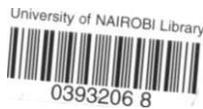


**^ PSYCHIATRIC MORBIDITY AND RELATED FACTORS IN THE  
REHABILITATION PROCESS OF PARAPLEGICS AT THE NATIONAL  
SPINAL INJURY HOSPITAL IN NAIROBI, KENYA.**

**A DISSERTATION SUBMITTED IN PART FULFILMENT FOR THE AWARD  
OF MASTER OF MEDICINE (PSYCHIATRY) IN THE UNIVERSITY OF  
NAIROBI, KENYA.**



**BY  
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r<sup>ST</sup> JUNE, 2005.**

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## **DECLARATION**

I, Dr. Solomon K Kaguchia, do hereby declare that this dissertation is the result of my original work. It has not been submitted either wholly or in part to this or any other university for the award of a degree in Master of Medicine in Psychiatry.

Signed                    I

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## **DEDICATION**

This dissertation is dedicated to my parents Nahashon and Jane Kaguchia for their love and encouragement over the years.

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## ABBREVIATIONS

ASIA	American Spinal Injury Association
DF	Degree of freedom
DSM IV-TR	Diagnostic statistical manual IV-text revised.
NA	Not applicable
NPM	No Psychiatric Morbidity
PM	Psychiatric morbidity
PTSD	Posttraumatic stress disorder
RA	Rheumatoid Arthritis
SPI	Standard Psychiatric Interview
SES	Socio-economic Status
* <sup>2</sup>	Chi Square

## **OPERATIONAL TERMS**

The variables that were regarded as related factors in the rehabilitation process include:

- 1) Socio-demographic characteristics. In socio-economic status, the occupational groups was used to classify the subjects. For the purpose of analysis, the first three occupational group will be ranked together as the higher SES with the last three comprising the lower SES (see appendix 3 item 6)..
- 2) Mode of injury, which referred to the patient's role in the event that led to injury. If the patient initiated the event that led to injury, such injury was regarded as self-involving. The rest were regarded as having injuries initiated by the action of others.
- 3) Therapeutic adherence, which is a rating by the rehabilitation personnel on the patients' willingness to participate in therapy. The ratings were in terms of excellent, satisfactory and poor (see appendix).
- 4) Physical complications as present on examination and as indicated in the clinical notes.

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## ABSTRACT

**Background:** Many studies in the Western world have reported a high association between paraplegia and psychiatric morbidity. Some complications of paraplegia and characteristics of patients have been associated with psychiatric morbidity. No study in this field has been done in Kenya.

**Setting:** The study was conducted at the National Spinal Injury Hospital in Nairobi, Kenya.

**Objective:** To establish the magnitude of psychiatric morbidity among paraplegics and to assess association with socio-demographic characteristics, mode of injury, therapeutic adherence and physical complications.

**Design:** This was a descriptive cross sectional study.

**Subjects:** All paraplegics undergoing rehabilitation at the National Spinal Injury Hospital.

**Method:** One hundred and twenty patients seen between the months of December 2003 and May 2004 met the study criteria and were recruited for the study. Paraplegic complications and adherence to therapy were determined through examination and reference to clinical notes. A socio-demographic data and treatment questionnaire was administered followed by a standard psychiatric interview and diagnosis made using DSM IV-TR criteria.

**Main outcome measures:** Physical complications of paraplegia, level of adherence to therapy, and psychiatric morbidity.

**Results:** Out of the 135 patients seen over a six-month period, 128 patients consented to participate in the study. A large proportion of patients (70%) were below the age of 39 years. Road Traffic Accidents was the leading event causing injuries with most victims being passengers. Seventy-two patients (56.25%) were diagnosed with psychiatric disorder. Posttraumatic stress disorder was diagnosed in 23.4% of the subjects and was the leading psychiatric complication. Others were depression (17.2%), alcohol dependence (1.6%), generalized anxiety disorder (5%), cannabis abuse (8%) and somatization disorder in 7.5% of the patients. Variables significantly associated with

psychiatric morbidity were female gender, relatively young age, non-adherence to therapy, single or divorced and presence of physical complications.

**Conclusions:** In the paraplegic population studied, a majority of patients had psychiatric morbidity. However, this co-morbidity was neither documented nor included in the management plan.

**Recommendation:** Trauma and rehabilitation specialists dealing with paraplegics should identify and treat co-existing psychopathology and evaluation for psychiatric complications should be included in their rehabilitation and treatment algorithm.

**CHAPTER 1**  
**INTRODUCTION**  
**1.1 BACKGROUND**

Spinal injury can cause much physical impairment that change the persons ability to carry out activities such as ambulation, grooming, toileting and many other activities of daily living. In addition to physical impairments, there are psychological and psychiatric consequences that impact on the patient's life. Traditionally, rehabilitation has been focused on teaching techniques of mobility and activities of daily living (ADL). ADL and mobility are taught within a rehabilitation centre, which may or may not be part of an acute care hospital. The National spinal injury hospital is the only post acute rehabilitation centre in Kenya. This forty two-bed facility is run by the Ministry of Health and admits patients on a referral basis from both government and private hospitals. The rehabilitation centre is situated five kilometers to the west of Nairobi city centre in an upper middle class suburban area. It is one of three such centres in Africa, with one in South Africa and the other in Egypt (2). It can only cater for 20% of those who require its facilities due to its limited capacity. It also has an outpatient department, vocational therapy and a physiatry (physical therapy) unit.

Individuals of many disciplines have contact with the disabled person during this rehabilitation process; clinicians, social workers, nurses, vocational therapists and recreational therapists. A team approach is customary in rehabilitation. Emphasis in rehabilitation has shifted from survival of the disabled person to psychosocial integration into the community. Persons with spinal injury do not have psychological problems per se, but rather they have tremendous reality problems as they learn to live with a disability (1). Unfortunately, failure to cope may trigger psychological and psychiatric problems, which may impact on the outcome of the physical disability (1). Therapeutic adherence, a marker of psychological adjustment, physical complications, social and vocational adjustment in relation to demographic variables and overall mental well-being will be determined in this study.

## **1.2 JUSTIFICATION**

There is data to suggest that between 60% and 70% of the deaths of persons who survive the acute phase of spinal injury may involve self-neglect or self-destructive behaviors (1). In Kenya, 70% of such patients die within five years of leaving hospital (2). Similar findings have been found in other areas (1,3)- Successful rehabilitation, which addresses psychological and psychiatric problems thus, has direct impact on mortality reduction. Many of the patients seen in this unit have forensic interests as their injuries occurred as a result of actions by others. Where compensation is indicated, the psychological aspects are not taken into account, as parameters that would act as a guide do not exist. This is not the case in other regions (3). It is hoped that this study will serve as a pioneer study as well as a basis for further research into the psychiatric aspects of rehabilitation systems in an African setting.

### **1.3 AIM: -**

To establish the magnitude of psychiatric morbidity amongst patients undergoing rehabilitation at the National Spinal Injury Hospital, and to establish if there are significant differences in relation to type of physical complications, mode of injury (whether self-involving or not) and adherence to therapy.

### **1.4 OBJECTIVES: -**

1. To determine the socio-demographic characteristics of rehabilitation centre inpatients and outpatients who have been attended to over a six-month period.
2. To determine the prevalence of psychiatric morbidity among patients attended to at the national spinal injury hospital over a six-month period.
3. To establish whether there are significant differences in psychiatric morbidity between the groups whose injuries are self-involving and those whose injuries are through action by others.
4. To establish whether there are significant differences in psychiatric morbidity between patients with physical complications and those without, and between a particular type of physical complication compared with another.
  - To determine the relationship between psychiatric morbidity and adherence to therapy.

### **1.5 NULL HYPOTHESES:-**

1. Psychiatric morbidity has no association with the presence and type of physical complications among paraplegics at the National Spinal Injury Hospital.
2. There is no difference in psychiatric morbidity rates among paraplegics on rehabilitation at the National Spinal Injury Hospital and that found among paraplegics and other trauma patients in other regions.
- 3 There is no association between psychiatric morbidity rates and the level of adherence to therapy

## **CHAPTER 11**

### **LITERATURE REVIEW**

#### **2.1 Common causes and Physical complications of traumatic spinal cord injury.**

Traumatic spinal cord injury is damage to the cord that results in loss of mobility or feeling. In most cases the spinal cord remains intact, but loss of nerve function occurs (4). Although anyone can experience traumatic spinal cord injuries, most injuries occur in young men between the ages of 15-24 years, presumably because they engage in active, high-risk lifestyles (5). Road traffic accidents is the leading cause of spinal cord injury. Industrial and sport accidents also make a significant toll. In countries where gun culture is rife, gunshot injury is a common cause of traumatic cord injury (5). Minor falls in the aged and from heights, usually under influence of alcohol, are also a significant cause (5). Spinal cord injury complications affect nearly all systems of the body, from respiratory to reproductive systems, depending on the level of the lesion. Most complications resolve completely within six months. Any complication lasting more than six months is likely to be permanent (4).

Acute pneumonia is the leading cause of death in the early post injury period whereas urological complications are the leading cause in the chronic phase of spinal cord injury (4). Injuries above twelfth thoracic vertebra (T12) cause spastic or reflex bladder while those below T12 cause flaccid bladder both of which predispose the patient to repeated urinary tract infections and kidney damage. Autonomic dysreflexia, (AD), a paraplegia complication with multiple causes and symptoms occurs when spinal cord injury damages the control mechanism of high blood pressure. Physical loss of sexual function and a decrease in sexual desire is one of the most psychologically traumatic sequelae of spinal cord injury (6).

Other complications may result in skin and muscular conditions such as pressure sores and contractures and bone disorders such as osteoporosis and fractures. Chronic pain syndrome is not only underestimated and overlooked but it is also a key indicator of depression in spinal cord injury (7).

## 2.2 Psychological aspects of spinal cord injury.

In sudden onset of disability, some patients have severe depression and continue to feel devastated about their neurological deficits while others are realistic while continuing to experience underlying fears due to uncertainties about their future (8). Patients with poor coping skills or who are severely depressed and those with other psychiatric problems are likely to make slow progress in rehabilitation. They are prone to develop medical complications particularly pain, joint contractures, pressure sores and urology complications. The better-adjusted patient adopts a more active role in his rehabilitation, achieving maximum independence in activities of daily living and few medical complications. A rehabilitation outcome of functional independence depends commonly on the motivation of the patient, and the neurological level of the lesion. The patient's mental status, family support, home situation and financial leverage undoubtedly play important roles as well.

Our knowledge of the immediate psychological consequences of spinal injuries is incomplete. An earlier (1954) study by Wittkower E. (9) compared the immediate reaction of soldiers and civilians to injury. Those injured in combat showed a certain amount of equanimity about the injury since they may be very glad just to be disabled. Most patients with paraplegia, upon receiving the injury feel their legs have been cut off, but seeing them rekindles hope that everything will be all right. Denial has begun to play its role; "it is usually intense and a major defense mechanism." Das S. (1978) describes the feelings of panic that a person with quadriplegia can experience when faced with abrupt loss of sensation over a major proportion of his body (10).

Sumington G. (1976) refers to the profoundly altered sensory inputs to the lower part of the body (11). Loss of sensation associated with injury is one form of sensory deprivation; the restricted view of the world while in traction and hospitalized is another form of sensory deprivation. Body image is a term that refers to the body as a psychological experience and includes one's feelings and attitudes towards one's own body, body parts and body functions. The literature on body image in spinal injury is limited and falls into two categories: those describing distortions in perception of one's body, and those attempting to relate body image to disability adjustment. In spinal injury **the** internal source of information about body image is lost but external sources remain.

Bors E. (1957) studied fifty men with spinal injury and found that the incidence of body image distortions was one hundred percent (12).

Conomy J. (1973) describes the types of body image distortions that were experienced by his sample of eighteen traumatically injured persons with spinal injury (13). He found that all patients in his study sample had at least some fragmentary disruption of the body scheme. Eighty nine percent of his cases experienced a disordered perception of the body in space (proprioceptive body image). This distortion recurred early after the injury. Conomy J. concludes by noting that body image distortions may occur more frequently than we believe because physicians do not interview patients to obtain this data.

Blakeney O. (2002) has discussed how trauma can transform the structure of self (14). His study involved survivors of physically disfiguring trauma regardless of cause. Persons who have been rendered disfigured by traumatic insult no matter how young or old must recreate themselves. He found that the extent of injuries, amputations and paralysis are not good indicators of psychosocial recovery. The immediate response of the family and the patients are not good indicators of adjustment and ability to recreate themselves as individuals. Factors associated with poor prognosis for psychosocial adjustment included social shyness, individual and family conflict and lack of family cohesion (14).

One of the anxieties in early stage of spinal injury may result from lack of information on what is happening. Brackman and Dishoeck (1976) interviewed sixty persons with traumatic spinal injury who had been admitted to hospital within six hours of the accident and asked them when they would have wished to receive information about their condition (15). Seven percent wanted information on admission, thirty three percent wanted to be told "as soon as possible", and eighteen percent within the second week. Thus, it appears that fifty eight percent of their sample wanted to understand their condition within two weeks. Twenty five percent said the timing depended on their mental status. This means there were individual differences in their desire for information, and hence the amount of information disclosed should depend on the influence it will have on rehabilitation process.

Isson J. (1994) has discussed the probability of critical accident debriefing in causing and perpetuating intrusive and hyper arousal phenomena (16). Berger S. and Garret J. (1952) did not believe that all persons with paraplegia react to the disability in the same

way (17). Different persons, they assume, react to a disability in their own typical manner. However, they assert that certain behaviours occur more frequently; for example depression, anxiety and immature emotional expressions characterized by impulsiveness, explosiveness and egocentric behaviour. In addition, patients may assume autistic attitudes (17).

As early as nineteen fifty, Nagler B. described seven different types of reaction to spinal injury (18). His sample was based on a sample of five hundred persons hospitalized for two weeks. He found anxiety and reactive depression, psychotic reaction, indifference, psychopathic reaction, dependency reaction, normal reaction. Nagler B. did not give estimates for these categories. Among his patients, those with psychopathic reaction had the most medical complications while those with dependency reaction the least.

A Study by Lawson B. (1989) indicates that depression is not as severe or as prevalent as had been suspected following spinal injury (19). Classically, depression is characterized by loss of appetite, insomnia and psychomotor retardation, but depression in this sense does not occur to the majority of patients following spinal injury. Thus, the term 'grief' seems more appropriate to describe the sadness and loss one would feel when suddenly disabled (19).

In a systematic prospective study of seventy-one patients with spinal cord injury in the rehabilitation phase of injury, fourteen patients meeting the DSM 111 criteria for major depression were identified. A further thirteen patients had transients periods of depressed mood while the majority had no clear evidence of depression. The Beck Depression Inventory was found to be valid in this group of patients (20). Denial seems to occur in a very small proportion of persons who become suddenly disabled. It may be defined as the refusal to participate in any of the rehabilitation activities because these activities are perceived to be unnecessary. The patients expect to recover completely and view rehabilitation as unnecessary (20).

Timothy E. (1999) has noted that while the consortium for spinal cord medicine has recognized and developed guidelines for assessing and diagnosing depression in people with spinal cord injuries, the role of psychotherapy is not clearly emphasized as that of medication (21). He has noted the factors that contribute to depression as patients coping styles, whether they blame themselves for their injuries and any unresolved conflicts

from previous trauma. Others included pre-injury psychological impairment, patient's cognitive style and grief caused by injury.

There have been a number of interesting studies into the incidence of depression after onset of spinal chord injury. Klas R. (1970) did a longitudinal study of forty persons with quadriplegia and found there was no consistent relationship between those with depression and performance in therapies, and that the staff usually rated patients as more depressed than patients' selfratings (8). Outcome studies in conditions that limit mobility have mainly concentrated on Rheumatoid arthritis (RA). Certain psychological factors appear to predict a poor course of RA, including poor motivation for adherence, low intelligence, depressed mood, pain and deficits in ego strength (46). Positive attitude from staff is also manifested in adherence to therapy and in physical outcome (46).

Recent literature on mental health effects of catastrophic trauma focuses on posttraumatic stress disorder. A review of 177 articles that describe results for 1130 distinct samples composed of over 50000 individuals who experienced different types of disasters including spinal cord injury has been carried out. Posttraumatic stress disorder was found in 65% of the samples with rates ranging between 20%-45%, depression at 37% with anxiety disorders at 19%. Panic disorder and specific phobia were rare. Disaster type (technological more than natural), location (west more than developing countries), sample type (youth and elderly more than adult) and gender (female more than male) were the main variables that explained variance in the severity of impairment (22).

Carol S. (2002) has noted that some disorders such as somatisation are not listed among the classic responses to disaster. This shortcoming could be due to many studies using symptom scales that fail to differentiate certain disorders such as somatisation from depression (23).

Burke Z. (1973) compared the incidence of pain problems at two different rehabilitation centres; Austin Hospital where he found incidence at fourteen percent and Rancho Los Amigos at forty five percent (24). Medical management at the two institutions was similar. He concluded that poor medical and psychological management in the early phases seemed to be important factors in higher incidence of pain problems at Rancho. He noted higher incidence of depression and drug and alcohol use among patients Presenting with pain problems (24).

Fordyce W. (1973) pioneered in creating a program of psychological management of pain problems using behavior therapy techniques. This approach has been found to be successful where there is no physical treatment available (25). Burke Z.(1973), who noted a higher incidence of alcohol and drug use among the Rancho pain patients, mentioned the role of drugs. He wonders if those who take alcohol in large quantities have a lower pain threshold and suggests this is an inability to cope with stress before and after spinal injury (24).

Chronic pain appears to be most frequently associated with various forms of depressive disorders including major depression, dysthymia and adjustment disorders. The range of prevalence of depression in patients with chronic pain is 10%-100% (43,44). These depressive disorders are found even when there is a clear evidence of organic aetiology to the pain (45). The relationship between pain and depression may be affected by variables such as age. Depression promotes pain and pain promotes depression (45).

Rudy Thomas (2003) has studied the utility of a combination of psychological intervention and physical therapy in improving pain reduction and increasing physical functioning and quality of life in patients with spinal injuries. The effect of a six-week programme of physical and cognitive behaviour therapy and methadone was compared to one with placebo methadone (n=400). Pain was reported through self- report (measures included pain inventories) and clinical interview. The group with cognitive behaviour therapy and placebo methadone had similar rates of pain reduction to that with active medication. They conclude by noting that cognitive behaviour therapy may be of equal efficacy as opioids in pain management in spinal cord injury patients (26).

The Vista Hill Psychiatric Foundation is concerned about the drug dependent person with paraplegia and notes that pain related factors should not be overlooked (26). Roy Lubit (1985) has noted the high incidence of substance abuse and aggression amongst patients who have been exposed to trauma (28). Dunn and Davis described a survey of ten patients with spinal injury who admitted to the use of marijuana. Fifty percent report a decrease in spasticity and headache pain after smoking marijuana (27).

### **2.3 Personality and spinal injury**

There has been few efforts to determine if there is some pre-injury personality characteristics that people with spinal injury share. Fordice W.(1973) studied a sample of males with spinal injury who had been categorized into two groups: those whose disability occurred as a result of their own imprudent behaviour and those whose disability occurred through accident with no evidence of imprudence on their parts. He found that the group categorized as imprudent onset scored higher on scales three and four of the Minnesota Multiphasic personality inventory, than the prudent group. These scores generally reflect a tendency toward impulse-dominated behaviour, some aggressiveness and some poor judgment (25).

There is little data on the personality characteristics of the populations with spinal injury. Those with self-involving spinal injury are more likely to have engaged in dangerous sports, history of multiple violence with associated arrests, dangerous driving and substance abuse (25). Wynne S. (2002) has identified personality traits of neurotism and extroversion, early conduct problems, family history of psychiatric disorders and pre-existing psychiatric disorders (defined according to DSM 111 -R) as being associated with an increased risk of traumatic events (29).

Bourestom N. and Howard M. (1965) compared the Minnesota multiphasic personality profiles of three disability groups, Rheumatoid Arthritis, multiple sclerosis and spinal injury. Spinal injury had the most benign profile, suggesting less emotional distress, the least anxiety and least concern with somatic problems (30). Kulka R. (1990) has noted personality traits such as hypersensitivity, pessimism and negative reaction to stressors as risk indicators for vulnerability to posttraumatic stress disorder (31). Dinardo Q. (1971) performed a study of the thesis that absence of depression does not necessarily imply a denial of disability and subsequent maladjustments (32). He studied 26 persons with spinal injury in terms of their locus of control. He found that internals have a higher self-concept than externals and externals are more depressed than internals. At any given point in their rehabilitation, externals not only showed symptoms of depression, but also had more physical complications (32).

## **2.4 Psychosocial aspects of spinal cord injury.**

Nickerson E. (1971) found that adjustment to paraplegia was significantly related to educational and occupational attainment and to theoretical vocational interests. These factors were also associated with socio-economic level and financial resources. Adjustment was defined as co-operation with hospital procedures (33). Kerr W. and Thompson M. (1972) followed one hundred and eighty one persons with spinal injury and rated their mental adjustment to the disability as failure, poor, fair, good and excellent. Unfortunately, the methodology for obtaining these rates was not specified. They found that the young tended to adjust better than the old. Fifty three percent of those rated as having failed in mental adjustment had unsatisfactory pre-injury life histories. Twenty nine percent had satisfactory pre-injury histories. For the entire group of one hundred and eighty one persons, nine were rated as failure, poor thirteen percent, fair twenty two percent, good thirty nine percent and excellent seventeen percent. Each of those rated as excellent came from warm and loving backgrounds. Eight of the failures in the average forty-five categories were dead at follow up and seven of these had severe unresolved problems before onset of the disability. This was mainly divorce, alcohol and drug use and frequent arrests due to violence. The level of lesion was not related to successful adjustment (34).

In a study of five-year post injury marital status, El Ghatit and Harson (1976) found that 26.7 % of the men who had been married at the time of injury had undergone divorce (35). Divorce rate was higher in couples with children. The level of injury was not related with divorce rate. Employment status was correlated with divorce (35). One area of interest to researchers in recent years is that of sexuality after spinal cord injury. Fisher T. and other workers (2002) were involved in a five-year study that sought to clarify some of the issues surrounding spinal cord injury and the appropriate timing of sexual health interventions (36). This study involved forty patients of either gender, and their response to questions was analysed at four months from time of injury until eighteen months after discharge from rehabilitation. Although most of the patients assumed their sexuality would not be different, the study showed that sexual acts reduced dramatically from injury to post injury rehabilitation. Perhaps the most significant information from this research is the importance of timing psychological intervention. The results suggested a definite need for advice, education and counseling for patients and their

partners. The optimum time for intervention is usually six months after they leave the rehabilitation. Some patients cannot tolerate this intervention earlier (36).

More than two thirds of spinal cord injuries in the United States in 1998 involved adolescents, young adults and those above seventy-five years old. There were twice as many males as females. Two thirds of firearm related injuries were classified as suicide in intent (24).

Kalb M. (1971) studied the relationship between non co-operation and depressive illness during hospitalization and post- hospital behavior in twenty-four white male patients with spinal injury (37). He found that middle socio-economic status (SES) showed a significant and positive correlation between degree of ward non co-operation, and the range of post hospital behaviors. The degree of depression was not related to any of the outcome variables especially medical complications. For lower SES subjects, the greater the depression, the poorer the performance on the outcome variables. Ward non-co-operation was unrelated to all outcome variables except education level and employment status. In these cases, more non co-operation was associated with more medical complications. Social class by itself was not a good indicator of ward non co-operation or depression. All low SES patients who received high non co-operation scores had a history of difficulty adjusting to society, with high incidence of alcoholism; substance abuse and multiple arrests. This was not the case for middle SES (37).

## **2.5 Summary**

The causes and complications of paraplegia are interwoven. Its associated physical complications can lead to psychological disturbance and vice-versa. Increasing substance abuse, personality characteristics, aggression with use of dangerous weapons are some of the psychological dimensions that are contributory to incidence of paraplegia (9). Motivation issues among the patients are associated with rehabilitation outcome while some physical complications have been noted for their association with psychiatric morbidity (37).

Paraplegia affects the occupational, leisure, and interpersonal relations. The contribution of these areas to psychological maladjustment is not only significant but certain aspects such as sexual issues tend to be overlooked (36). Findings that technological disaster

inflicts more psychological maladjustment than natural disaster has renewed interest variables that may be a part of injury such as a patients role in causing their injury (22).

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## **CHAPTER 111**

### **METHODOLOGY**

#### **3.1 STUDY DESIGN**

This was a descriptive cross sectional study.

#### **3.2 STUDY AREA**

The study was conducted at the National Spinal Injury Hospital, a government facility that is one of the three rehabilitation centres in Africa. The other two paraplegia rehabilitation units in the continent are in South Africa and in Egypt. It is managed under the Ministry of Health and is manned by a team of doctors, nurses, physiotherapists and vocational and recreational training personnel. Patients are referred for physical, vocational and recreational training from other hospitals from which they receive acute injury care. It has an inpatient unit with forty beds and an outpatient clinic that handles a similar number of patients each month. It is situated five kilometers to the west of Nairobi city centre in an upper middle class suburb.

#### **3.3 STUDY POPULATION**

Out of 135 paraplegics seen over a six-month period, only 128 satisfied the study criteria and were included in this study.

#### **3.4 INCLUSION CRITERIA**

a) All Paraplegics seen at the National Spinal Injury Hospital between December 2003 and May 2004 and had injuries for six months or more.

#### **3.5 EXCLUSION CRITERIA**

- a) Patients who refused to give informed consent.
- b) Patients below the age of eighteen.
- c) Patients with no medical records.

### 3.6 SAMPLE SIZE DETERMINATION

Sampling procedure: Both inpatients and outpatients seen over a six month period and who met the criteria for recruitment constituted the study sample. The outpatients were recruited at the two clinic days in the week while inpatients in the rehabilitation phase were attended as they underwent therapy in the unit.

The minimum number of patients for the study was determined by the formula:

$$n = \frac{(z^2 - x/2) p(1-p)}{d^2}$$

Where:

$z^2 - x/2 = 1.96$  (from the table of Standard Normal Distribution, this corresponds to 95% confidence interval).

$x$  = level of significance at 5%

$n$  = minimum number of PATIENTS

$p$  = prevalence of psychiatric morbidity in American Paraplegic Studies.

Ranges are between 60% and 70% ( $j_i = 65\%$ )

$d$  = degree of precision at 7.5%

$$n = \frac{1.96^2 * 0.65 * 0.35}{(0.075)^2} = \frac{0.873964}{0.005625}$$

= 155 patients

The minimum required sample size was 155 paraplegics. Only 128 patients were recruited, as the desired number could not be attained.

**3.7 PROCEDURE** Out of the 135 paraplegics seen over a period of six months, 128 (94.8%) gave informed consent to complete the socio-demographic and treatment questionnaire and undergo a Standard Psychiatric interview. Physical complications were evaluated through ASIA protocols and clinical psychiatric diagnosis based on DSM-TR criteria.

### 3.8 INSTRUMENTS

1- A Socio-demographic and treatment/rehabilitation questionnaire designed by the researcher.

3. The Standard Psychiatric Interview- the instrument was developed as a two-stage screening instrument to provide standardized approach to psychiatric assessment. The SPI is a standard semi structured inventory for recording patient's symptoms. It consists of four parts :-

- (i) Subheading for brief recording of the patient's present and past history.
- (ii) Enquires more systematically about any psychiatric symptom the patient may have experienced over the past week.
- (iii) Family and personal histories, unstructured allowing the clinician to ask relevant probes.
- (iv) Rating manifest abnormalities seen during the interview.

4. Clinical records at the hospital were used to assess physical complications and participation in physical therapy.

5. American Spinal Injury Association index was be used to grade the physical disability of spinal injury patients.

6. Diagnostic and statistical manual of mental disorders volume IV (DSM IV) is one of the two diagnostic instruments for mental disorders. The purpose of DSM IV is to provide clear description of diagnostic categories in order to enable clinicians and investigators to diagnose, communicate about, study and treat people with mental disorders.

### **3.8 DATA ANALYSIS**

The data collected was edited to ensure uniformity and keyed into a computer. Analysis was be done using the statistical package for social sciences (SPSS) version 10. Data was analyzed using descriptive statistics such as percentages, and inferential statistics such as association analysis using non-parametric methods. The results are presented in figures and tabular format and interpretive analysis used to derive the data meaning. Significance level was held at a P value of less than 5%.

### 3.9 FLOW CHART

A. Review of treatment records.

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B. Every consecutive patient in outpatient department +All inpatients meeting criteria.  
135 paraplegics approached and the nature of the study explained.

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C. Informed consent obtained from 128 patients to participate in the study.

D. Physical disability rating established by entering the American spinal injury association score and complications noted through reference to patients records. A quick physical assessment was done at this stage.

E. Questionnaires administered on:

1. Socio -demographic characteristics, treatment and rehabilitation.

F. Standard psychiatry interview

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G. DSM IV-TR Diagnosis.

H. Data analysis

## CHAPTER IV:

### RESULTS

#### 4.1 AGE

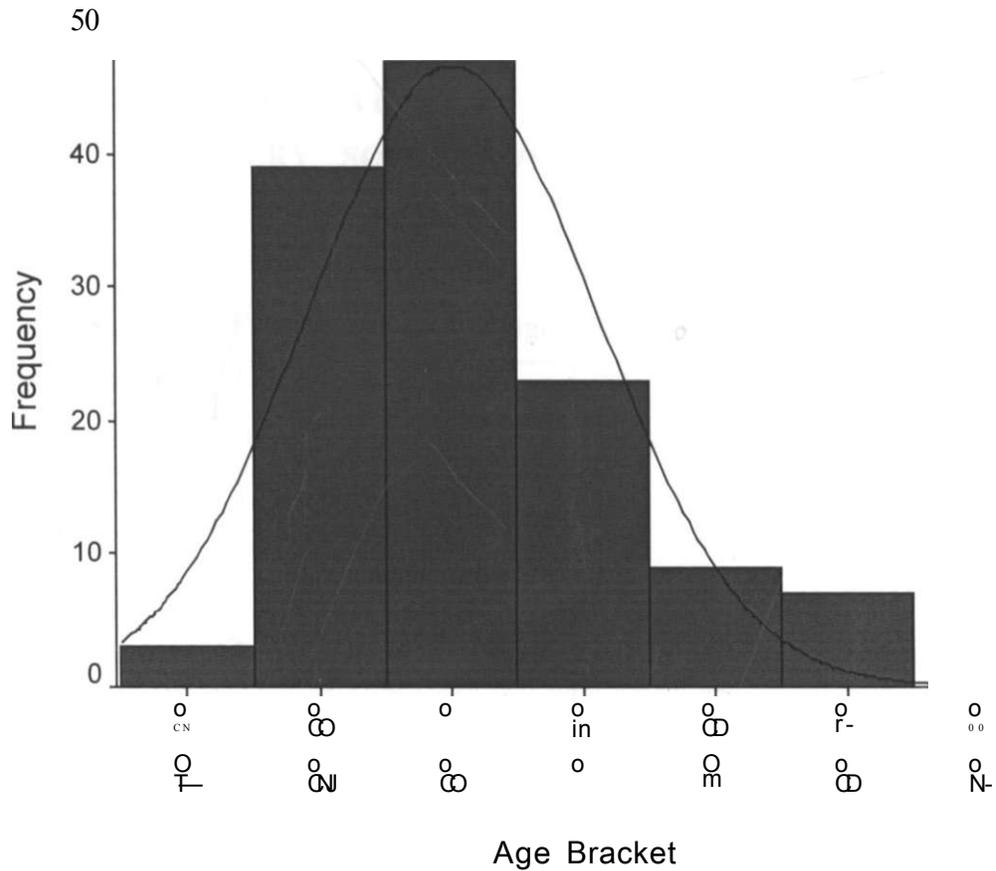
During the study period, 128 paraplegics with injuries over six months were assessed for physical and pain complications and a standard psychiatric interview performed. The age distribution had a wide range with the youngest participant being 18 years old and the oldest being 69 years. Variance was 119.65 and standard deviation 10.94. The mean age for the whole group was 35.15 and the modal age group was 30-39 as illustrated in table 1.

**TABLE 1: AGE DISTRIBUTION OF THE STUDY SUBJECTS**

<b>Age bracket</b>	<b>Male</b>	<b>%</b>	<b>Female</b>	<b>%</b>	<b>Total</b>	<b>%</b>
10-19	1	0.8	2	1.6	3	2.3
20-29	26	20.3	13	10.2	39	30.5
30-39	35	27.3	12	9.4	47	36.7
40-49	17	13.3	6	4.7	23	18.0
50-59	8	6.3	1	0.8	9	7
60-69	7	5.5	.	.	7	5.5
<b>Total</b>	<b>94</b>	<b>73.4</b>	<b>34</b>	<b>26.6</b>	<b>128</b>	<b>100</b>

There were 94 males representing 73.4% of the study population while females were 34 representing 26.6 %. The male: female ratio was 1:2.8. The majority of the patients were in the age bracket 20-39 representing 77.2 %. The mean age for males was 36.3 ( SD 11.4) while that for females was 32 (SD 9.0).

**FIGURE 1: AGE DISTRIBUTION OF THE STUDY SUBJECTS (n=128).**



#### **4.2 GENDER**

There were 94 males, comprising almost three-quarters (73.4%) of the study population and there were 34 females (26.6%).

#### **4.3 MARITAL STATUS**

Fifty-three patients were married at the time of study (males=44, females =9). Seventy patients (54.7%) were single at the time of injury. No patient had undergone divorce or was widowed in the pre-injury period. At the time of study five patients had undergone divorce, one male and four females. These patients had sustained injuries more than five years earlier. Only one patient (male) had married after injury.

#### 4.4 EDUCATION STATUS

Three (2.3%) patients had no formal education. Forty patients (31.25%) had attained primary education, fifty-three (41.4%) secondary education and thirty-two (25%) had education or training beyond the secondary level education.

#### 4.5 SOCIO-ECONOMIC STATUS

**TABLE 2:PRE-INJURY SOCIO-ECONOMIC STATUS OF THE STUDY SUBJECTS.**

<b>Occupation</b>	<b>Frequency</b>	<b>Percentage</b>
Higher executive	3	2.3
Business manager	10	7.8
Administrative	31	24.2
Clerical	24	18.8
Skilled manual	5	3.9
Machine operator	23	18.0
Unskilled	13	10.2
Not ascertained	2	1.6
Never worked	17	13.3
<b>Total</b>	<b>128</b>	<b>100</b>

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Pre-injury category had nine ranks and the findings were as outlined in table 2. Fifty six point five percent of the patients were in the middle ranks consisting of administrative, clerical, skilled manual and machine operators.

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**TABLE 3. POST-INJURY SOCIO-ECONOMIC STATUS OF THE STUDY SUBJECTS.**

<b>Occupation</b>	<b>Frequency</b>	<b>Percentage</b>
Full time gainful	1	0.8
Part-time gainful	12	9.4
Unemployed	34	26.6
Dependent student/spouse	59	46.1
Public/private assisted	2	1.6
Not ascertained	20	15.6
Not applicable	0	0
<b>Total</b>	<b>128</b>	<b>100</b>

Nearly half the patients (46.1%) were dependent on t patients (10.2%) had gainful employment. Occupation status of twenty patients could not be ascertained

#### **4.6 PHYSICAL COMPLICATIONS OF SPINAL INJURY.**

**TABLE 4: PHYSICAL AND PAIN COMPLICATIONS AMONG THE STUDY SUBJECTS**

<b>Complication</b>	<b>Frequency</b>	<b>Percentage</b>
Continuous pain	19	14.8
Bladder	22	17.2
Decubiter ulcer	11	8.6
Contractures	7	5.5
Multiple	27	21.1
None	42	32.8
<b>Total</b>	<b>128</b>	<b>100</b>

Physical complications were assessed by reference to patients' notes as well as actual physical evaluation. Physical complications were found in 67.2% of the patients with multiple and bladder complications accounting for more than a third of complications (38.3%).

#### 4.7 CAUSES OF SPINAL INJURY

**TABLE 5: EVENTS LEADING TO INJURIES AMONG THE STUDY SUBJECTS.**

<b>Event</b>	<b>Number of cases.</b>	<b>Percentage</b>
Road traffic accidents	90	70.3
Falls from height	14	10.9
Gun shot injuries	9	7.0
Industrial	10	7.8
Assault	5	3.9
<b>Total</b>	<b>128</b>	<b>100</b>

Road traffic accidents was the event causing most injuries (70.3%) with assault using sharp objects causing the least injuries (3.9%). Gunshot injuries patients sustained their injuries from stray bullets (3 patients) or they were victims of armed robberies. There were no patients referred from corrective services. Six patients who sustained their injuries from falls from heights had taken alcohol prior to incurring injuries.

**TABLE 6: PATIENTS ROLE IN INJURY**

<b>Role</b>	<b>No.</b>	<b>Percentage</b>
Self involving	40	31.3
Initiated by others	88	68.7
<b>Total</b>	<b>128</b>	<b>100</b>

A minority of the injuries (31.3 %) had been initiated by the patients themselves with a majority due to action of others.

#### 4.8 COMPLIANCE AND PATIENT'S VIEW ON PROSPECTS FOR RECOVERY

**TABLE 7: ADHERENCE TO THERAPY RATING**

<b>Rating</b>	<b>No. of cases</b>	<b>Percentage</b>
Excellent	44	34.4
Satisfactory	52	40.6
Poor	32	25
<b>Total</b>	<b>128</b>	<b>100</b>

At the time of study, thirty-two patients (25%) were not participating well in the rehabilitation process as rated by the rehabilitation personnel. The parameter used was the proportion of assigned tasks undertaken.

**TABLE 8: PATIENTS VIEW ON PROSPECTS FOR FULL RECOVERY**

<b>View on recovery</b>	<b>No. of cases</b>	<b>Percentage</b>
Full	36	28.3
Some	68	53.5
None	23	18.2
<b>Total</b>	<b>127</b>	<b>100</b>

Twenty-three patients did not expect their condition to improve at all while thirty-six viewed their condition as temporary.

#### 4.9 RECOGNITION OF PSYCHOLOGICAL PROBLEMS

None of the patients had been identified as having a psychological problem that would require clinical intervention. Hence no psychotherapy or pharmacotherapy for psychological problems was offered.

#### 4.1.0 PSYCHIATRIC MORBIDITY IN THE STUDY POPULATION

**TABLE 9: PSYCHIATRIC MORBIDITY (DSM IV-TR) AMONG THE STUDY SUBJECTS**

<b>Type of disorder</b>	<b>Male</b>	<b>% of total</b>	<b>Female</b>	<b>% of total</b>	<b>Total</b>	<b>% of total</b>
Ptsd	19	14.8	11	8.6	30	23.4
Depression	14	10.9	8	6.3	22	17.2
Alcohol dependence	2	1.6	1	.8	3	2.3
Generalized anxiety	2	1.6	3	2.3	5	3.9
Somatization	3	2.3	2	1.6	5	3.9
Cannabis abuse	7	5.5	0	0	7	5.5
<b>Total</b>	<b>47</b>	<b>29</b>	<b>25</b>	<b>19</b>	<b>72</b>	<b>56.3</b>

Posttraumatic stress disorder was the leading psychiatric disorder in both males (20.4%) and females (32.4%). Seven male patients admitted regular use of cannabis while no female patient was diagnosed with substance abuse. Two male patients and one female patient satisfied DSM IV -TR criteria for alcohol dependence.

#### 4.1.1 PSYCHIATRIC MORBIDITY AND CROSS-TABULATIONS

**TABLE 10: AGE VERSUS PSYCHIATRIC MORBIDITY AMONG THE STUDY COHORT.**

Age group	PM		NPM		TOTAL		ROW PERCENT.	
	No	%	No	%	No	%	%PM	%NPM
29 and below	28	21.9	14	10.9	42	32.8	66.7	33.3
30-39	29	22.6	18	14.06	47	36.7	61.7	38.29
40-49	8	6.25	15	11.71	23	17.9	34.8	65.21
50 and above	7	5.4	9	7	16	12.5	43.8	56.2

$\chi^2 = 9.117$  DF=3, P=0.028

Younger patients had a higher psychiatric morbidity than those relatively older, with those aged twenty-nine and below with a PM rate of 66.7% while those above forty years having a lower rate. This finding was significant.

**TABLE 11: GENDER VERSUS PSYCHIATRIC MORBIDITY AMONG THE STUDY POPULATION.**

Sex	PM		NPM		TOTAL		ROW PERCENT	
	No	%	No	%	No	%	PM	NPM
M	47	36.7	47	36.7	94	73.4	50	50
F	25	19.5	9	7	34	26.6	73.5	26.5
<b>Total</b>	<b>72</b>	<b>56.2</b>	<b>56</b>	<b>43.7</b>	<b>128</b>	<b>100</b>		

$\chi^2 = 5.573$ , DF=1, p=0.018.

The relative risk of psychiatric morbidity (odds ratio) among the female study subjects was 2.8, a statistically significant finding (P=0.018).

**TABLE 12: EDUCATION LEVEL VERSUS PSYCHIATRIC MORBIDITY**

<b>Education Level</b>	<b>PM</b>		<b>NPM</b>		<b>TOTAL</b>		<b>ROW PERCENT</b>	
	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>% PM</b>	<b>%NPM</b>
None/ primary	23	17.9	20	15.6	43	33.5	53.4	46.6
Secondary	33	25.8	20	15.6	53	41.4	62	38
Tertiary	16	12.5	16	12.5	32	25.0	50	50
<b>Total</b>	<b>72</b>	<b>56.3</b>	<b>56</b>	<b>43.8</b>	<b>128</b>	<b>100</b>		

$\chi^2 = 2.88, 1DF = 2, p = 0.1652$ .

There is no significant association between psychiatric disorder rate and the level of education in this study cohort as p is more than 0.05

**TABLE 13: MARITAL STATUS VERSUS PSYCHIATRIC MORBIDITY**

<b>Marital Status</b>	<b>PM</b>		<b>NPM</b>		<b>TOTAL</b>		<b>ROW %</b>	
	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>% PM</b>	<b>% NPM</b>
Married	23	17.8	30	23.4	53	41.4	45.5	55.5
Single/ Divorced	49	38.2	26	20.3	75	58.6	65.3	34.7
<b>Total</b>	<b>72</b>	<b>56.3</b>	<b>56</b>	<b>43.8</b>	<b>128</b>	<b>100</b>		

$\chi^2 = 6.073, DF = 1, P = 0.0141$

Married patients had statistically significant lower PM than those who were either single or divorced.

**TABLE14: SOCIO-ECONOMIC CLASS VERSUS PSYCHIATRIC MORBIDITY**

Social Class	PM		NPM		TOTAL		ROW PERCENT	
	No	%	No	%	No	%	% PM	%NPM
Upper Class	16	12.5	28	21.9	44	34.3	36.3	63.7
Middle Class	34	26.5	18	14	52	40.6	65.3	34.7
Lower Ranks	22	17	10	7.8	32	25	68.8	21.2
<b>Total</b>	<b>72</b>	<b>56.3</b>	<b>56</b>	<b>43.7</b>	<b>128</b>	<b>100</b>		

$\chi^2=10.866$ ,  $DF=2$ ,  $P=0.004$

Low socio-economic class had significant association with PM ( $P=0.004$ ).

**TABLE 15: DURATION OF INJURY VERSUS PSYCHIATRIC DISORDER**

Duration of injury	PM		NPM		TOTAL		Row %	
	NO	%	NO	%	NO	%	%PM	%NPM
6/12 5 years	48	37.5	36	28.1	84	65.6	57.1	42.9
Above 5 years	24	18.8	20	15.6	44	34.4	54.5	45.5
<b>Total</b>	<b>72</b>	<b>56.3</b>	<b>56</b>	<b>44.7</b>	<b>128</b>	<b>100</b>		

$\chi^2 =2.34$ ,  $DF=1$ ,  $p=0.127$ .

There was no statistically significant association between duration of injury and PM ( $p=0.127$ ).

**TABLE 16: MODE OF INJURY (WHETHER BLAMED ON SELF OR BY ACTION OF OTHERS) VERSUS PSYCHIATRIC MORBIDITY**

Mode of Injury	PM		NPM		TOTAL		ROW PERCENT	
	No	%	No	%	No	%	% PM	% NPM
Attributed to others	22	17.2	18	14	40	31.2	55	45
Blamed on self	50	39	38	29.7	88	68.8	56.8	43.2
<b>Total</b>	<b>72</b>	<b>56.2</b>	<b>56</b>	<b>43.8</b>	<b>128</b>	<b>100</b>		

\*<sup>2</sup> =0.037, DF=1, P=0.848

There was no statistically significant difference between those who blamed others for initiating their injuries and those who attributed the injuries to their own actions (p=0.05).

**TABLE 17: PSYCHIATRIC DISORDERS IN RELATION TO ADHERENCE RATING**

Rating	Alcohol	Depression	Ptsd	Somatisation	Cannabis abuse	GAD	NPM	Total
Excellent	.	5	6	.	.	2	31	44
Satisfactory	.	8	16	1	3	2	22	52
Poor	3	9	8	4	4	1	3	32
Total	3	22	30	5	7	5	56	128

Patients with poor rating had a high prevalence of psychiatric morbidity (91%, n=29). They also contributed a disproportionate number (70%) of those with alcohol dependence and cannabis abuse. Poor adherence to therapy was significantly associated with psychiatric morbidity (see table 18).

**TABLE 18: ADHERENCE TO THERAPY VERSUS PSYCHIATRIC MORBIDITY**

Adherence	PM		NPM		TOTAL		ROW PERCENT	
	No	%	No	%	No	%	%PM	%NPM
Excellent	13	10.2	31	24.2	44	34.4	29.5	70.5
Satisfactory	30	23.4	22	17.2	52	40.6	57.7	42.3
Poor	29	22.7	3	2.3	32	25.0	90.6	9.4
<b>Total</b>	<b>72</b>	<b>56.3</b>	<b>56</b>	<b>43.8</b>	<b>128</b>	<b>100</b>		

**\*<sup>2</sup> =27.939, DF=2, p<0.0001**

There was significant association between psychiatric morbidity rates and poor adherence to therapy (p<0.05).

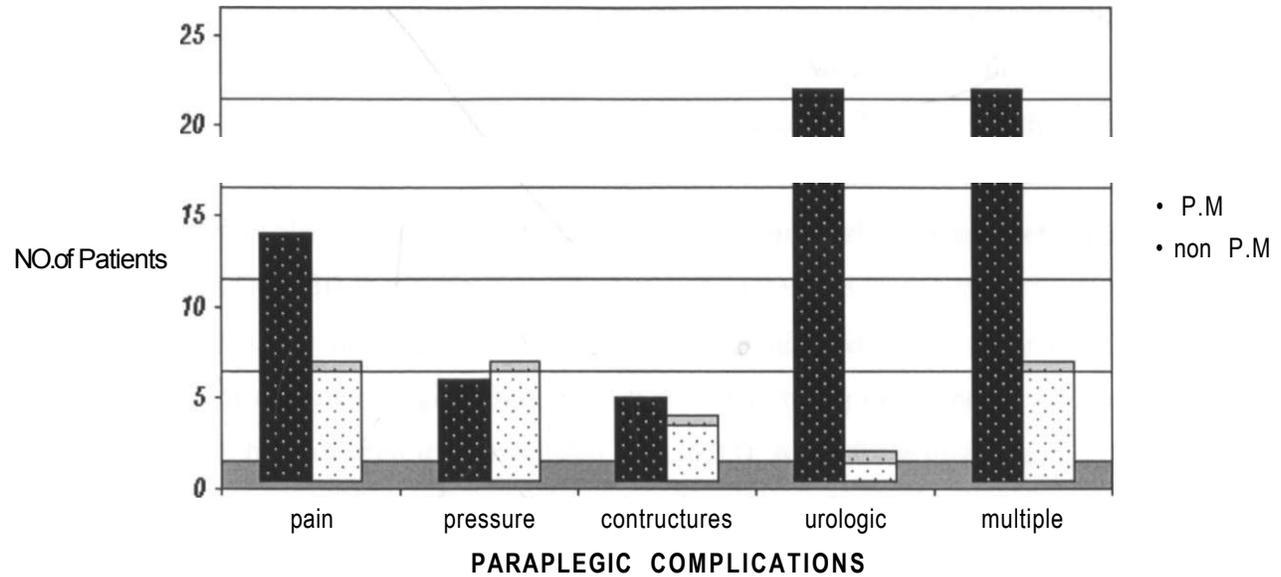
**TABLE 19: PRESENCE OF PHYSICAL COMPLICATIONS VERSUS PSYCHIATRIC MORBIDITY.**

Physical Complications	PM		NPM		TOTAL		ROW PERCENT	
	No	%	No	%	No	%	%PM	%NPM
Absent	8	6.3	34	26.6	42	32.8	19	81
Present	64	5.0	22	17.2	86	67.2	74.4	25.6
<b>Total</b>	<b>72</b>	<b>56.3</b>	<b>56</b>	<b>43.8</b>	<b>128</b>	<b>100</b>		

**\*<sup>2</sup> =35.156, DF=1, p=0.0001.**

Presence of physical complications had a highly statistically significant association with psychiatric morbidity as p<0.001.

**FIG 2: GRAPH OF PSYCHIATRIC MORBIDITY AND PARAPLEGIA COMPLICATIONS.**



While patients with bowel and urologic complication had a psychiatric morbidity of 95.5 %, those with pressure sores had a PM of 45.5 %. Statistical analysis was not done due to low counts in many cells.

**TABLE 20: CAUSE OF INJURIES VERSUS PSYCHIATRIC MORBIDITY**

Cause of injury	PM		NPM		TOTAL		ROW PERCENT	
	No	%	No	%	No	%	% PM	%NPM
RTA	53	41.4	37	28.9	90	70.3	58.9	41.1
Falls	5	3.9	9	7.0	14	10.9	35.7	64.3
Gunshot	7	5.5	2	1.6	9	7.0	77.8	22.2
Industrial	4	3.1	6	4.7	10	7.8	40	60
Assault	3	2.3	2	1.6	5	3.9	60	40
<b>Total</b>	<b>72</b>	<b>56.2</b>	<b>56</b>	<b>43.8</b>	<b>128</b>	<b>100</b>		

\*<sup>2</sup> =5.408, DF=4, p=0.248.

There was no significant association between events leading to injuries and psychiatric morbidity.

## CHAPTER V

### DISCUSSION

The prevalence rate of psychiatric disorders was 56.25%. This finding is close to the 60-70 % prevalence rate found in western studies (21). Among specific diagnoses, posttraumatic stress disorder was leading with a prevalence of 23.4 %, which is within the range of 20-45%, among 77 studies carried out in North America (21). Judd FK had established the prevalence of depression in 72 paraplegics in a rehabilitation setting at 19 %, based on the DSM III-R criteria (19). The level of depression in this study is close, at 17.2%. The seven patients (5.4%) with cannabis abuse initiated its use prior to injury. The use of this drug in neurological injuries is increasingly being mentioned, even though the extent on use has not been fully evaluated, (24,26,33). Apart from its role in initiation of events leading to injury, its effects on muscle relaxation and reduction of spasticity in spinal injury may make it unlikely the patient will abandon its use. Two patients (1.6%) satisfied DSM IV-TR the criteria for alcohol dependence while GAD was diagnosed in 5% of the patients. Somatisation disorder, which has been overlooked as a complication of trauma (22), was diagnosed in 3.9% of the patients. DSM IV-TR criteria requirements especially the onset of symptoms before the age of thirty, and the multi-systemic consequences of spinal injury, may be some of the reasons for the low likelihood of this diagnoses in this group of patients.

The patients in this study were relatively young, with more than two thirds (67.2%) below thirty-nine years. There were only seven patients (5.5%) above the age of sixty. This may be a reflection of Kenyan population distribution (47). Young adults, adolescents and the elderly were the significant groups comprising two thirds of the injuries that took place in the USA in 1998, with findings in this study showing a similar pattern of overrepresentation of the relatively young. Those relatively younger had a statistically significantly higher PM rate, probably due to shattered life goals. Western studies have found old age (above 65) to be more associated with PM (33).

Female gender had a statistically significant higher PM rate than male, a finding shared by other studies (21). In this study, bowel and bladder complications had the highest rates of PM. These distressing complications are more difficult to treat in female than in the male counterpart. Other contributing factors could be due to frustration of the female role as mothers and spouses, probably to a greater extent than the role of the male sex.

Those patients placed at low social economic rank had higher PM rates than those at higher ranks, a finding which was statistically significant. Social class itself has not been associated with differences in PM rate per se in other studies, but rather with specific diagnoses (36). Lower socio-economic groups have been associated with a high incidence of substance abuse and alcohol use disorders (36). Five of the seven patients with continued cannabis use despite injury were in the lower socio-economic ranks. Probably their counterparts in the higher socio-economic groups status had more options in terms of ways of relieving their distress.

No significant differences in PM rates were found in patients with different levels of education attainment. This could be due to equal levels in frustration in terms of physical mobility and limitation of occupation choices.

Being single or divorced was significantly associated with a higher PM rate than in those who were married at the time of study. Family conflicts have been associated with higher rates of psychological maladjustment in other studies (13) . In this study, the role of conflicts and their association with psychopathology was not evaluated.

The rate of PM in those with injuries less than five years was not significantly different from that of patients with injuries of longer duration. As a type 1 trauma (short-term unexplained event) the lack of significant differences could be due to the long-term nature of the paraplegia complications. This includes social domains such as prospects of gainful occupation as well as devastation of the individual's sexual life.

PM rate in patients with injuries initiated as a result of their own action had no statistically significant difference from that in those with injuries initiated by action of others. No patient had injuries from natural/ 'act of God' event. All injuries in this study group were technological in nature of their cause. Technology based injuries have been found to have significantly higher PM rates than those due to natural events (21).

Bowel and urology complications showed high levels of PM but of unclear statistical significance as low counts in some categories did not allow analysis. Pain is the complication that has been widely mentioned in other studies as having high levels of PM, especially depression (43,44). The use of opiates in its management has elicited concerns in the West due to addiction (27). None of the patients in this study population was found to be dependent on opiates.

The significant association of poor adherence with therapeutic procedures with PM may be a reflection of symptoms of some of the conditions diagnosed in this group of patients. Unfortunately, this rating on therapy participation also reflects the attitude of the staff towards the patient, a factor with a significant input towards the patient's willingness to participate in therapy. In his patient categories, Niegler had noted that those patients with a 'dependency reaction' participated very well in therapy with those a 'psychopathic reaction' the least (18). In this study, 70% of those with cannabis abuse and alcohol dependence were in the group with poor adherence to therapy rating.

There was no mechanism in place to capture in psychiatric or psychological terms the difficulties faced by the patients. While this study and others (22) do confirm the existence of psychiatric morbidity in this group of patients, some workers have suggested that this patients do not show the true classical syndromes such as depression, arguing that what they mainly suffer from is a 'grief reaction' (19).

## **LIMITATIONS OF THE STUDY**

1. The study period coincided with a time when the public sector transport was undergoing reforms. This had an impact on the number of patients who could manage to attend outpatient clinic. The inpatient unit was also partially closed for physical rehabilitation. Therefore the desired study sample could not be met.
2. This was a hospital-based study therefore results may not represent the general status of all paraplegics in the country. Results cannot be generalized.

## **CONCLUSIONS**

This study had evaluation of psychiatric morbidity among paraplegics in a rehabilitation setting as its main objective. Its association with socio-demographic variables, adherence to therapy, mode and cause of injury was then examined. On the basis of findings of this study, it is justifiable to conclude that:

1. There were significantly more patients of relatively younger age than older ones in the rehabilitation population with those below 39 comprising 70% of the study group. Males are more likely than females to sustain paraplegia.
2. Paraplegia has a huge impact on social economic status of patients, rendering them jobless or dependent on spouses or public.
3. Road traffic accidents are the leading cause of paraplegia and most paraplegic victims are not responsible for initiating the event that led to their injuries.
4. Posttraumatic stress disorder, diagnosed in 23.4% of the study sample, and depression at 17.2% are the leading cause of psychiatric morbidity in this cohort of patients. Alcohol dependence, diagnosed in 1.6 % of the patients is the least cause of psychiatric disorder in this group of patients.
5. No significant association between duration of injury, role in initiating injury, level of education and psychiatric morbidity could be demonstrated.
6. Female gender, poor adherence to therapy, low socio-economic status, presence of physical complications and being single or divorce was significantly associated with PM.

## **RECOMMENDATIONS**

1. More rehabilitation outfits should be put in place as the national spinal injury hospital can only cater for 20 % of those who need its services. This is crucial as 70% of paraplegics in our country are dead within five years, many of them due to due to lack of adequate rehabilitation care. The ministry of health and other health care providers should include this specialized programme as part of their mission.
  
2. Personnel working in rehabilitation units should be trained on psychiatric aspects of trauma and should be able to offer pharmacological and non - pharmacological intervention.
  
3. It is hoped that labor policies that allow those with chronic disability to retain their jobs should be put in place, especially in situations physical aids can complement the individual. This may not always be possible.
  
4. Physicians working in rehabilitation units should appreciate the linkages between physical and pain complications of paraplegia and psychiatric morbidity.

## **FURTHER STUDIES**

Studies that examine the personality characteristics of patients with self involving injuries needs to be carried out and the role of substance use among public transport sector transport drivers in causing accidents evaluated. This will allow strategies for intervention to be developed.

## CHAPTER VI: APPENDICES

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## 6.2 RESEARCH PROJECT

### STANDARDISED PSYCHATRIC INTERVIEW

(Modified Clinical Interview)

**Schedule to be completed by the Psychiatrist**

No. \_\_\_\_\_ Date \_\_\_\_\_

Patient \_\_\_\_\_ Age \_\_\_\_\_

Follow instruction on rating and use of **SPI** from the manual on **SPI**

#### **i) Symptoms**

<b>Symptoms</b>	<b>Cycle the rating</b>	<b>State Reasons for Morbid Rating</b>
i) Somatic Symptoms	0 1 2 3 4	
ii) Fatigue	0 1 2 3 4	
iii) Sleep Disturbance	0 1 2 3 4	
iv) Irritability	0 1 2 3 4	
v) Lack of Concentration	0 1 2 3 4	
Vi) Depression/Unhappiness	0 1 2 3 4	
vii) Worry /Anxiety	0 1 2 3 4	
viii) Phobia	0 1 2 3 4	
ix) Bewitchment	0 1 2 3 4	

**Sub total**

#### **Abnormalities of Behaviour**

<b>Item</b>	<b>Circle rating</b>	<b>State Reasons for Morbid Rating</b>
i) Slow lacking spontaneity	0 1 2 3 4	
ii) Suspicious defensive	0 1 2 3 4	
iii) Histrionic	0 1 2 3 4	

**Sub totals**

**(iii) Abnormalities of mood**

<b>Item</b>	<b>Circle rating</b>	<b>State reasons for mood Rating</b>
i) Depressed	0 1 2 3 4	
ii) Anxious agitated and tense	0 1 2 3 4	
iii) Flattened incongruous	0 1 2 3 4	

**Subtotal**

**Perception and cognitive Abnormalities**

<b>Item</b>	<b>Circle rating</b>	<b>State reasons for Morbid Rating</b>
i) Excessive concern with bodily functions	0 1 2 3 4	
ii) Depressive thought content	0 1 2 3 4	
iii) Delusion	0 1 2 3 4	
iv) Hallucinations	0 1 2 3 4	
v) Intellectual impairment	0 1 2 3 4	

**Sub total**

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**(ii) Family Psychiatric History**

**iii.) Brief personal and Social History**



## **Mandatory Questions on SPI - Symptoms**

### **1. Somatic Symptoms**

- i) Have you noticed anything wrong with your health apart from what you have told me?
- ii) In the past week, have you been troubled with headache or indigestion? Anything else

### **2. Fatigue**

- i) Have you noticed that you tire easily?
- ii) Or that you seem to be lacking energy'

### **3. Sleep Disturbance**

- i) What about your sleep?
- ii) Have you lost sleep in the last week?
- iii) Do you have difficulty dropping off?
- iv) Are you restless at night?
- v) Do you wake up easily?

### **4. Irritability**

- i) Do you find that you are upset or irritable with those around you?
- ii) Do you lose your temper or get angry easily?

### **5. Lack of Concentration**

- (i) Do you find it difficult to concentrate?
- (ii) Do you get muddled or forgetful?

### **6. Depression Unhappiness**

- i) How have you been feeling in your spirits in the past week?
- ii) Have you at times felt sad, unhappy or miserable?

### **7. Worry/ Anxiety \* -**

- i) Do you find that you get anxious or frightened for no obvious reason?
- ii) Do you worry a lot on trivial matters?

**8. Phobias**

- i) Are you scared or frightened of certain things or situations for no good reason?
- ii) When?
- iii) Where?

**9. Disordered Libido**

- i) Do you find changes in your sexual performance, desire or frequency?
- ii) Have you lost interest in marital relationship?

**10. Bewitchment**

- i) Do you think that bewitchment, spirits or witchcraft are responsible for your present condition of sickness.
- ii) How?

### **6.3 RESEARCH PROJECT QUESTIONNAIRE**

#### **SOCIAL DEMOGRAPHIC AND TREATMENT / REHABILITATION QUESTIONNAIRE**

##### **QUESTIONNAIRE NO.**

1. Patients registration number

2. Age

3. Sex

1. Male

2. Female.

4. Marital status

**A) Pre-injury**

1= Married

2= Single

3= Divorced

4= Other

**B) Current**

5. Level of education

1= None

2= Primary

3= Secondary

4= Tertiary

6. Socio- economic Status

**A) Pre-injury**

- 1= Higher executive, proprietor of a large concern, major professional
- 2 = Business manager of large concern, proprietor of medium sized business, lesser professional.
- 3 = Administrative personnel, owner of small independent business, minor profession.
- 4 = Clerical of sales worker, technician. Owner of little business
- 5 = Skilled manual employee
- 6 = Machine operator, semi-skilled
- 7 = Unskilled employee
- 8 = Never worked in (employment)
- 9 = Not ascertained

**B** Subjects present occupational status is

- 0 = Not applicable
- 1 = Full time gainful employment
- 2 = Part time gainful employment
- 3 = Unemployed
- 4 =Dependent spouse /student
- 5 =Recipient or private or public assistance
- 6 = Not ascertained

7. Duration since onset of injury

- 1 = Btw 6/12 and 5 years
- 2 = over 5 yrs.

8.American spinal injury association index

9. Mode of injury

- 1 = Self involving
- 2 = By action of others.

10. Medical complications

- 1 = continuous pain
- 2 = pressure sores
- 3 = joint contractures
- 4 = bowel/urologic complications
- 5 = other (state)
- 6 = multiple

11. Rehabilitation staff rating on patient's level  
of co-operation

- 1 = excellent
- 2 = satisfactory
- 3 = poor

12. Patients view on prospectus for full recovery

- 1 = full
- 2 = some
- 3 = none

13. Recognition of psychological problem from clinical notes

- 1. Mentioned
- 2. Mentioned intervention done.
- 3. Not mentioned.

#### **6.4 INFORMED CONSENT EXPLANATION**

To be read and questions answered in a language in which the patient is fluent.

**TITLE: PSYCHIATRIC MORBIDITY AND RELATED FACTORS IN THE REHABILITATION OF PARAPLEGICS AT THE NATIONAL SPINAL INJURY HOSPITAL.**

**INSTITUTION:** Department of Psychiatry, Faculty of Medicine, College of Health

Sciences, UNIVERSITY OF NAIROBI.

**INVESTIGATOR:** Dr. Kaguchia Solomon Kago.

**SUPERVISORS:** Dr. Caleb Othieno and Dr. J.M. Mburu.

Permission is requested from you for enrolment in a medical research study.

You should understand the following general principles, which apply to all in Medical research, whether normal or patient volunteers:

- 1) Your agreement to enroll is entirely voluntary;
- 2) You may withdraw from the study at any time;
- 3) Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled;
- 4) After you read the explanation, please feel free to ask any questions that will allow you to understand clearly the nature of the study.

#### **INTRODUCTION**

In this project, we are assessing mental disturbance among patients with paraplegia. We would also like to find out physical complications of paraplegia.

**PURPOSE OF STUDY.**

To establish the magnitude of psychiatric disturbances among paraplegics and correlate it.

**PROCEDURES TO BE FOLLOWED:**

- We will request for information from you concerning your health status from the time of disease onset, treatment procedures and the outcome of treatment.
- We will also complete a standardized questionnaire incorporating your socio-demographic data, clinical information on spinal injury, disability status, self-rating questionnaire and standardized psychiatric interview.
- A general clinical examination will be undertaken to assess any physical disability you may have. A clinical record form will be completed for you.

**BENEFIT:**

It is hoped that the outcome of study will ensure better management of spinal injury.

**ASSURANCE OF CONFIDENTIALITY:**

Records will be kept confidential and your name will not be used in any resulting publications.

**NUMBER OF VOLUNTEERS: 155****ETHICAL CONSIDERATION**

This protocol has been designed with the patient's confidentiality in mind.

The Code of Professional Conduct and Discipline (1949) Medical ethics and the 1965 declaration of Helsinki (on human experimentation and statute laws) will be adhered to in this research. Patients whose clinical status after examination is found to need treatment will be attended to in liaison with the clinicians at the rehabilitation unit.

## 6.5 AMERICAN SPINAL INJURY ASSOCIATION INDEX

- A. Complete - No sensory or motor information is preserved in sacral segments s4-s5.
- B. Incomplete- Sensory but not motor functions is preserved below neurologic level.
- C. Incomplete motor function preserved below neurologic level and most key muscles below neurological level have muscle grade less than 3.
- D. Incomplete - Motor function is preserved below neurologic level, and most key muscles below neurologic level have muscle grade greater than or equal to.
- E. Normal.

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## 6.6 CLINICAL RECORD FORM

REGISTRATION NUMBER

AGE

SEX

CURRENT COMPLAINTS:

GENERAL EXAMINATION

SYSTEMIC EXAMINATION

- 1) CENTRAL NERVOUS SYSTEM
- 2) CARDIOVASCULAR SYSTEM
- 3) RESPIRATORY SYSTEM
- 4) ABDOMINAL SYSTEM
- 5) GENITAL-URINARY SYSTEM
- 6) MUSCULOSKELETAL SYSTEMS;
- 7) SKIN

RECOMMENDATION