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An Analysis of Pain Following Traumatic Spinal Cord Injury among Adults in Zimbabwe

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Abstract

The purpose of the study was to analyse on pain following traumatic spinal cord injury, its prevalence, the types of pain present, the common treatments used and their perceived effectiveness in the management of these reported pain types. A cross sectional study was carried out at St Giles Rehabilitation Centre and from members of the Spinal Injuries Association of Zimbabwe (SIAZ). A researcher-administered questionnaire was used to collect data from 24 participants with traumatic spinal cord injury. The questionnaire elicited information on demographic data, pain characteristics and the perceived effectiveness of the common treatments used. Among the 24 participants in the study, 17 were males (70.8%) and 7 were females (29.2%). Pain prevalence was 79.2% among the study participants and approximately a fifth (21.03%) of all participants rated their pain as severe. Eight (33.3%) of the participants had neuropathic pain while 11 (45.8%) had both nociceptive and neuropathic pain types. However, no association was found between sex, age, time post injury when tested against the presence of pain ($p > 0.05$). Weather changes aggravated almost every type of pain reported. Both pharmacological and non-pharmacological methods were used to manage the pain but their perceived effectiveness was rated as low. The majority of the traumatic spinal cord injured people experienced some pain and this pain was severe in a fifth of all participants. Pain significantly affected their quality of life. Physiotherapists and other medical professionals need to be aware of this and should employ pain reducing modalities and empathy when dealing with these patients.

Keywords

Traumatic Spinal Cord Injury, Nociceptive Pain, Neuropathic Pain, Effectiveness of Treatment

1. Introduction

In the world, the estimated annual incidences of spinal cord injuries vary from 10.4 to 83 cases per million of people with 33 years being the mean age of sustaining these injuries [1]. Traumatic spinal cord injury however, is reported to occur primarily in young adults aged between 16 and 30 years of which approximately 80% of them are males [2]. In a study carried out in Zimbabwe from 1988 to 1994 the major causes of traumatic spinal cord injury especially among males aged between 20 and 40 years were road traffic accidents (50%), assaults (11%), falls from trees (11%), off bikes (4%), off scotch carts (2%), and gunshot (4%) while 18% were of undetermined causes [3]. There are no recent statistics on spinal cord injury in Zimbabwe except the 9142 cases of disabilities related to neural injuries which were reported by The National Disability Survey of Zimbabwe in 2013 [4].

Pain following spinal cord injury has been reported in many studies [3] [5]-[9]. In a study carried out in Zimbabwe pain was a prominent feature in the lives of many traumatic spinal cord injured patients of which 77% of reported the presence of pain [3]. Findings from another study in Zimbabwe [9] confirmed that pain was a permanent accompaniment and the spinally injured people just had to find ways of coping with it. A longitudinal study of 100 people with traumatic spinal cord injury in USA found 73 subjects (81%) reporting the presence of pain following spinal cord injury [7]. Although vocational training and resettlement are some of the two important components of the rehabilitation process, the presence of pain makes it very difficult for the spinally injured to achieve maximal vocational status and effective rehabilitation [10] [11]. Since there is inadequate government support in most developing countries, they are left to sustain themselves at a great emotional and financial cost.

The competency of physiotherapists in dealing with pain following spinal cord injury remains questionable. This is because physiotherapy assessment of spinal cord injured patients tends to focus mainly on sensory and functional limitations while the rehabilitative management focuses on improving sensory or motor function, prevention of pressure sores and dealing with incontinence. It will be noted that the physiotherapy assessment for these patients lacks a standard detailed classification system for pain across many studies which may cause an under-appreciation of the pain that the majority of these patients may have to endure. Pain following spinal cord injury continues to be managed as "normal" pain by physiotherapists.

Although rehabilitation professionals consider themselves strong advocates for people living with disabilities they have been silent on this issue of chronic pain after spinal cord injury especially in the developing countries where published literature related to this issue is virtually non-existent. However, chronic pain produces psychological and social handicaps and it is important to be cognizant of this. Due to its relation to quality of life, health care providers need to give this issue the same priority given to other spinal cord injury related issues hence the focus of this study to conduct an analysis of pain due to traumatic spinal cord injury and to explore on its management.

2. Materials and Methods

2.1. Type of Study and Study Population

The study was a descriptive cross sectional study on the analysis of pain following traumatic spinal cord injury in Harare, Zimbabwe. A convenient sample of traumatic spinal cord injured people aged above 18 years was selected from St Giles Medical Rehabilitation Centre and from members of the Spinal Injuries Association of Zimbabwe (SIAZ).

2.2. Inclusion and Exclusion Criteria

Traumatic spinal cord injured people either male or female had to be above 18 years of age and able to give consent. The definition of traumatic spinal cord injury was defined as any spinal cord injury of traumatic origin. Non-traumatic spinal cord injured people and medically unstable traumatic spinal cord injured people with severe difficulties in communication were excluded from the study.

2.3. Instrumentation

Researcher-designed questionnaires in both English and Shona (local language) were used to collect data from participants (**Appendix 1**). The questionnaires comprised of three sections which included demographic data, pain characteristics and common treatment used. The outline was an adapted and modified version of a questionnaire by Widerstrom-Noga and Turk, (2003) which they used in the USA on a study to determine types of pain associated with spinal cord injury and effectiveness of methods used to treat it [12]. Questions to determine the different types of pain present were developed from the proposed algorithm for pain following spinal cord injury by Siddall and Middleton, (2006) in Australia [13]. In their algorithm, they described nociceptive and neuropathic pain as the two major types of pain encountered in spinal cord injury as previously reported by *the International Association for the Study of Pain of* 2000. They also further sub-classified nociceptive pain into musculoskeletal and visceral subtypes while neuropathic pain was subdivided into above-level, at-level and below-level of injury pain subtypes.

2.4. Pilot Study

A pilot study for validation of the questionnaire was done using responses from four subjects external to the study population from the Disability Women Support Organization. The subjects consisted of two males and two females and alterations were made according to the feedback received. Initially, all the participants were supposed to complete the questionnaire on their own but one had problems with writing due to a C5 level injury. The other three preferred a one to one interaction with the researcher. The researcher then decided to change to a researcher administered questionnaire in both English and Shona (local language) instead of subjects completing the questionnaire on their own.

2.5. Procedure

Members of SIAZ were accessed at the SIAZ offices during one of their meetings. Other participants from SIAZ were contacted by telephone to arrange appointments for the interviews in their homes. Participants from St Giles Medical Rehabilitation Centre were either inpatients or outpatients who were accessed at the centre.

2.6. Data Analysis

Data analysis was done using Statistical Package for Social Sciences (SPSS) Version 16 (Chicago, IL). The usage of Spearman Correlation Coefficient was for measuring the internal consistency while the Spearman Brown coefficient and split half methods were used for measuring reliability of the paragraphs of questions. Descriptive statistics were used to describe data.

2.7. Ethical Considerations

The study was conducted after approval from the Joint Research Ethics Committee Board of the College of Health Sciences, University of Zimbabwe (JREC/01/09). Permission to carry out the study was granted by the Disability Women Support Organization (DWSO), St Giles Medical Rehabilitation Centre and Spinal Injuries Association of Zimbabwe (SIAZ). Informed consent was sought first and participants had to sign or put an X on the informed consent form.

3. Results

3.1. Demography and Injury Characteristics of Participants

The demographic and injury characteristics of the 24 participants who completed the questionnaires are presented in Table 1. A total number of 24 participants of which men were the majority met the inclusion criteria of the study.

3.2. Characteristics of Pain Present in the Traumatically Injured Spinal Cord Persons

Most participants 19 (79.2%) reported the presence of current pain while 5 (20.9%) did not report any presence of current pain. There was no statistically significant association between age and the presence current of pain ($p = 0.138$). No association was found again between time post injury and presence of current pain ($p = 0.435$). Location of pain according to region of sensory and motor loss was distributed as; 8 (33.3%) subjects had pain located in the region of sensory and motor loss while 11 (45.8), had pain present in both the normal regions and those of sensory and motor loss.

Most participants had pain in the legs and feet (70.8%), followed by pain in the back at level of injury (58.3%). Only one participant (4.2%) reported pain in the back above level of injury. Patients reported the onset of head pain as little as 24 days and 33 days post injury in the back at level of injury. Weather changes were found to be the most aggravating factor for pain in all body parts. Activity exacerbated pain especially in the

Table 1. Demography and injury characteristics of participants (n = 24).

Characteristic	Participants
Age in years (median)	32
Time post injury in years (median)	2.5
Sex	
• Male	17 (70.8%)
• Female	7 (29.2%)
Level of injury	
• Cervical	9 (37.5%)
• Thoracic	15 (62.5%)
Type of injury	
• Complete	6 (33%)
• Incomplete	18 (67%)
Diagnosis	
• Paraplegic	18 (75%)
• Quadriplegic	6 (33%)
Cause of injury	
• Road traffic accidents	16 (66.7%)
• Assault	3 (12.5%)
• Accidental falls (building, trees, scotch cart)	5 (20.8%)
Current vocational activity	
• Employed	5 (20.8%)
• Self employed	6 (33%)
• Voluntary	2 (8.3%)
• Student	1 (4.1%)
• Unemployed	4 (16.7%)
• Unemployed but working before injury	6 (33%)

neck, shoulder, arms and hands while stress aggravated pain in the head in three participants. Spasms were common in the legs and feet while other aggravating factors like a urinary catheter and a full stomach worsened pain in the genitals and abdomen respectively.

3.3. Severity of Pain

Of all the 12 anatomical locations of pain, most respondents (75%) reported their pain to be moderate in severity as shown in Figure 1. Mild pain was reported in three locations (3.95%) while severe pain was reported in 16 locations (21.05%). No participant reported any of their pain as excruciating.

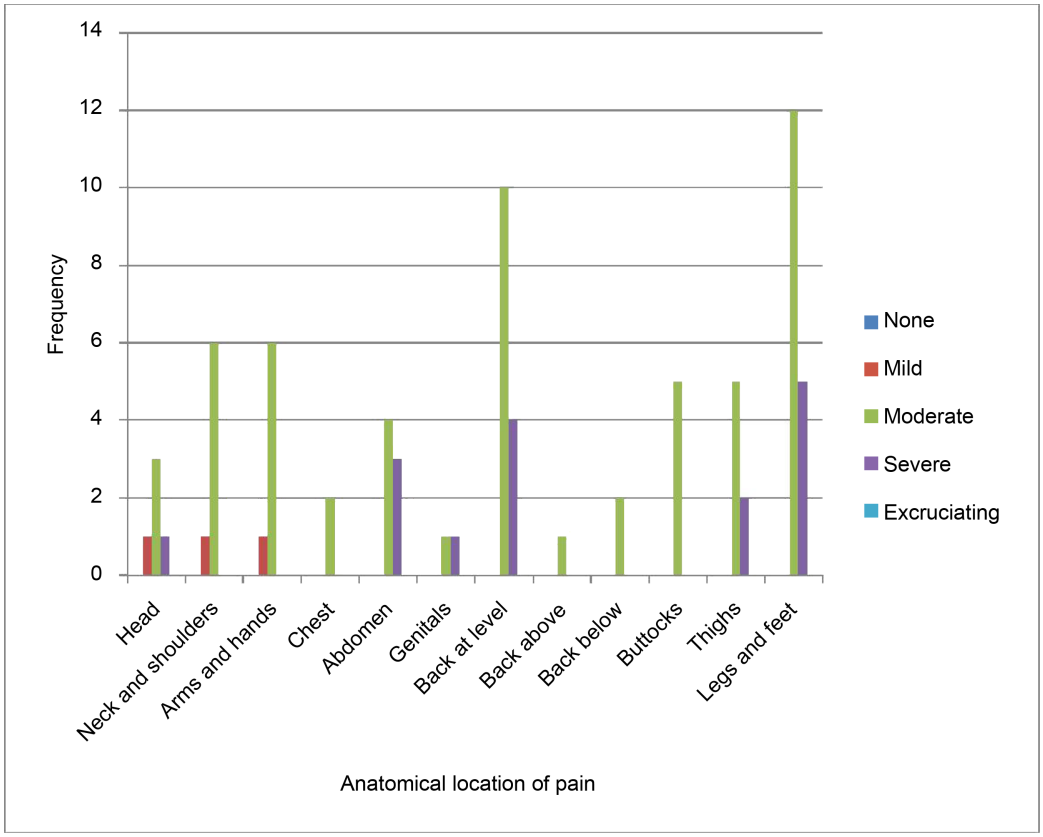

Figure 1. Frequencies on the severity of pain according to anatomical location.

3.4. Quality of Pain

Aching was the most commonly word used to describe pain in the head, neck, shoulders, arms, and hands regions. Abdominal pain was described as dull and cramping although one subject (4.2%) reported it as bloating. Pain in the legs and feet was commonly described as burning while other descriptions such as pulsating and pins and needles were also used. Electric pain was used to describe pain especially for back at level of injury.

24-Hour Behaviour of Pain

Pain in most body parts was found to be intermittent all day long (**Figure 2**). Only three subjects (12.5%) described their pain to be worse in the morning. Seven subjects (29.2%) reported their pain in legs and feet as worse at night only. Continuous pain all day long was also reported in all body parts.

3.5. Pain Treatment and Their Perceived Effectiveness

Treatment of pain varied according to the body parts indicated for pain. Drugs were a common treatment modality used to manage this pain according to the body parts with pain. These drugs ranged from simple analgesics (paracetamol), aspirin (NSAID) to opoids (morphine) and anti-spasticity drugs (baclofen). Psychotherapy was also used to manage pain while massage was used for abdominal pain and buttock pain only. Of

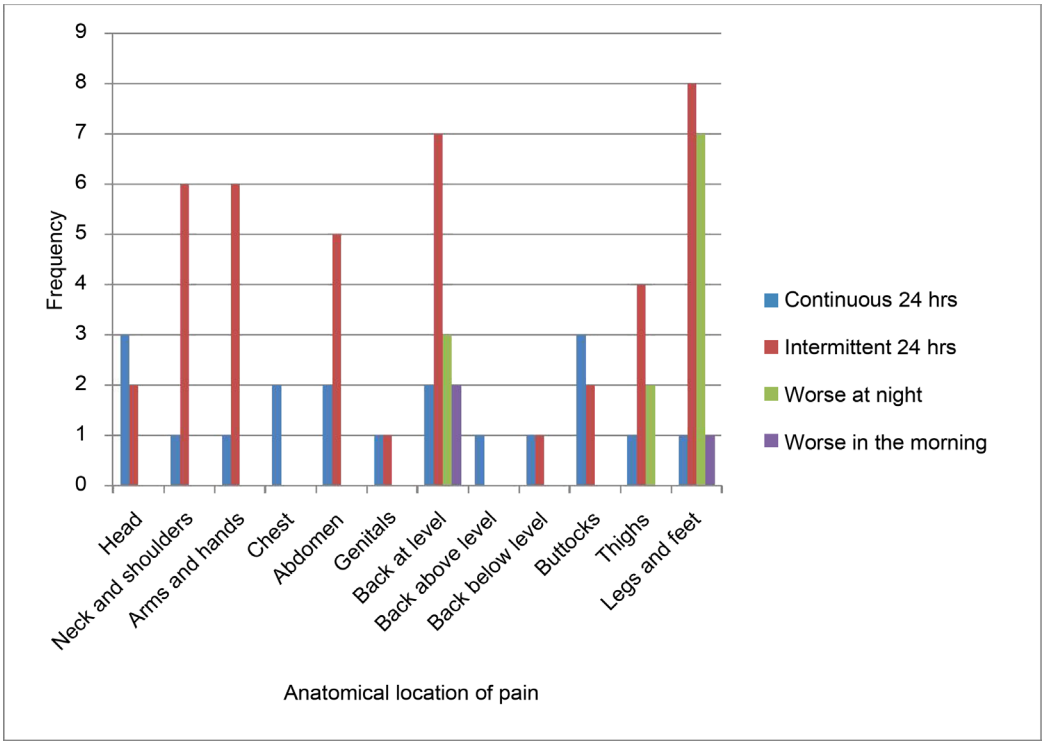

Figure 2. Distribution of pain according to 24-hr behaviour pattern.

note herbal medicine and alcohol were also used for pain relief. Physiotherapy modalities such as exercise were reported to be of use in neck, shoulder, arms and hands region while distraction/diversion therapy was of use for back below level of injury, buttocks, legs and feet pain. Occupational therapy was also used for neck, shoulder, arms and hands pain. A few people reported no treatment for their pain as they just endured the pain. Other forms of treatments used were marijuana in one subject (4.2%). Surgery was also performed for back pain at level of injury. The effectiveness of these treatment modalities is as shown in **Figure 3**.

Of all the treatment modalities used for management of pain according to body parts indicated, most participants reported slightly better improvement in the reduction of their pain as shown in **Figure 3**. In 5.88% anatomical pain locations participants reported considerable pain reduction, however some reported no response to treatment. No participant had treatment either worsening or completely making the pain disappear.

4. Discussion

The age range of the 24 participants was 24 - 69 years with a median age of 32 years while the median time post-injury was 2.5 years. It therefore shows that in Zimbabwe the economically active group is most affected which agrees well with a previous study where the 20 to 40 years age group was the mostly affected group with traumatic spinal cord injuries [3]. Some of the participants in this study (25%) were employed before injury but had been forced to leave their employment due to their spinal cord injuries.

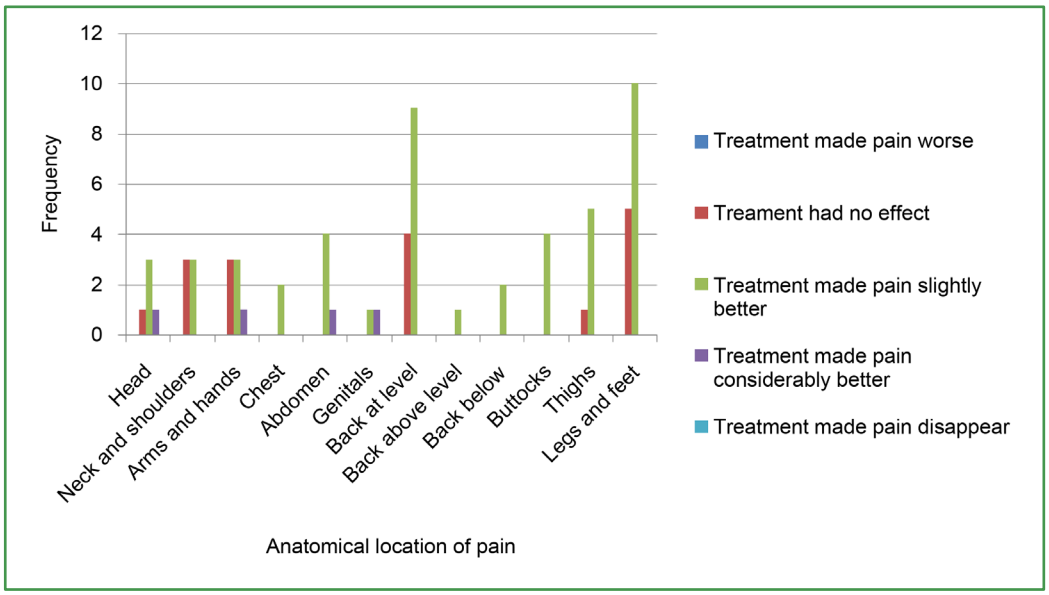

Figure 3. Distribution of body parts and perceived effectiveness of treatment.

Motor vehicle accidents topped the list of causes of injuries (66.7%), a common trend found in developing countries where motor vehicle accidents are the leading cause of traumatic spinal cord injuries [14]. Statistics from the National Highway Patrol Report of 2015 in Zimbabwe also confirms that road traffic accidents are high and a menace in the country [15]. Reasons for this are multifactorial and a lot still needs to be done to combat these accidents. Assaults contributed to 12.5% of the traumatic spinal cord injuries in this study. One case was due to domestic violence. Whilst the government of Zimbabwe can be commended for the passing of the Domestic Violence Bill in 2008, there is still need to educate the contents of the bill to all levels especially in rural areas. Although literature has reports of a short life expectancy for spinal cord injured people in developing countries [16], it was interesting to find one person surviving with paraplegia for 23 years. This can be attributed to the fact that over the years the management of spinal cord injuries has improved and indeed for some individuals there is more access to information and improved healthcare.

The finding that unemployment was high among participants in this study (41.7%), with 54.5% of these working before their injuries adds to the body of literature that has reported challenges faced by spinal cord injured people in securing employment [9] [17]-[19]. A similar study in the USA, also reports 56.3% of the participants with spinal cord injury being unemployed [12]. Although reasons for unemployment after injury were not explored it can be deduced that motor problems or even pain could have contributed dropout from jobs. The effect of injury on employment and self-sustenance is thus substantial.

4.1. The Prevalence of Pain Following Traumatic Spinal Cord Injury among the Participants

The prevalence of pain following traumatic spinal cord injury in this study was 79.2%.

The results confirm that people with traumatic spinal cord injury in Harare continue to experience pain long after their injuries. These findings are consistent with studies that have found the prevalence of chronic pain after spinal cord injury ranging from 18 to 94% range [3] [7] [13] [20] [21]. Our results also fall within the 33% to 94.5% range that was reported in a review of pain prevalence after spinal cord injury [22]. Not only was the pain a frequent occurrence following traumatic spinal cord injury among participants but 21.05% rated their pain as severe and none as excruciating. This was consistent with literature findings where 21% of subjects reported their pain as severe and none as excruciating [21]. An estimated third of spinal cord injured individuals are predicted to experience severe pain and this is similar to results in this present study [20]. Based on the high pain prevalence value from this study, there in need support spinal cord injured people to achieve a more prominent place for support in an equitable national health system. Spinal cord injured people can become independent and self-sufficient if some of their problems, like pain are met.

4.2. Characteristics of the Types of Pain Present among Traumatic Spinal Cord Injured Subjects

Although many pain classifications have been described in literature, this study used the Spinal Cord Injury Task Force of the International Association of the Study of Pain (IASP) classification which describes nociceptive and neuropathic pain as the two major types of pain encountered in spinal cord injury [31]. Pathophysiologically, neuropathic pain is caused by a dysfunctional nervous system and is located in the region of abnormal sensation while nociceptive pain is usually located in the region of normal sensation and initiated by the stimulation of somatic or visceral nociceptors [32]. Nociceptive pain is further divided into musculoskeletal and visceral pain while neuropathic pain is subdivided into above-level, at-level and below-level pain subtypes as described previously [13]. Based on findings from this study, 8 (33.3%) subjects had neuropathic pain only (located in the region of sensory and motor loss) while 11 (45.8), had both nociceptive and neuropathic pain types (had pain present in both the normal regions and those of sensory and motor loss). None had neuropathic pain only.

4.2.1. Visceral Pain

Visceral pain was found located exclusively in the abdomen and was characterised by features such as cramping, dull and bloating terms which are consistent with those found in literature where this pain was described as dull, poorly localized and cramping [13]. The intermittent nature of this pain which was a term used in previous reports was also used to describe it by participants in this study [23]. Weather changes aggravated this type of pain.

4.2.2. Musculoskeletal Pain

Musculoskeletal pain due to nociceptor activation and located in the region of normal sensation rostral to the level of injury was present even in some participants who also had neuropathic pain. Common places where the pain was located include the head,

neck and shoulders for quadriplegics while it included arms and hands in paraplegics. Reasons for this may be overuse of arms, hands and shoulders during transfers, mobilization and propelling themselves in wheelchairs [23] [24]. Activity, stress, weather changes and overexertion were reported to aggravate the pain characteristic of musculoskeletal pain as reported [13]. The pain was described as intermittent and continuous in all the body parts while the onset range of this pain was 23 - 63 days. Although other longitudinal studies reported an early onset of 14 days [21], differences in the pain onset is difficult to remember as many patients will be battling the early phases of spinal cord injury.

4.2.3. Above Level Neuropathic Pain

Only one subject complained of pain a dermatome above the level of injury. The pain was of moderate severity and the onset after injury being one year. Susceptibility to this pain is usually due to activity associated with wheelchair use or transfers [13]. This was also the case with this subject who was a quadriplegic and used a wheelchair for mobilization. Weather changes aggravated this pain which was described as an ache.

At level neuropathic pain

Pain prevalence of this type has been reported as 33%, with an early onset [21], which does agree well with findings from this study where pain started within the first month of injury. The kind of pain usually results from secondary physiological changes to the damaged spinal cord which may include neuromas. Common description used to describe this pain was electric whilst weather changes and abnormal position exacerbated the pain. Pain was described as moderately severe to severe by the participants. The 24 hour behaviour of pain varied among subjects but was mostly intermittent. These findings on neuropathic at level pain do not agree with findings from previous studies which reported (segmental) at level neuropathic pain as the most common type of pain [25].

4.2.4. Below Level Neuropathic Pain

Below level neuropathic pain was found mainly located in the chest, genital area, back, buttocks, thighs, legs and feet regions. The pain was located caudal to the level of injury where there was sensory loss. Of all the anatomical locations of pain found, almost half of the pain types suited the description of below level neuropathic pain. This was the most common type of pain as reported [26] [27]. In this present study the most commonly used descriptions for the quality of pain were aching, burning, pulsating, cramping, pins and needles especially in the legs and feet. Development of this pain varied according to anatomical location with the pain developing sometime later after injury as reported in literature [21]. The majority of the participants described the frequency of this pain as intermittent 24 hours while others had it continuous 24 hours. Previous studies have described this pain as constant although it can fluctuate according to other factors but is not at all related to position or movement [21]. However, one participant in this study, reported activity to worsen her leg pain. Although the cause of this was not explored, literature has also found that sudden noises or jarring move-

ments can trigger this type of pain [21].

4.2.5. Pain Treatment and Perceived Effectiveness of Treatment

Current pain in many different anatomical locations of varying severity was reported by the respondents with those who used treatment not differing from those who did not on any demographic variables. Some mentioned treatments were drugs, alcohol, psychotherapy and herbal medicine while the most common pain medications were paracetamol, aspirin, indomethacin, ibuprofen, baclofen and morphine. Interestingly two participants did not indicate any use of treatment interventions to relieve their pain. These results show a very big difference in the drugs used in the first world countries where higher treatment frequencies of opioids, anticonvulsants and sedatives drugs were used [12] [28]. A possible explanation for this difference is mainly due to the availability of these drugs in the developed world and the much wider availability of healthcare insurance which is not the case in Zimbabwe. It therefore means spinal cord injured people in Zimbabwe are left with limited options to manage their pain.

Reports of visits to psychologists, psychiatrists and social workers were another option to manage the pain. While this form of psychotherapy might include addressing other problems accompanying spinal cord injury to the professional mentioned, they felt it also dealt with the pain they were experiencing. One of the participants reported self-psychotherapy. Herbal medicines use which was reported as useful in treatment was never reported in previous similar studies. Musculoskeletal pain which was mainly located in the head, neck, shoulders, arms and hands was also managed by heat, occupational therapy and exercise. Alcohol was found to be another commonly used method of managing pain in the majority of participants. The possible reason of opting for alcohol among other treatment modalities can be attributed to the fact that participants in this study had a median of 2.5 years post-injury and therefore they might have tried various treatment options and discontinued them if they were not helpful. Surgery was indicated in decompression operations for back at level injury. Self-administered treatment options which included massage, rest, sleep and distraction were also some of the treatment modalities mentioned. Despite these people working more with rehabilitation professional, physiotherapy modalities that manage pain such as ultrasound and TENS were not used although they can serve as adjuncts to pain treatment. This can only show a gap in the continuation of the rehabilitation process maybe due to high costs of rehabilitation or other factors. Other treatment options found in literature such as hypnosis, meditation, trigger point injections and chiropractic manipulation were never reported in this study which means that there are a lot of options for treatment in developed countries than developing ones. However, from the study it can be seen that treatment was not pain specific as has been found in one subjects using ice to treat neuropathic pain in the legs and feet.

The majority of respondents in this study reported inadequate management of their pain as they reported treatment to slightly reduce their pain. None of the respondents reported total pain disappearance after treatment. This therefore means that treatment of spinal cord injury chronic pain is far from ideal. From this study it appears that some

of the participants have lost hope as they have resorted to alcohol and marijuana. The reasons for failure to achieve total control of this pain are many. The list is extensive and may include lack of resources, lack of knowledge among the health providers and the widely reported difficulty of treating chronic pain among others. Similarly, physiotherapy modalities interventions used such as massage, heat, and exercise were used but their effectiveness was not very clear as multiple treatment modalities were also used in conjunction with them to manage the same pain [28]. However, one study reported pain relief in 50% of people using these modalities alone [12]. Although gabapentin has been found to offer an alternative therapeutic alternative for alleviation of neuropathic pain as reported by 76% of the participants in a previous study [29], it was never used in this study. Amitriptyline was found to be helpful in a small number of participants which was not found in this study [30]. This shows that in Zimbabwe a lot has to be done in terms of research to find more therapy on spinal cord injury pain. Based on findings from this study, spinal cord injury pain among traumatic spinal cord injury is still prevalent and not adequately managed by either prescribed or self-initiated treatments. In addition, physiotherapy intervention together with medications appears to be used for various types of pain with strong analgesics like opioids are only indicated for those with severe pain. It is therefore imperative that future pain management strategies in this population be tailored to suit different pain types if we are to ever reach a stage of total control of this pain.

4.2.6. Strengths and Limitations of the Study

The present study, just like any other studies had its own limitations. Chief among such limitations included sample determination. Participants were conveniently sampled, the sample size ($n < 30$) was small and therefore results cannot be generalized to be true representation of all traumatic spinal cord injured subjects in Zimbabwe. Pain perception is a subjective phenomenon based on age, sex and mood of the participant thus the information got was taken as true representation of the person's view regardless of mood that day. Despite all this the study had its own strengths. The study explored at lengthy on pain characteristics so as to determine the different pain types together with the treatment methods used that has never been done by previous studies. Also a recent classification for pain after spinal cord injury that is well understandable with explanations on each pain type was used.

5. Conclusion

In conclusion, it has been found from this study that pain prevalence is high among traumatic spinal cord injured people in Harare of which the majority are men. Approximately a fifth of all participants rated their pain as severe which meant that pain may be affecting their quality of life. Weather changes aggravated almost every type of pain. Health care providers including rehabilitation professionals need to conduct thorough assessments in this group of people so that they accurately determine patients' problems and not just regurgitate preconceived problems. Pain management modalities need to receive some priority in patient treatment. Further research work also needs to

be conducted to get a much deeper understanding of chronic pain in spinal cord injured patients so as to come up with treatment methods that are more effective in the management of pain.

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Conflict of Interest

The authors declare no conflict of interest.

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Appendix 1: Instrument: English Version Questionnaire

TITLE: AN ANALYSIS OF PAIN FOLLOWING TRAUMATIC SPINAL CORD INJURY AMONG ADULTS IN ZIMBABWE.

SECTION A: DEMOGRAPHIC DATA.

a. Age……

b. Sex

o Male

o Female

c. What was the cause of your injury?

o Road traffic accident

o Assault

o Fall

o Industrial accidents

o Sports injuries

o Other (specify)……..

d. Which level of the spine was injured?

o Cervical

o Thoracic

o Lumbar

o Sacral

e. What was the type of injury?

o Complete

o Incomplete

f. How long have you been injured?.....

g. What was your diagnosis?

o Monoplegic

o Diplegic

o Hemiplegic

o Paraplegic

o Quadriplegic

h. Which of the following describes your main vocational activity?

o Employed

o Self employed

o Voluntary work

o Unemployed

o Student

o Unemployed but working before injury

o Retired

o Other…….

SECTION B: PAIN CHARACTERISTICS.

1) General questions.

a. Do you suffer from any **current pain** because of your spinal cord injury?

- o Yes
- o No

b. Where is the pain?

- o Region of normal sensation
- o Region of sensory/motor loss
- o In both regions of normal and sensory loss

2) Anatomical location of pain

a. From the following list of body parts, where do you feel the pain?

- o Head
- o Neck and shoulders
- o Arms and hands
- o Chest
- o Abdomen
- o Genitals
- o Back above level of injury
- o Back at level of injury
- o Back below level of injury
- o Buttocks
- o Thighs
- o Legs and feet

3) Onset of pain

According to the body parts you indicated when did this pain start after the injury?

- o Head ……
- o Neck and shoulders ……
- o Arms and hands ……
- o Chest ……
- o Abdomen ……
- o Genitals ……
- o Back above level of injury ……
- o Back at level of injury ……
- o Back below level of injury ……
- o Buttocks ……
- o Thighs ……..
- o Legs and feet ……..

4) Aggravating factors

According to the body parts you indicated what aggravates this pain?

- o Activity
- o Overexertion
- o Abnormal positioning
- o Compression
- o Stress
- o Weather changes

- o Spasticity
- o Others (include)……

5) Severity of pain

According to the body part(s) you have indicated above, can you rate your pain severity using the following 5-point scale.

None	Mild	Moderate	Severe	Excruciating
1	2	3	4	5

6) Quality of pain

According to the body part(s) you indicated in (2), which of the following statements best describe the quality of pain that you are currently experiencing from the following list of adjectives used to describe quality of pain. Indicate at most two adjectives that best describe your pain. You are free to add some of your own not included in the list.

- o Burning
- o Stabbing
- o Pricking
- o Aching
- o Sharp
- o Shooting
- o Stinging
- o Pulsating
- o Radiating
- o Pressing
- o Throbbing
- o Electric
- o Dull
- o Exhausting
- o Cramping
- o Any other……

7) 24-hour behavior of pain.

According to the body part(s) you indicated in (2), which of the following statements best describes your 24-hour behavior of pain. You are free to add any other description that best describes your 24-hour behavior of pain not included in the list.

- o Continous 24 hours
- o Continous all day only
- o Continous all night only
- o Intermittent all day
- o Worse at night only
- o Worse in the morning
- o Worse in the afternoon
- o Any other……

SECTION C: PAIN TREATMENTS.

a. From the following list of types of treatments used in managing pain following spinal cord injury which ones have you have used in the management of your **current pain.** You are free to add some of your own treatment types you have used which are not listed.

- o No treatment
- o Massage
- o Ultrasound
- o Heat therapy
- o Ice therapy
- o Transcutaneous electrical nerve stimulation (TENS)
- o Acupunture
- o Occupational therapy
- o Exercise
- o Nerve blocks
- o Surgery
- o Trigger point injections
- o Alcohol
- o Hypnosis
- o Meditation
- o Herbal medicine
- o Psychotherapy
- o Chiropractic manipulation
- o Drugs (specify)……..
- o Rest
- o Sleep
- o Distraction
- o Any other (please specify)…….

b. From the pain treatment types you indicated above, can you rate your perceived effectiveness of treatment according to anatomical location(s) you indicated above in reducing your pain using the following 5-point scale.

Made pain worse	Had no effect	Made pain slightly better	Made pain considerably better	Made pain disappear
1	2	3	4	5