 Sampling and Sampling Method

Sampling is a process of selecting subjects who are representative of the population being studied (Burns and Grove 2003:31). Purposive sampling according to Burns and Grove (2003) is a judgmental or selective sampling that involves the conscious selection by the researcher of certain subjects or elements to include in a study. A purposive sampling method was used in this study, with the sample being taken from all the patients discharged from four adult Intensive Care Units (ICU's) at the hospital when they returned for their first outpatient visit. ICU's from which the sample was taken were those ICU's that have official clinics, as the patients were collected and interviewed at the clinics in outpatients at their first return visit post hospital discharge.

- **Inclusion criteria for this study**

Criteria for inclusion were all patients of 18 years old and above, who had been discharged from one of four adult ICU's at an academic level 1 hospital and had returned to an outpatient department (OPD) in the same hospital, and were willing to

participate. Patients who were included had been in medical, surgical, cardiac and neurosurgical ICU's. This variety of patients was included in order to obtain a general overview and to exclude speciality bias. Neurosurgical patients – who have been excluded from many prior studies along with patients who suffered neurological trauma for example, Schelling et al (2001), Jones et al (2003) and Scragg, Jones and Fauvel (2001) – were included. This was done as they were found to be capable of answering the complex questions with ease, and as competently, as all the other patients from differing ICU specialities.

- **Exclusion criteria for this study**

Patients that were excluded included all patients who were admitted to the trauma ICU and all patients whose admission to ICU was as a result of violence. These patients were omitted to exclude Post Traumatic Stress Symptoms, Anxiety and Depressive symptoms due to causes other than the ICU experience. Patients' who did not wish to participate, were also excluded.

3.4 Data Collection

3.4.1 Procedure

Once permission was obtained from the Chief Executive Officer of the hospital, and the Gauteng Department of Health to proceed with the research, data collection commenced. The Health Research Ethics Committee of the University of the Witwatersrand approved this study (M060455) (refer **Appendix B**).

The researcher introduced herself to all the consultant physicians, surgeons and nursing managers involved in the outpatient speciality clinics, explained the research,

and sought permission to conduct the study. Once permission had been granted the researcher attended the outpatients department twice a week in the mornings. The researcher introduced herself to small groups of patients who were attending outpatients and gave a brief presentation about the research that was being conducted and asked all patients who were returning for their first visit post-ICU, and willing to participate in the study, to raise their hands. Each patient who had made themselves known to the researcher was given an information letter to read (refer **Appendix D**). Once they had read and understood the information letter, and indicated that they were willing to participate, they were asked to sign an informed consent form (refer **Appendix E**). Their names were kept in a separate notebook by the researcher, which was kept on her person or in a locked drawer whenever it wasn't being used to collect data. This information was collected to crosscheck names with the ICU register, to ensure that the participants had been discharged from the ICU in the hospital. To ensure a degree of privacy, the researcher conducted the interview in an office in the outpatient department. However, at times there were no vacant offices and as an alternative, a quiet corner of the outpatient department that was separate from the main section was used.

Data were collected by means of a checklist comprising three sections namely demographic and patient information and items derived from two instruments (Hospital Anxiety and Depression Scale (HADS) and Experience After Treatment In Intensive care-7 scale (ETIC-7)) (refer **Appendix F**).

The interview took approximately 10 minutes to complete, as there were 21 items as well as a few questions regarding the participants' medical history. The patients were

given the opportunity to ask questions once the structured interview had been completed. During this period, in which the researcher allowed the patients to talk and ask questions, some information that the researcher thought to be of interest to this study was noted and reported in the following chapter. Many of the patients stated that they were relieved to be able to discuss and share their experience of ICU. Data were collected over a 3-month period. A total of 98 questionnaires were completed and used for data analysis.

Timing of the measurement of the anxiety, depressive and PTS symptoms in this study was at the first visit to the Out-Patient Department (OPD), post ICU and hospital discharge. It was noted by the researcher that although the patients were returning for their first visit, the time since discharge from the ICU ranged from 4 weeks to 4 months. Many of the patients had not returned for their first scheduled OPD visit. Reasons given for this were varied and included: -

- Feeling too weak or ill to travel to the hospital.
- Not returning, as they were feeling well, thus saw no need to 'bother' the doctors.
- Lack of money for transport to and from the hospital, as they had been unemployed since the initial admission.
- They wanted to avoid the hospital, as they wanted to "get on" with their lives and forget the ordeal that they had been through.
- They had consulted other doctors and traditional healers.
- They had not needed to come in as family members had collected their medication.

Collecting the patients directly from the OPD enabled the researcher to establish reasons why many patients do not return initially for follow up after ICU discharge. The OPD clinics have also proved to be an effective place to collect and interview patients who were discharged from ICU.

Pilot Study

A pilot study was conducted consisting of 10 participants prior to the execution of the main study, on patients who had been discharged from ICU. The objective of the pilot study was to test the participants' understanding of the informed consent form, the wording of the information letter and the wording of the questionnaire.

All items were understood. The results from the pilot study were not included in the main study.

The pilot study did however give guidance as to further collection of research participants. The researcher was originally planning to get lists from all the wards to which the ICU patients had been discharged, regarding when they were returning to outpatients for their first visit. It was immediately apparent that the majority of the patients who had been given a follow-up appointment did not return for their first visit. Acquiring the lists of appointments from the ward clerks was also not logistically practical. It became apparent whilst doing the pilot study in the outpatient department that a number of patients, whose names had not been given by the ward clerks, were returning for their first visit post-ICU. It became clear that it would be more practical to collect research participants directly from the outpatient department at the ICU speciality clinics, instead of trying to follow up patients with booked appointments. The researcher then proceeded to collect the participants for the main

study directly from the outpatients department, two mornings a week for a three-month period. Patients' names were checked against an ICU register.

3.4.2 Instruments

The instrument used to collect the data during the structured interview consisted of three parts. Section 1 consisted of nine items including age, gender, race, ICU type, ventilated or not, memory of physical restraints, length of stay in ICU, stressful event prior to admission or post-discharge from ICU, current medications and finally a question pertaining to prior treatment for stress or psychological problems.

Section two consisted of the Hospital Anxiety and Depression Scale and section three The Experience After Treatment In ICU-7 scale (ETIC-7), both discussed in detail below.

3.4.2.1 The Hospital Anxiety and Depression Scale (HADS)

This is a widely used and popular measure that has been extensively translated and used in a broad variety of clinical populations. This 14-item measure has been subject to two previous reviews exploring a number of psychometric aspects of this tool. Consistently it has been found to be a reliable and valid measure of two independent and separable dimensions of anxiety and depression (Martin 2005:69). The HADS questionnaire contains 14 statements (e.g. I feel tense or 'wound up') relating to mood, each with four possible indicators of the frequency with which the patient experiences such a feeling. One such indicator is chosen for each statement, and scoring results in scales of 0 – 21 for anxiety and depression respectively. Scores of nine and 10 on each subscale indicate the possibility of anxiety or depression, and scores of 11 or above indicate a 'case' of anxiety or depression (Rattray, et al 2005).

Scragg, Jones & Fauvel (2001) used an additional measure for psychological distress, the HADS total score. Scores from the two subscales (anxiety and depression) can be combined to produce the HADS full-scale score. A full-scale score of >12 may be indicative of a clinical disorder. A further screening measure for psychological distress using the HADS is currently being utilized by Sellick and Edwardson (2007). If a 'borderline' score (i.e. eight, nine or ten) is found on both subscales at the same time, the individual is considered "at risk" for psychological distress. All of the above measures are reported in this study to enable a broad and thorough measure of the prevalence of symptoms of anxiety and depression.

Anxiety and depressive symptoms in this study are defined as all cases above the threshold score of eight, and in addition to this a 'clinical case' of anxiety or depression is defined as a score of 11 or above. A total HADS score is computed for each participant to detect the prevalence of 'possible clinical disorder'.

This measure has good internal reliability, construct and discriminative and predictive validity, as well as being readily accepted by patients in acute settings; it takes minutes to complete and it has been validated in Intensive Care patients, with a stated Cronbach coefficient for anxiety of 0.78 – 0.93 and a Cronbach coefficient for depression of 0.82 – 0.90 (Mykletun, Stordil and Dahl, 2001). It is traditionally a self-report measure, but has been used successfully as part of a structured interview (Rattray and Hull 2007).

3.4.2.2 Experience After Treatment In Intensive care-7 scale (ETIC-7)

This scale has seven items, and was designed by Scragg et al in 2000 for the study Psychological Problems Following ICU Treatment (Scragg, Jones and Fauvel, 2001).

It was specifically designed to measure post-traumatic stress symptoms directly related to the patient's experience of ICU. The construct criteria were taken from the Diagnostic and Statistical Manual Fourth Edition (DSM-IV) and the criteria come from the trauma re-experiencing (for example, intrusive thoughts and upsetting recollections of the trauma, recurrent dreams or nightmares, and flashbacks), and trauma stimuli-avoiding (for example, efforts to avoid conversations, places, and thoughts associated with the trauma, detachment from others, and a restricted range of affect) symptom clusters. Scores on the ETIC-7 range from zero to twenty-one. Scores of zero to seven indicate no symptoms, and all scores of eight and above indicate symptoms of Post Traumatic Stress (PTS). The higher the score, the more severe the symptoms (Scragg, Jones and Fauvel 2001). The Cronbach Alpha for the ETIC-7 is 0.84. The seven items of this scale were shown to have good internal consistency; it showed validity by strong correlation with the Impact of Event Scale (IES) and the Hospital Anxiety and Depression Scale (HADS) (Scragg, Jones and Fauvel 2001).

3.4.3 Validity and Reliability in the data collection process

Validity is the extent to which an instrument accurately reflects the abstract constructs being examined (Burns and Grove 2003). Reliability can be described as the extent to which an instrument consistently measures a concept (Burns and Grove 2003).

Reliability was maintained by:

Ensuring consistency with the data collection, which was achieved by using the same questionnaire (which contained two instruments with published psychometric

properties), administered by the researcher alone at each structured interview. The data were also verified by the statistician for accuracy.

Validity was maintained by:

Using instruments for data collection that have published psychometric properties.

Ensuring a heterogeneous sample from different ICU's to exclude ICU specialty bias, excluding patients that had been admitted as a result of trauma so excluding extraneous variables that could affect PTS results. A pilot study was carried out prior to the main study to ensure that patients understood the wording in the information letter and the main instrument. Patients were assured of anonymity and that their participation in the study was voluntary and that they could withdraw at any stage without consequence. The assistance of an expert statistician was sought during data analysis.

3.5. DATA ANALYSIS

Means, standard deviations and frequencies were calculated for all variables investigated. Prevalence for symptoms of anxiety, depression and post-traumatic stress are reported as percentages along with their 95% confidence intervals. Prevalence rates were also calculated for individual items on the "Experience After Treatment in ICU-7" item scale (ETIC-7). This was done to determine the prevalence for avoidant and intrusive symptoms in the sample population (for example, flashbacks, intrusive thoughts, avoidant thoughts and nightmares). A statistician from the Medical Research Council was consulted both before and after data collection. Data were originally scored on the individual questionnaires for the "Hospital Anxiety and Depression Scale (HADS)", and "Experience After Treatment In Intensive Care-7

(ETIC-7)" scale. Following this the results were entered into a Microsoft Excel spreadsheet, then saved on a memory stick and taken to the statistician for further analysis.

The researcher used STATA Version 10 to perform a preliminary analysis of frequencies, descriptive data, correlations, and t-tests. The alpha level was set to the conventional 0.05. All significance testing was two-tailed. T-tests were used when comparing two groups, and univariate analysis of variance using F-statistic was used to test groups with (>2) comparisons.

Demographic and clinical data were used to describe the study sample characteristics, in order to allow for correlations to be made.

Logistic regression was performed on the memory of restraints in ICU and post-traumatic stress (PTS) symptoms, to provide odds ratios for potential risk factors for the development of PTS symptoms. Logistic regression was also performed to determine an odds ratio between those patients who had both symptoms of anxiety and PTS symptoms.

Tetrachoric correlations (correlation performed on binary variables, i.e. variables that have only 0 or 1 as a value) were performed on the individual items of the ETIC-7 to test for inter-item correlation on the ETIC-7. Finally, a reliability coefficient was calculated for the symptoms of anxiety, depression and post-traumatic stress symptoms in this study.

3.6 ETHICAL CONSIDERATIONS

The following steps were taken to ensure that ethical considerations were observed:

Approval for the study was sought from the Faculty of Health Sciences Postgraduate Committee and the Human Research Ethics Committee (Medical) of the University of

the Witwatersrand. Written approval and clearance to proceed with the study was obtained from both the Faculty of Health Sciences Postgraduate Committee (see **Appendix A**) and the University Human Research Ethics Committee (M060455) (see **Appendix B**). Permission to conduct the research was obtained from The Deputy Director of Gauteng Health Department (see **Appendix C**) and also from the Chief Executive Officer of the Hospital.

Permission was obtained from the Director of Intensive Care Units, from physicians and surgeons of the outpatient clinics and the nursing managers in charge. An information letter (see **Appendix D**) was sent to all of the above and was also given to each prospective participant to read before agreeing to participate in the study. The information letter contained details regarding the purpose of the research, the data collection procedure, the researchers contact details and also the assurance of the anonymity of all participants. The researcher included her contact details as consideration was given to the fact that there was a small risk that patients might have felt distress after answering questions regarding their ICU experience. An experienced psychiatric registered nurse was available to debrief the patients if the need came about.

The researcher kept in mind that the ICU patient is classified as a "vulnerable patient" by the Helsinki agreement and followed the advice of the Human Research Ethics Committee (Medical) of the University. The patients were informed that their participation was voluntary and that they could refuse to participate. If they chose to participate after reading the information letter, they were asked to sign an informed consent form (see **Appendix E**). The patients were informed about their rights to

withdraw their participation from the study as and when they wished to, and at the same time assured that if they chose to withdraw from the study, they would not be prejudiced in any way whatsoever. The anonymity of the participants was ensured, as the names of the participants were not written on any of the questionnaires, which were assigned a number only. Their names were kept in a separate notebook by the researcher, which was kept on her person or in a locked drawer at all times. This information was collected to enable the researcher to crosscheck the names of the participants against the ICU register. Care was also taken that no harm came to the patients, by ensuring privacy whilst completing the interview and by giving them an opportunity to ask questions after the interview was completed.

Permission was sought from the publishers of the instruments that were used (Medal ™, www.medal.org.) and granted (see **Appendix G**)

3.7 SUMMARY

In this chapter the methodology of the study was described. The study design was based on the study purpose and objectives. Data collection was described as well as the instruments that were used. The Hospital Anxiety and Depression Scale is a reliable and valid instrument developed by Zigmond and Snaith (1983). The Experience After Treatment in ICU-7 scale (ETIC-7) was used, as it was specifically developed to measure post-traumatic stress symptoms directly related to the ICU experience. The pilot study was performed to test the understanding of the wording used in the information letter and the questionnaire. To protect the rights of the study participants this study proposal was subjected to ethical review and their input guided the conduct of the study, which was also approved by the Health Sciences Postgraduate Committee. The next chapter presents the results and major findings of this study.

CHAPTER FOUR

RESULTS AND FINDINGS

4.1. INTRODUCTION

In the previous chapter, the research methodology was discussed. In this chapter, the descriptive and comparative statistics employed to describe and synthesize the data and interpretation of the research findings will be presented. The main objectives of this study were to report the prevalence of symptoms of anxiety, depression and post-traumatic stress (PTS), which will be reported along with their 95% confidence intervals. Percentages in these findings were taken to the nearest whole number.

The results from the study were described and analysed using descriptive and inferential statistics to achieve the study objectives. Frequencies (f), means (M), Standard deviations (SD), standard error (SE), confidence intervals (CI), modes (Mo) and medians were used where applicable to describe the data. Statistical tests that were used in this study include Pearson's product moment correlation coefficient (r), paired t-test (t), Chi-Square Test of Independence (X^2), Analysis of variance (ANOVA) F-statistic (F), Tetrachoric correlation, logistic regression (reported as odds ratios) and a reliability coefficient for symptoms of anxiety, depression and post-traumatic stress (PTS) in this study.

A definition of the inferential statistics used in this study:

Pearson's product moment is a parametric test used to determine relationships among variables and measures the extent of the relationship between variables.

Correlational analysis provides two pieces of information about the data: the nature of the relationship (positive or negative) between the two variables and the magnitude or strength of the relationship. The outcome of the Pearson's product moment correlation coefficient (r) is between –1 and +1. A value of '0' indicates no relationship. Traditionally, an *r*-value of 0.1 to 0.3 is considered a weak relationship, a value between 0.4 and 0.5 is a moderate relationship and a value above 0.5 is considered a strong relationship. The relationship may be either positive or negative (Burns and Grove 2005:333).

Paired t-test is a parametric analysis technique used to determine significant differences between the means of two sets of data (Burns and Grove 2005:338)

Chi-Square Test of Independence is a statistical test that determines whether two variables are independent or related (Burns and Grove 2005:329) The result is reported as X^2.

Analysis of variance and the F statistic is a statistical test used to examine differences among two or more groups by comparing the variability between groups with the variability within each group. The results of an ANOVA are reported as an *F* statistic (Burns and Grove 2005:340).

Tetrachoric correlation is a correlation coefficient computed for two normally distributed variables that are both expressed as a dichotomy (StataCorp. 2007).

Logistic regression is a technique for making predictions when the dependent variable is a dichotomy, and the independent variables are continuous and /or discrete (StataCorp 2007).

4.2. DEMOGRAPHIC DATA

Demographic data were collected in order to describe the characteristics of the sample population and to enable comparisons between the different categories with regards the prevalence of the symptoms of anxiety, depressive and post-traumatic stress (PTS).

Table 4.1 Sample size and gender of study population

		Number	Percentage
Total sample pop		98	100%
Gender	Male	59	60%
	Female	39	40%

4.2.1 Sample size, age and gender of population

The total number of participants was 98. The mean age was 55.2years (SD = 13.66), the median was 56.5 years the mode was 54years. The youngest participant was 18 years and the oldest was 81 years making the range 63. The majority of the participants were male of which there were 59 (60%) and there were 39 (40%) females (refer to Table 4.1 above).

Table 4.2 Age distribution of sample

	Age category	Number	Percentage
Age	18 – 35yrs	7	7%
	36 – 55yrs	40	41%
	>55yrs	51	52%

4.2.2 Age distribution of sample

The majority of the study population (52%) were older than 55 years. This was expected as the incidence of morbidity and mortality increases with age. There were only seven (7%) participants in the 18 to 35 years group, although this small number was not surprising as the majority of younger admissions to ICU are trauma related, and all trauma cases were excluded from this sample. There were n=40 (41%) in the 36 to 55 years group (refer Table 4.2 above). The Black patients had the youngest mean age of 47 years followed by the Coloureds 49 years, Indians 56 years and finally the Whites who had the oldest mean age of 61 years.

Table 4.3 Race of sample population

Race	Number	Percentage
Black	32	33%
White	47	48%
Indian	15	15%
Coloured	4	4%

4.2.3 Race of sample population

The majority of the sample were White n=47 (48%), followed by n=32 Black (33%), Indians n = 15 (15%) and Coloureds of whom there were four (4%), (refer to Table 4.3). This is not an accurate representation of the racial ratio's in the South African population, of which Blacks make up 79.6% of the population (www.statssa.gov.za), but perhaps it illustrates that a large number of the Black patients who are discharged from the ICU's do not return for their follow up visits as scheduled. The director in charge of the ICU's at the hospital verbally confirmed this, by stating that a large majority of the Black patients fail to return to the hospital after their discharge.

4.3 CLINICAL DATA OF SAMPLE POPULATION

Table 4.4 Clinical data collected

Variable		**Number**	**Percentage**
ICU type	Neuro	10	10%
	Cardiac	38	39%
	Surgical	36	37%
	Medical	14	14%
Length of Stay	1 – 6 days	76	77%
	7 – 10 days	9	9%
	>11 days	13	14%
Ventilated	Yes	33	34%
	No	65	66%
Memory of restraints	Yes	24	24%
	No	74	76%
Prior stressor	Yes	6	6%
	No	92	94%
Prior psych Rx	Yes	5	5%
	No	93	95%

Data were collected regarding different ICU types that patient's were in. This was to enable comparisons between the groups with the prevalence of anxiety, depressive and post-traumatic stress (PTS) symptoms, and to ascertain whether results between the groups were statistically significant.

4.3.1 Sample from different ICU specialities

The sample included participants from different ICU's to exclude speciality bias. Thirty-eight participants (39%) were from Cardiac ICU; thirty-six (37%) were from Surgical ICU; fourteen (14%) participants were from Medical ICU; and ten participants (10%) were from Neurosurgical ICU (refer Figure 4.1 below).

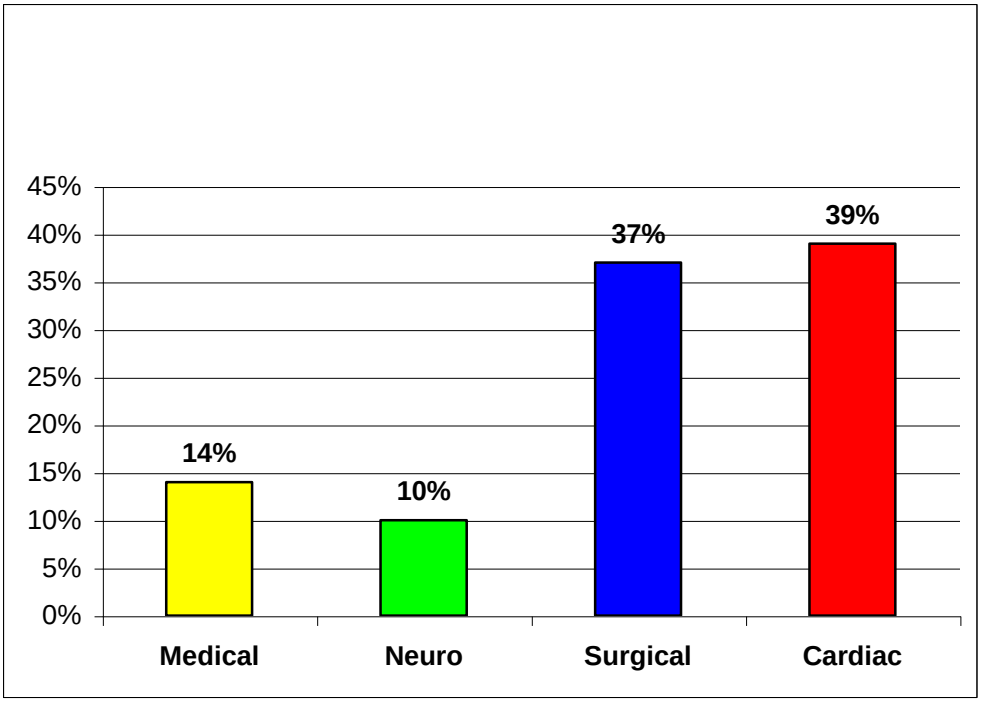


Figure 4.1 Percentage of sample from different ICU's

4.3.2 Length of stay in ICU

The average length of stay in ICU was 5.6 days, but this result was skewed due to a small number of patients who had an extended (>30 day) stay in ICU. The mode was two days; the median three days and the range 59 days. From these results it can be extrapolated that the majority of participants in this study had short stays in ICU. For ease of analysis, the patients were grouped into one of the following categories: one to six days, seven to 11 days and >11 days. More than 11 days in ICU is generally defined as a long-term ICU admission (Adamson, 2004). Seventy-five participants (77%) stayed for one to six days; nine (9%) stayed for seven to 10 days, and fourteen (14%) stayed for > 11 days. Only 23% of this sample population's stay was longer than six days (refer Table 4.4, pg 58).

4.3.3 Mechanical ventilation

The number of patients who were mechanically ventilated was thirty-three (34%). The majority of patients were not ventilated during their ICU stay n = 65 (66%). Both ventilated and non-ventilated patients were included in this study as differences between the two groups have been largely unexplored (Rotondi et al. 2002). The majority of ICU studies exploring posttraumatic stress (PTS) symptoms use patients who have been mechanically ventilated, excluding the population who are not for example Rotondi et al. (2002), Samuelson et al. (2007) and Girard et al. (2007). Seventy six percent of the participants in this sample were surgical and cardiac patients who required close observation in ICU following high-risk surgery and cardiac procedures.

4.3.4 Memory of physical restraints

The number of patients who had memory of physical restraints was twenty-four (24%). The majority of the sample n = 74 (75%) did not have memories of restraints.

4.3.5 Stressors prior to admission to ICU or post-discharge

Only six patients (6%) reported having had a stressful event immediately prior to admission to ICU or post discharge. These stressors were varied and ranged from a patient's own wedding (the groom) to a bereavement in the family.

4.3.6.Previous psychiatric treatment

Five patients (5%) stated that they had previously received treatment for a psychological problem or stress, and they had sought treatment from a health professional for the problem. This number was perhaps not a true reflection as there is a possibility that the patients were reluctant to be forthcoming with such sensitive information due to the stigma attached to mental illness.

- Tables 4.5, 4.6 and 4.7 overleaf provide further details regarding the symptoms of anxiety, depression and post-traumatic stress and the effect of the variables gender, race, length of stay, restraints and ventilation. Mean scores, Standard Deviations, Range and Medians (p50) are provided.

Table 4.5 Anxiety symptoms. Mean scores, Standard deviations, Range and p50 (Median)

Item	Variable 1	Variable 2	N	Mean	SD	Min	Max	Median p50
4.5.1	**Anxiety Symptoms**							
	Gender							
		Male	59	7.98	4.59	1	21	8
		Female	39	8.41	3.99	0	19	9
	Race							
		Black	32	7.47	4.23	1	16	7.5
		White	47	8.77	4.52	0	19	9
		Indian	15	8.47	4.50	0	21	8
		Coloured	4	5.25	2	3	9	7
	Length of Stay							
		1-6 days	76	8.14	4.24	0	21	8
		7-10 days	9	9	5.59	3	18	8
		=>11days	13	7.62	4.46	1	16	7
	Restraints							
		Yes	24	9.43	4.86	1	21	9
		No	74	7.97	4.17	0	19	8
	Ventilated							
		Yes	33	8.21	4.62	0	18	8
		No	65	8.12	4.27	0	21	8

Table 4.6 Depressive symptoms. Mean scores, Standard deviations, Range and p50 (Median)

Item	Variable 1	Variable 2	N	Mean	SD	Min	Max	Median p50
4.5.2	**Depressive Symptoms**							
	Gender							
		Male	59	6.24	3.61	1	16	6
		Female	39	6.95	3.67	0	16	7
	Race							
		Black	32	7.22	3.12	1	15	7
		White	47	6.38	3.93	0	16	6
		Indian	15	5.6	4.2	0	16	4
		Coloured	4	6	2.1	3	8	6.5
	Length of Stay							
		1-6 days	76	6.66	3.72	0	16	7
		7-10 days	9	5.56	3.01	0	10	5
		=>11days	13	6.38	3.81	1	15	7
	Restraints							
		Yes	24	7.26	4.10	1	16	7
		No	74	6.46	3.51	1	16	7
	Ventilated							
		Yes	33	7.03	3.75	0	15	7
		No	65	6.26	3.6	0	16	7

Table 4.7 Post-traumatic stress symptoms. Mean scores, Standard deviations, Range and p50 (Median)

Item	Variable 1	Variable 2	N	Mean	SD	Min	Max	Median p50
4.5.3	**Post-traumatic stress symptoms**							
	Gender							
		Male	59	5.32	5.02	0	21	5
		Female	39	6.66	5.16	0	18	5
	Race							
		Black	32	6.66	4.72	0	18	6
		White	47	5.04	4.40	0	18	5
		Indian	15	6.27	6.64	0	21	6
		Coloured	4	9	8.36	2	21	6.5
	Length of Stay							
		1-6 days	76	5.84	5.07	0	21	5
		7-10 days	9	4.67	4.35	0	14	3
		=>11days	13	7.23	5.35	0	19	5
	Restraints							
		Yes	24	9.11	5.21	2	21	8
		No	74	6.30	4.7	1	21	5
	Ventilated							
		Yes	33	7.45	2.71	0	21	6
		No	65	5.14	5.20	0	21	4

Table 4.8 Prevalence of anxiety symptoms in sample population

		% sample anxiety symptoms	Std Error	95% confidence interval
Age	18-35yrs	71%	0.184	0.348 – 1.080
	36-55yrs	42%	0.079	0.267 – 0.582
	>55years	49%	0.070	0.349 – 0.630
Gender	Male	41%	0.064	0.278 – 0.534
	Female	59%	0.079	0.431 – 0.748
Race	White	53%	0.073	0.385 – 0.677
	Black	47%	0.089	0.290 – 0.646
	Indian	40%	0.130	0.140 – 0.659
	Coloured	25%	0.250	-0.246- 0.746

4.4 PREVALENCE OF ANXIETY SYMPTOMS

A total of 48% (SE 0.05; CI 0.38 – 0.58) of the sample showed symptoms of anxiety, using the threshold score of eight on the HADS anxiety scale, as recommended by Zigmond and Snaith (1983). The mean score on the HADS anxiety scale was 8.14 (SD 4.50) and the range was 21.

Of the 48% showing signs of anxiety, n=17 (17%) had scores of 11 and above denoting a "case" of anxiety (Scragg, Jones & Fauvel 2001). Anxiety symptoms were most prevalent in the White population of whom 53% (SE 0.07) had scores above the 'cut-off', although there were no statistically significant differences found between the racial groups ($F = 1.788$; $df = 3$; $p = 0.67$). Females had higher rates of anxiety than the males, with females having a prevalence of 59% (SE 0.08) compared to males 41% (SE 0.06). The differences between the groups were not however statistically significant ($t=-1.20$; $df=96$; $p=0.233$).

The age group with the highest prevalence of anxiety was the youngest group (18 – 35years),

71% (SE 0.18), although this result may not be a true reflection of anxiety in this age group as the number of participants was only seven. The oldest group (>55 years) had the next highest prevalence of anxiety, 49% (SE 0.07) and the 36 – 55 years group had the lowest prevalence of anxiety 42% (SE 0.08).

Table 4.9 ANOVA Age and anxiety

	df	**F**	**p**
Between groups	2	3.475	**0.035***
Within groups	94		

*p < .05.

An ANOVA was carried out to test for differences between the age groups and anxiety and a statistically significant result was obtained: (F=3.475. df =2; p = **0.035**) See Table 4.9 above.

Table 4.10 Prevalence of depressive symptoms in sample

		% sample depressive symptoms	Std Error	95% confidence interval
Age	18-35yrs	14%	0.142	- 0.140 – 0.426
	36-55yrs	20%	0.064	0.072 – 0.327
	>55years	35%	0.067	0.218 – 0.487
Gender	Male	22%	0.054	0.112 – 0.328
	Female	36%	0.077	0.204 – 0.513
Race	White	30%	0.067	0.164 – 0.431
	Black	28%	0.080	0.120 – 0.441
	Indian	27%	0.118	0.032 = 0.501
	Coloured	No observations		

4.5 PREVALENCE OF DEPRESSIVE SYMPTOMS

A total of 28% (SE 0.45; CI 0.185 – 0.365) of the sample showed symptoms of depression, using the cut-off score of eight on the HADS depression scale, as recommended by Zigmond

and Snaith 1983. The mean score on the HADS depression scale was 6.5 (SD 3.73), the range was 16; the mode and the median were both seven. From the mean and the mode it can be extrapolated that the majority of patients did not have symptoms of depression. Of the 28% showing signs of depression on HADS depression scale, fifteen participants (15%) of the sample participants had scores of 11 and above denoting a "case" of depression (Scragg, Jones & Fauvel 2001).

Depressive symptoms were most prevalent in the White population of whom 30% (SE 0.07) had scores above the 'cut-off', although there were no statistically significant differences found between the racial groups ($F = 0.152$; $df = 3$; $p = 0.928$). Females had higher rates of depression than the males, with females having a prevalence of 36% (SE 0.08) compared to males 22% (SE 0.05). The differences between the groups were not however statistically significant ($t=-0.29$; $df=96$; $p=0.776$).

The age group with the highest prevalence of depression were the oldest group of >55 years old, of which 35% (SE 0.07) had symptoms of depression. No significant differences were found between the age groups ($F= 0.682$; $df = 2$; $p = 0.508$). (Refer Table 4.10 for more details regarding symptoms of depression).

4.6 HADS TOTAL SCORE

In this study a total of fifty-seven (58%) participants had a total HADS score of above 12. Scragg, Jones & Fauvel 2001 used this additional measure for the screening of patients with a possible 'clinical disorder' - the HADS total score. Scores from the two subscales, (anxiety and depression), are combined to produce the HADS full-scale score. A full-scale score of >12 may be indicative of a clinical disorder.

An alternative screening measure for psychological distress using The Hospital Anxiety and Depression Scale (HADS) is currently being utilized by Sellick and Edwardson (2007). If a 'borderline' score (i.e., eight, nine or ten) is found on *both* subscales at the *same* time, the individual is considered "at risk" for psychological distress. In this study, twenty-six (26%) of the sample had borderline scores on both subscales and are "at risk" for psychological distress. This is more than a quarter of the sample population.

Table 4.11 Prevalence of post-traumatic stress symptoms

		% sample PTS symptoms	Std Error	95% confidence interval
Age	18-35yrs	43%	0.202	0.027 – 0.829
	36-55yrs	30%	0.733	0.154 – 0.445
	>55years	31%	0.065	0.183 – 0.443
Gender	Male	25%	0.057	0.140 – 0.367
	Female	41%	0.079	0.251 – 0.568
Race	White	28%	0.065	0.145 – 0.407
	Black	38%	0.086	0.202 – 0.547
	Indian	27%	0.118	0.032 – 0.501
	Coloured	50%	0.288	-0.072 - 1.072

4.7 PREVALENCE OF POST TRAUMATIC STRESS (PTS) SYMPTOMS

A total of 32% (SE 0.05; CI 0.22 – 0.41) of the sample showed symptoms of post traumatic stress (PTS) symptoms, counting all scores of eight and above on the Experience After Treatment in ICU (ETIC-7) scale, as recommended by Scragg, Jones & Fauvel (2001). The mean score on the ETIC-7 scale was 5.96 (SD 5.34), the range was 21 and the mode was zero. From the mode and the mean scores it can be extrapolated that the majority of participants had no symptoms of post-traumatic stress. Two patients (2%) in the sample had the maximum score of 21, and they were both were male. Of the 32% showing symptoms of PTS, twenty-three (23%) had moderate symptoms, scoring eight to 15 on the ETIC-7 scale and seven (7%) had scores of 16 and above denoting severe symptoms of PTS (Scragg, Jones & Fauvel 2001).

PTS symptoms were most prevalent in the Coloured population, 50% (SE 0.29) although this result may not be a true reflection of the prevalence of PTS symptoms between racial groups as there were only four Coloureds in the sample population. The Black population had the second highest prevalence of PTS symptoms, 38% (SE 0.09). The Indians had the lowest prevalence of PTS symptoms 27% (SE 0.12). Differences between racial groups did not however reach statistical significance ($F = 0.536$, $df = 3$, $p = 0.659$).

Females had higher rates of PTS symptoms than the males, with females having a prevalence of 41% (SE 0.08) compared to males 25% (SE 0.06). The differences between the groups were not however statistically significant ($t=-0.99$; $df=96$; $p=0.324$).

The age group with the highest prevalence of PTS symptoms was the youngest group (18 – 35yrs), 43% (SE 0.20). There were however, no significant differences in the means between the groups ($F =0.233$; $df = 2$; $p = 0.800$). Perhaps with a larger sample this result would reach significance. (Refer Table 4.11 for details).

4.8 ANXIETY, DEPRESSIVE AND PTS SYMPTOMS

From the above results, it can be seen that **symptoms of anxiety** in this sample population have the **highest prevalence** with 48%; followed by 32% of the sample with PTS symptoms and 28% with symptoms of depression. The prevalence of depressive symptoms in this study (28%) is lower than both that of PTS (32%) and anxiety (48%). Nelson et al. (2000) reported that symptoms of depression were positively associated with longer lengths of ICU stay, longer duration of mechanical ventilation and a greater number of days on sedative medication. The average length of stay for the participants in this study was short (Median = three days) and only 34% of this sample was mechanically ventilated. This could perhaps explain the lower prevalence of depressive symptoms in this study as compared to symptoms of anxiety.

There is significant evidence to show that there is a strong correlation between the subscales of HADS anxiety and HADS depression from the chi square analysis: ($X^2 = 21.17$; **p = 0.000**) and also from Pearson's correlation (r = 0.534; **p = 0.000**). This concurs with previous studies done using the HADS scale (Scragg, Jones & Fauvel 2001, Zigmund and Snaith 1983).

There is also significant evidence to show that there is an association between the ETIC-7 and HADS depression from the chi square analysis: ($X^2 = 15.99$; **p = 0.003**) and from Pearson's correlation (r = 0.366; **p = 0.002**). There is also a highly significant association between the HADS anxiety component and the ETIC-7 as shown by Pearson's chi-square ($X^2 = 13.68$; **p = 0.008**).

This confirms that the ETIC-7 is a valid measure and correlates with both the anxiety and depression subscales of the HADS. **The reliability coefficient for the symptoms of anxiety, depression and PTS symptoms in this study is 0.71.**

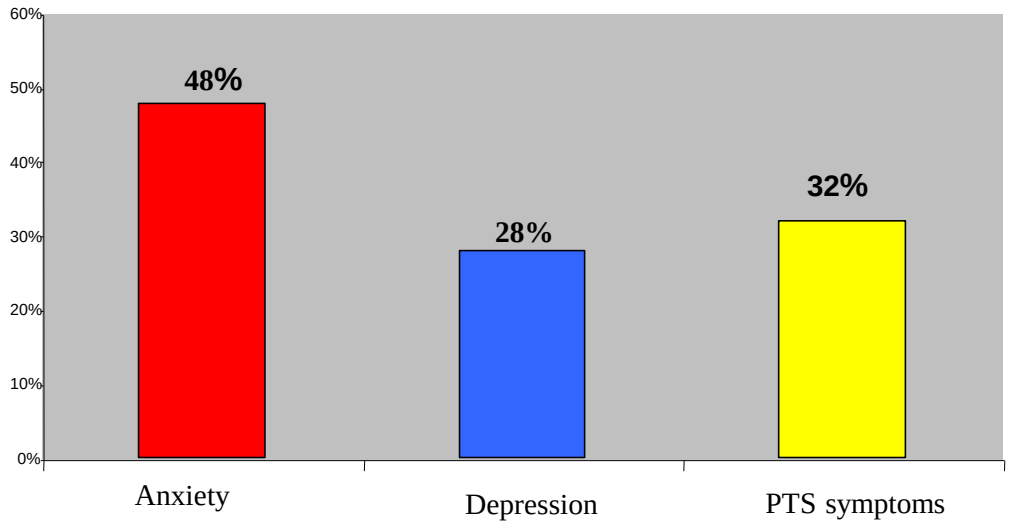


Figure 4.2 Prevalence of anxiety, depression and PTS symptoms

4.8.1 Anxiety, depression, PTS symptoms and mechanical ventilation

In this study, thirty-three (34%) of the population were ventilated. The majority of patients were not ventilated during their ICU stay n=65 (66%). Using ANOVA, there were no statistically significant differences found between the ventilated and the non-ventilated groups with regards to PTS symptoms ($F = 2.698$; $df=96$; $p = 0.104$), anxiety symptoms ($F = 0.416$; $df = 96$; $p = 0.521$) or symptoms of depression ($F = 1.867$, $df = 96$; $p = 0.175$).

Of the 32% of the sample population who had symptoms of PTS, more than half, seventeen participants (53%) were not ventilated. This finding is of interest as differences in PTS symptoms between patients who are mechanically ventilated and those who are not are largely unexplored (Rotondi et al. 2002).

4.8.2 Anxiety, depression, PTS symptoms and memory of physical restraints

The number of patients in this study who had memory of physical restraints whilst in ICU was twenty-four (24%). The majority of patients did not have memories of restraints being used n= 74 (75%).

Using logistic regression, it was found that patients who had memories of physical restraint were 6 times more likely to develop PTS symptoms than those with no memory of restraint (OR = 6.04; SE 3.06; **p = 0.000**, CI 2.23 – 16.33). This is evidence supporting the fact that restraints may increase the possibility of PTS symptoms developing.

The memory of restraints was also found to have a strong correlation with PTS symptoms ($r = 0.814$**; p = 0.000**).

4.8.3 Anxiety, depressive and post-traumatic stress symptoms and ICU type

Although no statistically significant differences were found between ICU types and anxiety (F= 0.777; df = 3; p = 0.510), depression (F = 0.167; df = 3; p = 0.919) and PTS symptoms (F = 2.234; df = 3; p = 0.089) in this study, the findings of this study are presented below.

Table 4.12 Prevalence of symptoms of anxiety, depression and PTS in different ICU's

Item	Psychological Sequelae	ICU Type	Prevalence %	Standard Error	95% confidence interval
4.10.1	**Anxiety symptoms**				
		Neuro	40%	0.16	0.07 – 0.72
		Cardiac	50%	0.08	0.33 – 0.66
		Surgical	44%	0.08	0.27 – 0.61
		Medical	**57%**	**0.13**	**0.29 – 0.84**
4.10.2	**Depressive symptoms**				
		Neuro	30%	0.15	0.00 – 0.60
		Cardiac	29%	0.74	0.14 – 0.44
		Surgical	17%	0.06	0.04 – 0.29
		Medical	**50%**	**0.14**	**0.22 – 0.77**
4.10.3	**Post-traumatic stress symptoms**				
		Neuro	40%	0.16	0.08 – 0.72
		Cardiac	21%	0.67	0.07 – 0.34
		Surgical	31%	0.78	0.15 – 0.46
		Medical	**57%**	**0.14**	**0.29 – 0.84**

- **Anxiety scores in patients from the different ICU's**

Medical patients had the highest prevalence of anxiety symptoms 57%, followed by Cardiac 50%, Surgical 44% and Neuro patients had the lowest prevalence of anxiety

40%. Although Medical patients had the highest prevalence of anxiety symptoms 57%, Cardiac patients had the highest Mean score of 8.76 (SD4.86). Neuro patients had the lowest prevalence of 40% and also the lowest Mean score of 7.7 (SD4.64).

- **Depressive symptoms in patients from the different ICU's**

Medical patients had the highest prevalence 50%, followed by Neuro 30%, Cardiac 29% and Surgical 17%. These findings contrast with the findings of Dowdy, Bienvenu, Dinglas, Mendez-Tellez, Sevransky, Shanholtz and Needham (2009), whose study found that depression was related to surgical but not medical or trauma admission. The results of this study found that medical patients had the highest prevalence (50%) and surgical, (17%) the lowest.

- **Post-traumatic stress symptoms in patients from different ICU's**

Medical patients had the highest prevalence 57%, followed by Neuro 40%; Surgical 31% and Cardiac patients had the lowest prevalence (21%) of post-traumatic stress symptoms. Medical patients had the highest mean score of 9.5 (SD 5.21) Surgical patients had the lowest mean score of PTS symptoms 6.6 (SD 5.27).

From the above results it can be extrapolated that Medical patients had the highest prevalence of anxiety, depressive and post-traumatic stress symptoms. Medical patients are usually admitted with an acute medical illness and have severe derangements that require organ support and ICU management. Admission is usually unanticipated and they may have a longer stay than for example, elective cardiac or surgical patients. Unlike a surgical condition, there is no definite procedure to correct

the underlying cause (Adamson 2004), which may predispose the patient to anxiety, depression and PTS symptoms.

Table 4.13 Percentages of total sample who had symptoms on the ETIC-7

Item on ETIC-7	Total % of pop with symptoms	Standard Error	95% Confidence Interval
1.Had upsetting thoughts or images about time in ICU	50%	0.050	0.399 – 0.600
2. Experienced flashbacks of ICU	46%	0.50	0.358 – 0.559
3. Felt upset when reminded of ICU	37%	0.049	0.270 – 0.464
4. Had bad dreams or nightmares about ICU	21%	0.41	0.131 – 0.296
5. Felt anxious or unwell when reminded of time in ICU	41%	0.50	0.309 – 0.507
6. Tried not to think about, talk about or have feelings about ICU	48%	0.05	0.378 – 0.580
7. Avoided activities, people or places that remind you of ICU	24%	0.43	0.158 – 0.331

4.9 ITEMS IN THE EXPERIENCE AFTER TREATMENT IN ICU (ETIC-7)

The ETIC-7 has seven questions, which are related to the Intrusive and Avoidance aspects of posttraumatic stress disorder. After examining the individual items, total percentages of the entire sample n=98 who had symptoms on each item, were recorded. (Refer Table 4.13 above).

As can be seen from the table above, 50% of the sample population suffered from intrusive thoughts, 72% had symptoms of avoidance of either thoughts or people and places that reminded them of ICU. Seventy-eight percent felt uncomfortable or anxious and unwell when they were reminded of their time in ICU. Twenty-one percent were experiencing dreams or nightmares associated with ICU.

However, the results for participants with symptoms of PTS (32%) differed from those who had no symptoms. The most frequent symptoms for the patients with symptoms of PTS were flashbacks n = 22 (69%), dreams and nightmares n = 13 (41%), and avoidance of thoughts or people and places that reminded them of ICU n = 22 (69%). Dreams and Nightmares in those with symptoms of PTS were double that of the participants with no symptoms and flashbacks were also more common (69%) as compared to 46% in the participants with no symptoms.

4.10 SUMMARY

This chapter presented the results of the data analysis. The prevalence of the symptoms of anxiety, depression and PTS following treatment in ICU at a level 1 academic hospital in South Africa, were found to be high. Almost half the sample (48%) had symptoms of anxiety, more than a quarter had symptoms of depression (28%), and almost a third (32%) of the sample had symptoms of posttraumatic stress. A total of 58% of the sample had a total HADS score of >12, which indicates a 'possible clinical disorder" (Scragg, Jones and Fauvel 2001), and a total of 26 patients (26%) had 'borderline" scores on both the HADS anxiety and HADS depression subscale, which indicates, according to Sellick and Edwardson (2007) "possible psychological distress". Whichever screening measure is taken, it is evident from the results that psychological distress levels following ICU treatment are high despite the fact that the majority (77%) of the patients in this study had short stays (one to six days) in ICU and only 34% of the sample were ventilated. The reliability coefficient for this study was 0.71.

The next chapter presents a discussion and summary of the main findings; recommendations made based on these findings, the limitations of the study, the summary and conclusions and finally Reflections.

CHAPTER FIVE

SUMMARY AND DISCUSSION OF THE MAIN FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

5.1. INTRODUCTION

In the previous chapter, the descriptive and comparative statistics employed to describe and synthesize the data and the interpretation of the research findings were presented. The final chapter of this study presents a discussion, summary and conclusions of the main findings. This is followed by limitations of the study, recommendations based on the findings and finally the reflections of the researcher, entitled "Journey Into Unchartered Territory".

5.2 SUMMARY OF THE STUDY

5.2.1. Purpose of the study

The purpose of this study was to determine whether anxiety symptoms, depressive symptoms and post-traumatic stress symptoms, were experienced by a sample of patients following discharge from Intensive Care Units within a level 1 academic hospital in Johannesburg, South Africa.

5.2.2 Objectives of the study

The research objectives for this study were to administer two instruments to investigate and determine: the prevalence and severity of anxiety symptoms, the prevalence and severity of depressive symptoms, and the prevalence and severity of post-traumatic stress symptoms, in patients at their first follow-up visit following discharge from an Intensive Care Unit.

5.2.3 Methodology

After consultation with a statistician, it was decided to use a sample size of ninety-eight participants to ensure that a power of at least 95% accuracy was acquired for the 0.05 level of significance testing. The researcher used a structured interview consisting of three sections, which contained two instruments with published psychometric properties to collect the data. These instruments were The Hospital Anxiety and Depression Scale (HADS) developed by Zigmond and Snaith (1983) and The Experience After Treatment in ICU-7 (ETIC-7) (Scragg, Jones and Fauvel 2001).

Prior to commencement of the study, ethical clearance was sought and obtained from the Human Research Ethics Committee (Medical), (M060455) (see **Appendix B**). Permission was sought and obtained from the Faculty of Health Sciences Postgraduate Committee (see **Appendix A**). Permissions were also obtained from the Deputy Director of Gauteng Health Department (see **Appendix C**), the Chief Executive Officer of the Hospital, the Director of the Intensive Care Units and the physicians, doctors and nursing managers in the speciality outpatient departments.

A pilot study was carried out prior to the commencement of the main study to check the wording and the understanding of the information letter, the informed consent form and the questionnaire. A prospective, quantitative, cross-sectional descriptive format was used to meet the objectives of this study.

Data collection took place during March, April and May 2009. Following further consultation with a statistician, descriptive and inferential statistics were used to analyse the data.

5.3. DISCUSSION OF THE MAIN FINDINGS

Symptoms of anxiety were found in 48% of the sample, depressive symptoms were found in 28% and PTS symptoms in 32% of the sample population at their first return visit to OPD post-discharge from ICU and hospital. Regardless of ethnicity, age or ICU type, the prevalence of psychological distress in South African patients at their first visit at outpatients after discharge is significant. If these patients are not identified and do not receive follow-up or psychological support, they may suffer for an undetermined length of time, and this may impact on their quality of life, their family life and their successful re-integration into society and a return to gainful employment.

An unexpected finding of this study was that patients who had memory of physical restraints in ICU were six times more likely to develop symptoms of PTS compared to those with no memory of physical restraint. (This is discussed in further detail later in the chapter – item 5.3.3).

5.3.1 Prevalence of anxiety and depressive symptoms

- **Anxiety**

Anxiety is the rust of life, destroying its brightness and weakening its power

TYRON EDWARDS in Moser (2007)

The total prevalence of anxiety symptoms was high, with almost half (48%) of the patients showing symptoms; twenty-seven (28%) participants from the sample population had symptoms severe enough (equal to or greater than 11 on the HADS

scale) to be classified as a ‘clinical case’ of anxiety (Scragg, Jones and Fauvel 2001). This prevalence of anxiety closely mirrors the findings of Sukansarat et al. (2007) and Scragg et al. (2001), who both used the Hospital Anxiety and Depression Scale to measure psychological sequelae following ICU treatment. Sukansarat et al (2007), reported a 24% prevalence of patients who were a ‘case’ of anxiety similar to the 28% of ‘cases’ in this study, and Scragg et al (2001) reported an overall anxiety prevalence of 43%, which closely mirrors this study’s prevalence of 48%. Women had a higher prevalence than men for both anxiety and depression, which concurs with the findings of Eddlestone et al (2000), Girard et al. (2007), Scragg et al. (2001), Moser (2007) and Davydow et al. (2008), although the differences between the two groups in this study did not reach statistical significance. The high prevalence of anxiety in this sample (48%) is troubling as the importance of anxiety and the medical and psychological consequences of it are often ignored by healthcare providers because it is a universal emotion that is managed without consequence by many people (Moser 2007).

- **Depression**

The prevalence of depressive symptoms was less than that of anxiety, but still high, with more than a quarter of the sample (28%) showing symptoms. Fifteen patients (15%) of the total sample had symptoms severe enough (equal to or greater than 11 on HADS depression subscale (Scragg et al. 2001)), to be classified as a ‘clinical case’ of depression. Scragg et al. (2001) reported a 30% prevalence of depressive symptoms above the score of eight on HADS. The findings of this study and the prevalence of depressive symptoms are very similar.

- **HADS total score**

An additional score that has been used with the HADS scale is that of a total HADS score (Scragg, Jones and Fauvel 2001). Any patient that has a **combined** HADS anxiety subscale and HADS depression subscale score of 12 or above, should be seen as an '**at risk**' case for a clinical psychological disorder. Fifty-seven patients (58%) of the sample had total HADS scores of 12 or above. Scragg, Jones and Fauvel (2001) reported 47% of their sample population with a total HADS score of 12 or above. Another screening measure for psychological distress using the HADS scale that has been successfully used by Sellick and Edwardson (2007) to identify oncology patients in psychological distress, is to identify all cases who have borderline scores of eight, nine or ten on **both** the HADS anxiety and HADS depression subscales. These patients should be seen as 'at risk' of developing psychological distress. In this study, twenty-six patients (26%) are 'at risk' cases.

From the above, it can be concluded that there is a significant prevalence of psychological distress amongst patients at their first visit post discharge from ICU and hospital. This prevalence is worrisome as the majority of the patients discharged from ICU are not followed up or offered support with regards to their psychological distress, as it is not identified.

5.3.2 The prevalence of post-traumatic stress (PTS) symptoms

The prevalence of post-traumatic stress (PTS) symptoms directly related to the ICU experience, as measured by the ETIC-7, is 32%. This is just under a third of the total sample population. These findings closely mirror those of Scragg et al (2001) and

Anderson (2008), who both reported a prevalence of PTS symptoms of 30%. Of the 32% with PTS symptoms, or patients with a score of above eight on the ETIC-7, there were eight participants (8%) with scores above 15, indicating severe symptoms. Two patients had a full-scale score of 21. Both of these patients were male, one from cardiac ICU and the other from surgical ICU.

The prevalence of PTS symptoms was found to be high and this is worrisome as PTS symptoms tend to persist over time (Davydow et al 2007). Post-traumatic stress symptoms may have the potential for increased morbidity, mortality and non-compliance in patients resulting in increased or wasted healthcare resources (Tedstone and Tarrier 2003). It is therefore important to identify those at risk. The highest prevalence rates for post-traumatic stress disorder (PTSD) in medical spheres have been identified as being patients following treatment in ICU and those with HIV infection (Tedstone and Tarrier 2003). The Coloured population had the highest prevalence of PTS symptoms 50% (SE 0.28), but this result may not be a true reflection of PTS symptoms in this group as there were only four Coloured participants in this study. The Black population had the next highest prevalence, with 38% (SE 0.86).

According to Cuthbertson et al (2003), PTS symptoms at 3 months post ICU tend to persist chronically without treatment. They also noted that the average duration of untreated post-traumatic stress disorder (PTSD) is 7 years, therefore non-identification or non-treatment will lead to chronic suffering. The majority of patients identified as having symptoms of PTS, had moderate scores of eight to 15 on the ETIC-7. If these patients do not receive adequate treatment, some of these patients

may be at risk of developing more severe symptoms over time. Previous research has demonstrated that in addition to the potential for chronic distress with PTS symptoms, there can be detrimental effects upon day-to-day functioning, education, employment and marriage (Kessler, 2000).

In this study there were no statistically significant relationships found between PTS symptoms and age, gender, ethnic status, type of ICU, ventilation, length of stay, prior stressors or previous treatment for mental illness. Perhaps with a larger sample size, this would differ.

5.3.3 Post-traumatic stress (PTS) symptoms and the memory of physical restraints

An unexpected finding of this study was that memory of physical restraints during their ICU stay was significantly correlated with the development of PTS symptoms (r =0.38; **p=0.0001**). Using logistic regression it was found that patients with memory of physical restraints were 6 times (OR 6.04; SE 3.06; **p=0.0000**; CI 2.23 – 16.33) more likely to develop symptoms of PTS. In her study comparing the ICU experience with that of torture, Dyer (1995) reported that patients listed pain and restricted movement as one of the highest stressors in ICU. This finding shows that the use of physical restraints in ICU may be a predictor in the development of PTS symptoms. This requires further investigation.

5.3.4 Post –traumatic stress (PTS) symptoms and mechanical ventilation

There were no statistically significant differences found between the mean scores of PTS in those patients who were ventilated and those who were not. Fifty-three percent (53%) of the patients who had symptoms of PTS in this study, were **not** ventilated.

This supports the finding of Cuthbertson et al (2003) that no single type of trauma always causes psychological disturbance. Critical illness and associated factors such as prolonged hospitalisation and mechanical ventilation are not necessarily enough to cause PTS symptoms in all patients. The degree to which these events are experienced as traumatic may be mediated by age, severity of illness, abruptness of onset, religious faith and individual interpretation (Jackson et al 2007).

5.3.5 Length of stay in ICU

In this study, the majority of patients (77%) had a short ICU stay of one to six days, with the mode being two days. One can extrapolate from this that the majority of participants in this study were not critically ill for a prolonged period of time. Perhaps if the sample had included a larger number of participants with prolonged stays, the results would have differed. However, previous studies have consistently found that severity of illness is ***non-predictive*** in the development of post-traumatic stress symptoms (Girard et al. 2007, Jackson et al. 2008 and Boer et al. 2008), although a longer stay in the ICU and prolonged ventilation has been found to be predictive of PTSD (Schelling et al. 1998).

5.3.6 Qualitative findings

As mentioned previously in chapter three, after completing the structured interview with the researcher, the patients were given the opportunity to ask questions and talk about their experience in ICU. It was noted during data collection that the majority of patients who were coping well with their recovery from ICU had significant spiritual faith and support. They mentioned trust and faith in a higher being and support from church groups as a great comfort during their recovery period. This concurs with the

positive effects of ‘perceived social support’ (Deja et al. 2006). Unfortunately, the researcher did not include questions regarding “spiritual faith or religious community support” in this study. Further research into this aspect of recovery would be interesting. On the whole, patients were relieved to be able to talk to someone about their experience in ICU and their recovery period. The family members of the patient took an interest in the research too, and a large number of them stated that it had been a stressful experience for the entire family. This observation emphasizes the need for holistic care for the patient and their family post-ICU discharge.

During data collection, the older patients, especially those >70 years, were found to be more accepting of their disabilities and physical limitations, whereas the younger patients were frustrated that their physical strength had not returned sooner. However, although the older patients appeared calmer and more accepting of physical limitations, the oldest age group in this study which consisted of patients older than fifty-five years, had the highest prevalence of depressive symptoms in this study.

5.4 LIMITATIONS OF THIS STUDY

The sample population used in this research was heterogeneous in age, ethnic status, gender and the type of ICU that the patient was admitted to, this will make generalisation of the results difficult. The majority of the patients were physically well enough to be able to walk to the clinic from the car park and this excludes the patients who were too ill or weak to attend the outpatient clinic, as well as those who did not return for their follow-up visit. The fact that the researcher requested that patients discharged from ICU make themselves known to the researcher in order for

them to be included in the study could have excluded patients who had 'avoidant' symptoms of post-traumatic stress.

5.5 RECOMMENDATIONS

The prevalence of the symptoms of anxiety, depression and PTS were found to be high. In addition to this, PTS symptoms have been demonstrated in this study to be directly related to the ICU experience, through the use of the ETIC -7. Further research needs to be done in South Africa examining the psychological sequelae following ICU treatment. Critical illness and the recovery from it does **not** end at the ICU door and patient's should be followed up and supported through their recovery period. Nursing care should be holistic, encompassing not only the physical but also the psychological recovery, as the one will affect the other. This is a basic tenet of nursing care.

5.5.1 Identification of patients at risk and follow up

Currently in South Africa there is no follow up of patients once they have been discharged from ICU. Intensive care staff have only "death" or "discharge alive from ICU" as clinical outcomes from which to judge practice performance and limited evidence exists on which to base decisions regarding improvements to critical care practice (Strahan et al 2004). Follow up of these patients is required.

A follow-up of patients could be introduced into the outpatient department (OPD), whereby patients returning for their first visit post-discharge could be given a self-report questionnaire to complete, which included the HADS scale and the ETIC-7.

Alternatively, it could be given to patients (or a family member) on their discharge from ICU, and requested to return it when they return for their outpatient visit. A sealed post-box could be placed in the OPD for the patients to 'post' their completed questionnaires. These questionnaires could be scored and assessed by an appointed health care professional. Those patients found to be "at risk" of developing a psychological disorder could be contacted telephonically and offered supportive counselling. Sellick and Edwardson (2007) have successfully used this screening technique, using HADS, at their oncology centre in Ontario, Canada.

Patients suffering from post-traumatic stress symptoms may not come forward to ask for help because of the avoidant symptoms of post-traumatic stress. Furthermore, Maddox and Dunn (2001) in their study of psychosocial recovery following ICU reported that patients did not commonly seek psychiatric support because of the perceived stigma attached to asking for professional help with mental health issues. Many of the patients valued an "independent spirit", equating it with strength of character and their belief that they were able to affect recovery unaided by outside support. This highlights the importance that interventions must be planned in collaboration with the population they are meant to serve and that a screening tool should be routinely used on ICU patients at their return visit in outpatients so that those in psychological distress may be identified and offered support.

5.5.2 Recommendations for nursing practice

Much ICU nursing and observations are invisible to the patient e.g. monitoring of vital signs, giving IV drugs, emptying drains and bags (Dyer 1995). The ICU care that is of most immediate concern to each patient is the care that he or she **directly**

experiences. Communication, reassurance, empathy and caring are of utmost importance, and the nurse is the person who should provide all of the above. Basic nursing care, along with the protection of the patients' autonomy, dignity and rights, effective communication and the involvement of family members in the patients recovery, would all help in preventing adverse psychological sequelae (Adamson 2004).

Patients should receive basic information from the staff in ICU on discharge regarding what to expect during their recovery and this information should be shared with the close family members (Price 2004). Psychological sequelae of ICU treatment, and the accompanying serious problems, may be averted if nurses take a pro-active approach, encouraging patients to discuss their emotional response to their illness and their experiences of ICU (Roberts and Chaboyer 2004).

- **Reduction of stressors**

Critical illness and their requisite ICU therapies expose patients to extreme stressors (Davydow et al. 2008). Psychoneuroimmunology (PNI) has demonstrated that the stress response is associated with altered immune function, decreased immunity and therefore a weakened and vulnerable patient both physiologically and psychologically (Caine 2003). This weakened state could slow the recovery process and leave the patients vulnerable to developing psychological sequelae such as anxiety, depression and post-traumatic stress symptoms. Nurses are constantly with the patient in ICU and are in an ideal position to reduce the amount of stressors that a patient has to deal with. Basic nursing care for example, promoting comfortable positioning, ensuring effective pain relief, providing periods of uninterrupted sleep, reducing environmental

noise and lighting, ensuring a degree of patient privacy and effective reassuring communication could all assist with reducing the stressors that the patient has to contend with.

- **Physical restraints**

As the memory of physical restraints were found to be a predictive factor in the development of PTS symptoms in this study, patients should only be physically restrained when all other alternatives have been exhausted (e.g., increasing sedative medication, effective communication with the patient, pain relief, etc.). There should also be some 'slack' in the IV lines and monitor cables attached to the patient so that their movement is not completely restricted.

5.5.3 Recommendations for nursing education

Nurses, especially those training in Intensive Care should be made aware of the prevalence of anxiety, depression and post-traumatic stress following treatment in ICU or the "ICU syndrome", and reminded that basic nursing care and effective and reassuring communication can help to diminish the stressors that an ICU patient has to contend with.

5.5.4 Recommendations for nursing research

Further research needs to be done into the effectiveness of informational and educational pamphlets in ICU, the role of the nurse in reducing the risk of psychological sequelae, and also into the planning and creation of follow-up care for the ICU patient. Furthermore, research needs to be done into factors that have been found to decrease the incidence of psychological sequelae – e.g. perceived social

support (Deja et al 2006), daily interruption of sedative infusions (Kress et al 2003), the use of patient diaries to improve factual recall (Backman and Walther 2001), and the use of these diaries as a debriefing tool (Combe 2005).

As the researcher is not aware of other studies on this subject matter in South Africa, there is enormous scope for South African nurse researchers to explore this subject matter.

5.6. SUMMARY AND CONCLUSIONS

Just under half the sample population (48%) had symptoms of anxiety, more than a quarter had symptoms of depression (28%), and 32% had symptoms of PTS.

It was observed in this study that a significant number of ICU patients returning to the community develop psychological sequelae related to their admission and necessary treatments received in ICU. This psychological distress can affect the patients' physical recovery (by an altered and decreased immune function), their quality of life and their functioning within the family and society (Perkonigg, Kessler and Wittchen 2000).

These patients need to be **identified** early, and offered appropriate treatment and support by developing good quality follow-up services with strong links to outpatient services and mental health services. However, to ensure that these patients are identified, a screening tool must be implemented and used routinely on all patients at ICU discharge or at their first return visit in the outpatient clinics. Corrigan et al (2007) reported that the suffering of the individuals with psychological sequelae post-ICU discharge is substantial, emphasising the need for empathetic care in ICU as well as afterwards, and the need for follow-up services for these individuals.

This study has demonstrated that the psychological effects of critical illness, admission to ICU and the necessary treatments rendered therein do not stop at the ICU door. These patients require guidance and follow up to ensure their full recovery.

5.7 REFLECTIONS

This was a descriptive, quantitative research report and the researcher maintained an objective approach to the data collection and the analysis of the results throughout the process. However, being immersed in the research report led the researcher to reflect on the experiences of the participants in this study, the journey that they had been through and the knowledge that a significant number of the participants were identified as having psychological sequelae as a result thereof.

"Journey into Unchartered Territory" was written by the researcher as a final reflection once the study was complete.

JOURNEY INTO UNCHARTERED TERRITORY

The experience of a patient going through the ordeal of critical illness and the Intensive Care Unit can be likened to that of taking a journey into un-chartered, perilous territory.

This journey has 5 main stops, each leaving the patient or the 'traveller', in a new environment, surrounded by different groups of people.

The nurse's function during the patient's travels is to act as the 'travel-guide'. The guide is a knowledgeable, dependable, responsible, caring companion who travels alongside the bewildered and vulnerable tourist or traveller.

The 5 main stops that the traveller makes start with the point of departure:

1) Start the journey with a critical illness or injury
2) Admission to ICU – length of stay – uncertain
3) Transfer to the ward after ICU
4) Discharge from hospital back to their home ground
5) The final leg of the journey…recovery and returning to normal functioning physically, and psychologically within the family, society and employment.

The patient's journey through illness, ICU and their recovery should be seen holistically – as a complete journey – with the patient arriving at their point of destination of physical and psychological 'wellness', safely and timeously, and NOT be left floundering with no 'travel guides' after the discharge from ICU, as is so often the case. The success of the journey should be measured once the patient has returned to their home and have physically and psychologically recovered from their expedition.

The journey through critical illness and ICU is indeed a perilous one during which the "traveller" will have to overcome many obstacles and dangers and conquer fears and anxieties. The nurse or 'guide' is in a privileged position in that they can 'be with' the patient and travel 'alongside' them and offer their knowledge, support, and guidance, as they are familiar with the route and can assist patients through the difficult phases.

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Appendix A

Faculty of Health Sciences
UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

7 York Road PARKTOWN Johannesburg 2193 Telegrams WITSMED Telex 4-24655.SA
FAX 643-4318 TELEPHONE 717-2075/2076
E-MAIL healthpg@health.wits.ac.za

MRS C HATCHETT
PO BOX 3214
EDENVALE
1610

APPLICATION NUMBER 0516849T
STATUS (DEG 49) (MM034) PZZ

2006-08-17

Dear Mrs Hatchett

Approval of protocol entitled Psychological sequelae following ICU treatment

I should like to advise you that the protocol and title that you have submitted for the degree of Master Of Science In Nursing (Part-Time) (Coursework) have been approved by the Postgraduate Committee at its recent meeting. Please remember that any amendment to this title has to be endorsed by your Head of Department and formally approved by the Postgraduate Committee.

Dr. GC Langley has/have been appointed as your supervisor/s. Please maintain regular contact with your supervisor who must be kept advised of your progress.

Please note that approval by the Postgraduate Committee is always given subject to permission from the relevant Ethics Committee, and a copy of your clearance certificate should be lodged with the Faculty Office as soon as possible, if this has not already been done.

Yours sincerely

S Benn (Mrs)
Faculty Registrar
Faculty of Health Sciences

Telephone 717-2075/2076

Copies - Head of Department____Supervisor/s

Plan your career and first-year curriculum online - explore our website: www.wits.ac.za/ec2
The University seeks to serve South Africa by furthering access to equal opportunity while striving for excellence in teaching, learning and research

Appendix B

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Hatchett

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER M060455**
PROJECT	Psychological Sequelae following Treatment in Intensive Care
INVESTIGATORS	C Hatchett
DEPARTMENT	Dept of Nursing Education
DATE CONSIDERED	06.05.05
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 06.05.25 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable

cc: Supervisor : Dr G Langley

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix C

CONTACT DETAILS OF THE RESEARCHER	
Date	02/02/2009
Tel number	072 525 0240
Fax number	011 648 2359
Email	hatchet@wweb.co.za
Researcher /Principal Investigator (PI)	Cindy Hatchett
Supervisor	
Institution	University of Witwatersrand
Research title	Psychological sequalae following treatment in intensive care.

Approval is hereby granted by the Gauteng Department of Health for the above research project to be conducted. Approval is limited to compliance with the following terms and conditions:

1. All principles pertaining to ethics of research are observed and adhered to by all involved in the research project. Of key importance are the issues pertaining to research on human subjects as contained in the Declaration of Helsinki (1964, amended in 1983) and the constitution of the Republic of South Africa, respect for:
   - Human dignity;
   - Autonomy;
   - Informed consent;
   - Vulnerable persons;
   - Confidentiality;
   - Lack of harm;
   - Maximum benefit;
   - and justice
2. The GDoH is indemnified from any form of liability arising from or as a consequence of the process or outcomes of this research;
3. Researchers commit to providing the GDoH with periodic progress and a final report; short term projects are expected to submit progress reports on a more frequent basis and all reports must be submitted to the Director: Policy, Planning and Research of the GDoH;
4. The Principal Investigator shall promptly inform the above mentioned office of changes of

contact details or physical address of the researching individual, organisation or team;

5. The Principal Investigator shall inform the above office and make arrangements to discuss their findings with GDoH prior to dissemination;
6. The Principal Investigator shall promptly inform the above mentioned office of any adverse situation which may be a health hazard to any of the participants;
7. The Principal Investigator shall request in writing authorization by the Director: Policy, Planning and Research of the GDoH for any intended changes of any form to the original and approved research proposal;
8. If for any reason the research is discontinued, the Principal Investigator must inform the above mentioned office of the reasons for such discontinuation;
9. A formal research report upon completion should be submitted to the Director: Policy, Planning and Research of the GDoH with recommendations and implications for GDoH.

AGREEMENT BETWEEN THE GAUTENG DEPARTMENT OF HEALTH (GDoH) AND THE RESEARCHER

Sue le Roux

Director: Policy, Planning and Research (GDoH)

Date:
4/02/2009

Cindy Hatchett

Principal Researcher

Date:
5/2/09

Appendix D

Information Letter

Good Day,

My name is Cindy Hatchett and I am currently a Master of Science (Nursing) candidate with the University of the Witwatersrand. As part of the course requirement, I am expected to conduct clinical research under supervision. I am investigating the psychological consequences experienced by patient's dealing with an acute critical illness, who have also been treated in an Intensive Care Unit. I would be extremely grateful if you would agree to participate in this research project. You have been selected as a potential participant for this research as you have recently been discharged from an Intensive Care Unit, and your personal experience, feelings and thoughts are of great value to me, and the completion of this research project.

Reason for doing research

It has been described in previous studies that the experience of having a critical illness and of being treated in an Intensive Care Unit is a stressful experience. Research has been conducted in USA, England, Europe and Australia on this issue, and I would like to investigate how South African patients feel after discharge from the Intensive Care Unit as your physical and psychological health are both important to your recovery process. Your opinion and experience as a unique patient who has been through this stressful experience, would make a valuable contribution towards identifying how patients feel after such an ordeal. Your opinion is required to ensure that the medical and nursing profession are informed, and so give you the correct treatment and care to ensure a quick and complete recovery from your illness.

What is expected of you if you choose to participate?

You would be expected to answer a total of 21 questions. Each answer that you give will be chosen from a set range of answers. e.g. 1. Often 2. Sometimes 3. Seldom 4. Not at all. It would be better if you answered the question quickly without thinking too much about it, as the first answer that comes to your head is normally the most

accurate. The interview should take approximately 10 minutes from start to finish, and would be done in the Out Patient Department.

Benefits or Risks Involved in Participation

It would be a wonderful opportunity for you to say how you truly feel and what you have been through. This may not benefit you immediately, but would most certainly benefit other patients who will experience a critical illness and receive treatment in an Intensive Care Unit. Through the results of this research, the medical and nursing staff will be made aware how you feel. Correct treatment methods and care plans can be implemented to ensure that future patients, having similar experiences to you, will receive appropriate inpatient care and rehabilitation.

There is a small risk that answering the questions could make you in a sense "relive" the experience of intensive care. If you become distressed by these thoughts, I have arranged that a counsellor be available to do crisis intervention if you so require. Please contact me if you require debriefing on 072-525 0240 or 011-648-2359.

Voluntary and confidential participation.

You have a choice as to whether or not you will participate in this research. Refusal to take part in the study will hold no consequences for you. If you initially agree to take part, you may withdraw at any point without having to give a reason. Your name will not appear on any of the research forms, or in the final research report. Each form will be identified by a number only. I will keep a record of names in a notebook in case of a need for follow up. This book shall be seen only by the researcher and will be kept in a locked drawer at all times when not being used.

If you have any queries at all, I would be pleased to answer them. My contact details are:

Sr. Cindy Hatchett at either 011 648-2359 or 072-525 0240.

If you would like a copy of the final research report, I will provide you with one. Postal details must then be provided.

If you understand what the research is about, and are happy and willing to take part in this research report, please sign the attached consent form.

Thank you for taking the time to read this and for taking part in research that will benefit patients in a similar situation as you find yourself now, in the near future.

Thank you

Yours faithfully,

Cindy Hatchett

R.N. R.M. BACur CHN NEd BA(Psych) Hons and current candidate for MSc(Nursing)

Appendix E

Psychological Sequelae Following Treatment in Intensive Care

Nursing Education
MSC Nursing
University Of Witwatersrand – Student: C. Hatchett 0516849T

CONSENT FORM

I agree to participate in this research project exploring the psychological sequelae; (consequences), following treatment in Intensive care.

I have read the information letter and understand what the study is all about. I also understand that participation is voluntary and that at any point I may withdraw from the study, without consequences.

I agree to answer the questions honestly and to the best of my ability. All information will remain confidential and my name will not appear anywhere on the questionnaire.

Number assigned to patient:

Signature:

……

Appendix F

Psychological Sequelae Following Treatment in the Intensive Care Unit

DATA COLLECTION INSTRUMENT - MSc

SECTION 1: DEMOGRAPHIC INFORMATION

1.1. AGE

<20	
20 - 30	
31 - 40	
41 - 50	
51 - 60	
61 - 70	
>71	

1.2. GENDER

MALE	
FEMALE	

1.3. RACE

WHITE	
BLACK	
INDIAN	
COLOURED	
ASIAN	

1.4. INTENSIVE CARE SPECIALITY

GENERAL	
CARDIAC	

NEURO	
OTHER	

1.5. VENTILATED IN ICU?

YES	NO

1.6. RETRAINTS USED IN ICU?

YES	NO	DON'T KNOW

1.7. LENGTH OF STAY IN ICU

1-6 DAYS	
7-10 DAYS	
>11 DAYS	

1.8. STRESSFUL EVENT JUST PRIOR TO ADMISSION OR POST DISCHARGE FROM ICU

YES	NO	DON'T KNOW

1.9. MEDICATIONS
1.9a CURRENT MEDICATION:

1.9b PRIOR TO ADMISSION HAVE YOU SOUGHT TREATMENT FOR STRESS OR PSYCHOLOGICAL PROBLEMS?

YES	NO

SECTION 2. HADS

2.1 I FEEL TENSE OR "WOUND UP"

Most of the time	
A lot of the time	
Sometimes	
Not at all	

2.2 I STILL ENJOY THE THINGS I USED TO ENJOY

DEFINITELY AS MUCH	
NOT QUITE AS MUCH	
ONLY A LITTLE	
HARDLY AT ALL	

2.3 I GET A SORT OF FRIGHTENED FEELING AS IF SOMETHING AWFUL IS GOING TO HAPPEN

DEFINITELY & QUITE BADLY	
YES. BUT NOT TOO BADLY	
A LITTLE BUT IT DOESN'T WORRY ME	
NOT AT ALL	

2.4 I CAN LAUGH AND SEE THE FUNNY SIDE OF THINGS

AS MUCH AS I ALWAYS COULD	
NOT QUITE AS MUCH NOW	
DEFINITELY NOT AS MUCH NOW	
NOT AT ALL	

2.5 WORRYING THOUGHTS GO THROUGH MY MIND

A GREAT DEAL OF THE TIME	
A LOT OF THE TIME	
FROM TIME TO TIME BUT NOT TOO OFTEN	
ONLY OCCASSIONALLY	

2.6 I FEEL CHEERFUL

NOT AT ALL	
NOT OFTEN	
SOMETIMES	
MOST OF THE TIME	

2.7 I CAN SIT AT EASE AND FEEL RELAXED

MOST OF THE TIME	
VERY OFTEN	
SOMETIMES	
NOT AT ALL	

2.8 I FEEL AS IF I AM SLOWED DOWN

NEARLY ALL THE TIME	
VERY OFTEN	
SOMETIMES	
NOT AT ALL	

2.9 I GET A SORT OF FRIGHTENED FEELING, LIKE "BUTTERFLIES" IN THE STOMACH

NOT AT ALL	
OCASSIONALLY	
QUITE OFTEN	
VERY OFTEN	

2.10 I HAVE LOST INTEREST IN MY APPEARANCE

DEFINITELY	
I DON'T TAKE AS MUCH CARE AS I SHOULD	
I MAY NOT TAKE QUITE AS MUCH CARE	
I TAKE JUST AS MUCH CARE AS EVER	

2.11 I FEEL RESTLESS AS IF I HAVE TO BE ON THE MOVE

VERY MUCH INDEED	
QUITE A BIT	
NOT VERY MUCH	
NOT AT ALL	

2.12 I LOOK FORWARD WITH ENJOYMENT TO THINGS

AS MUCH AS I EVER DID	
RATHER LESS THAN I USED TO	
DEFINITELY LESS THAN I USED TO	
HARDLY AT ALL	

2.13 I GET SUDDEN FEELINGS OF PANIC

VERY OFTEN INDEED	
QUITE A LOT	
NOT VERY MUCH	
NOT AT ALL	

2.14 I CAN ENJOY A GOOD BOOK OR RADIO OR TV PROGRAMME

OFTEN	
SOMETIMES	
NOT OFTEN	
VERY SELDOM	

FOR SCORING:

ANXIETY SUBSCORE	**DEPRESSION SUBSCORE**	**TOTAL HADS SCORE**

SECTION 3.

<u>EXPERIENCE AFTER TREATMENT IN INTENSIVE CARE - 7 SCALE</u> (ETIC-7)

To answer questions 'Have you experienced the problem over the last few days?"

3.1 Had upsetting thoughts or images about your time in ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
3.2 Experienced "flashbacks" that remind you of being in ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
3.3 Felt upset when you are reminded of your time in ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
3.4 Had bad dreams or nightmares about your time in ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
3.5 Felt anxious or unwell when reminded of your stay in ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
3.6 Tried not to think about, talk about, or have feelings about your time in ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
3.7 Avoided activities, people or places that remind you of the ICU?	**NOT AT ALL**	**RARELY**	**SOMETIMES**	**OFTEN**
SCORING				

Appendix G

Permission was not obtained for the use of The Experiences of Treatment in Intensive Care-7, as the authors state on page 14 that " We are happy for the ETIC-7 to be freely reproduced (Scragg P, Jones A and Fauvel N 2001:14). I will however inform them in writing that I will be using the scale in my study.

Dear Cindy Hatchett
Permission is granted to use our documentation and spreadsheets for the educational purpose you describe below. Please note also that you should credit the original authors of the algorithms. Full references are given at the bottom of the documentation page for each algorithm.

Best regards
Sriram
(Houston, TX)

From: Hatchett Family [mailto:hatchett@wweb.co.za]
Sent: Tuesday, February 28, 2006 4:08 AM
To: mgsriram@medal.org
Subject: Permission to use scales

Dear Sir,

I am presently a second year MSc student in advanced psychiatric nursing at the University of the Witwatersrand, Johannesburg, South Africa. My student number is: 0516849T

I am preparing my thesis which is investigating the psychological effects of ICU on patients. I request permission to use the scales that I have downloaded from your site for personal research purposes.

I would also be very grateful if you could supply me with the validity and reliability of the following scales; or, alternatively, web sites or articles in which I may find them.

The stressful patient experiences during intensive care.

The revised impact of event scale

Acute stress disorder

The 6 item short form of the social support Questionnaire of Saranson
Thanking you
Yours faithfully,

Cindy Hatchett email: hatchett@wweb.co.za

From: Hatchett Family [mailto:hatchett@wweb.co.za]
Sent: Saturday, April 01, 2006 9:03 AM
To: mgsriram@medal.org
Subject: Permission to use HADS & ETIC-7

Dear Sir,

I have previously written to you requesting permission to use some of your scales in my research thesis.

My name is Cindy Hatchett and I am currently an MSc student (nursing) at the University of the Witwatersrand, in Johannesburg, South Africa. I would like to request permission to use the instruments - The Hospital Anxiety and Depression Scale (HADS) and the Experiences of Trauma in Intensive Care-7, (ETIC-7).

My research will be investigating the Psychological Sequelae following treatment in the Intensive Care Unit.

Yours sincerely,
Cindy Hatchett
R.N. R.M. BACur NEd CHN BA(Psych) Hons; currently an MSc(Nursing) candidate.
email: hatchett@wweb.co.za

Dear Ms Hatchett:
(I thought I had replied earlier)

As you can see, the medal web site collects information from the published literature and creates documentation as well as a spreadsheet. References to the original works are provided.
For non-profit purposes you may use our spreadsheet and/or web-based form freely, provided acknowledgement is made in your research reports and published papers. The acknowledgement should specifically reference Medal ™, www.medal.org.

However, you may also need to obtain permission from the original authors of these scales. I suggest you ask your university administrators for help in this regard.
Sincerely

Sriram

M Sriram Iyengar, PhD
President, Institute for Algorithmic Medicine