ADDIS ABABA UNIVERSITY
DEPARTMENT OF NEUROLOGY

Research

Health-Related Quality of life in Patients with non-traumatic myelopathy at two neurology referral clinics in Addis Ababa Facility-based cross-sectional study

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DECLARTION

I declare that this thesis (Health-Related Quality of life in Patients with non-traumatic myelopathy at two neurology referral clinics in Addis Ababa Facility-based cross-sectional study) is my original work. It has not been summited for a degree or specialty certificate in any other universities and all the material used in this have been properly acknowledged.

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Abstract

Background: Non-traumatic spinal cord injury is to a range of conditions caused by infection, autoimmune, vascular, neoplastic, metastatic, and compressive lesions. The health care option to patients with spinal cord injury, usually supportive and rehabilitative, assumes to have a long-term benefit, hence requires continuous monitoring of Quality of life as an outcome measure, with the overall goal of optimizing patient functioning and well-being.
There is little information available on the quality of life in patients with non-traumatic spinal cord injury in Ethiopia. This study identifies the health-related quality of life in patients with non-traumatic myelopathy at two neurology referral clinics Of Tikur Anbessa Specialized Hospital and & Zewditu Memorial Hospital.

Methods: Institution-based cross-sectional study was conducted among a sample of 50 patients with non-traumatic spinal cord injury, using short-form -36 questionnaires to determine the Health-related Quality of life. The data was collected through face-to-face and through phone interviews from Tikur Anbessa Specialized Hospital and Zewditu Memorial Hospital from March 2019-October 2020.
Results- The mean age of the patients was 42.5±14.33. 23(46%) of them were males and 27(54%) were females with a male to female ratio of 1:1.1. 45(90%) patients were paraparetic and 18(36%) were bowel and bladder incontinent. The most common cause of non-traumatic myelopathy was compressive myelopathy (42%), followed by Transverse myelitis (34%). HIV myelopathy was seen in 4(8%) patients. The mean HRQOL was 37.08±25.41. 29(58%) patients with non-traumatic spinal cord injury fall in the lower range of HRQOL (0-33) while 12(24%) and 9(18%) in the moderate range (34-66), and higher range (67-100) respectively. The role of physical and role emotional domains were significantly affected. The body pain domain was least affected. Patients who walk supported were found to have significantly lower HRQOL compared to those unsupported patients (OR= 0.009, 95%CI: 0.001-0.097, P-Value= 0.01). Patients with sphincter dysfunction have lower HRQOL compared to those patients with no sphincter dysfunction (OR =1.600, 95%CI: 1.223- 2.093). Unemployment was found to have a significant association with low HRQOL (OR=0.014, 95% CI 0.004-0.0092, P-value =0.0021).

Conclusion -Patients with non-traumatic myelopathy have a low health-related quality of life. Walking with support, unemployed, and patients with sphincter dysfunction have low HRQOL. The role physical and role of the emotional domain were significantly affected so that physiological and emotional support should be part of the rehabilitation therapy. Government and non-government organization should involve NTSCI patients by forming platforms to suit employment of this group of patients.

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Abbreviations

AAU- Addis Ababa University

TASH- Tikur Anbessa Specialized Hospital

ZMH- Zewditu Memorial Hospital

NTSCI-Non traumatic spinal cord Injury

TSCI- Traumatic spinal cord Injury

SCI-Spinal cord injury

QL- Quality of Life

WHO-The World Health Organization

WHOQOL-100-The World Health Organization Quality of Life-100

BP-Body Pain

EH -Emotional Health

GH-General Health

HRQOL -Health-related quality of life

MH-Mental Health

PH-Physical Health

RP-Role of Physical

Operational definitions

- **Health-Related Quality of life- Health-related physical, emotional & social wellbeing measured by SP-36HLQ assessment tool.**
- **Myelopathy- Any neurologic deficit related to the spinal cord.**
- **NTSCI- Any myelopathy unrelated to trauma.**
- **TSCI- Any myelopathy caused by trauma.**

1, Introduction

It is well known that damage to the neural elements in the spinal canal resulting in resolving or permanent neurological deficits can arise from many different causes other than trauma. Although there is no universally accepted term for spinal cord damage not because of trauma (often referred to as non-traumatic spinal cord injury (NTSCI)—but better alternatives may be 'spinal cord damage' or 'spinal cord myelopathy') this field is an important aspect of spinal cord medicine(1).

NTSCI can occur at any age. It has been reported that the incidence of NTSCI is greater than that of traumatic spinal cord injury in some studies (3).Whether it's traumatic or non-traumatic spinal cord injury, clinical manifestations, health, economic, social consequence, and long-term rehabilitative care is more or less similar (2).

Common clinical presentation depends on severity & place of injury along the spine and includes loss of movement, altered sensation, loss of bowel and bladder control, extreme back or neck pain, the difficulty of breathing, coughing, or clearing secretions from the lung.

Causes of non-traumatic Spinal Cord Injury include Bacterial infections e.g. Tuberculosis, Viral infections e.g. Transverse Myelitis, Blood clots (thrombosis), or hemorrhage (bleeding), Non-malignant growths (tumors) which press on the spinal cord & Birth defects e.g. Spina Bifida. Diagnosis is usually established by an MRI scan. Patient history and full physical examination are important too. Long-term effects of spinal cord injury include paralysis, bladder and bowel problems, sexual problems, depression & pain (3).

The expression "Quality of Life" (QL) was first used by the president of the United States, Lyndon Johnson, in 1964 when he stated that "these goals cannot be measured by the size of our bank balances. Human and biological sciences were concerned with the definition of "Quality of Life". It should value parameters that go beyond controlling symptoms, reducing mortality, or increasing life expectancy (8).

The World Health Organization (WHO) defines QL as: "individuals' perception of their position in life in the context of the culture and value systems in which they live and about their goals,

expectations, standards, and concerns". This definition implies the idea that the concept of QL is subjective, multidimensional, and includes both positive and negative elements (8).

Quality of life assessment is important because it broadens the decisions made by the health team, extending them to healthcare programs and policies. Many researchers are unanimous in stating that the failure of many programs lies in the fact that they are based on the perception of health professionals, with interventions that are not connected to the social and QL conditions. Consequently, there are not many studies and the real needs, beliefs, and motivations of patients are undervalued. Quality of life is complex and perhaps this is why it is no surprise that it has no consensus definition or standard measurement tool. It does not mean that there was a shortage of ideas, there are more than one hundred QL measurement tools, but each one of them contains an idiosyncratic mix of dependent variables. (8) It is also noteworthy that many QL measurement tools have been developed for highly selected groups – particularly regarding the scales developed to monitor medical conditions or procedures, and this is why they should not be applied in the general population (22).

The SWLS is the most mentioned scale. It was developed to meet the need for a multi-item scale. It measures the level of satisfaction with life-based on a cognitive process. The SWLS psychometric properties seem to be favorable in American populations**.** Later, it was concluded that this scale could be used in different age groups. This self-report tool has five items, the SWLS was originally developed as a 7-point Likert scale, in which respondents indicate how much they agree or disagree with each item (22).

The SF-36 questionnaire has been broadly used because it is generic, easy to administer, and easy to implement. This tool came out from a health assessment questionnaire that contained 149 items, which was developed and tested in more than 22,000 patients to understand the questionnaire. Relatively short, it usually takes between 5 and 10 minutes to be administered as part of a health assessment study, The Medical Outcomes Study (MOS). The final version is a 36-item questionnaire divided into 8 subscales or domains, namely Physical Functioning (10 items), Role Limitations due to Physical Problems (4 items), Bodily Pain (2 items) General Health Perceptions (5 items), Vitality (4 items), Social Functioning (2 items), Role Limitations due to Emotional Problems (3 items), General Mental Health (5 items) and one more question

comparing the current health status to the status one year before. This tool assesses both positive health aspects (well-being) as well as negative aspects (disease)(21).

The World Health Organization Quality of Life-100 (WHOQOL-100) is a well-organized tool favorable to use in different cultures. Because of the need for short and rapidly administered tools, a shorter version of the WHOQOL-100 questionnaire was developed, the WHOQOL-Bref instrument with 26 questions in its final version. The first question is about the overall quality of life and the second is about satisfaction with their health. The other 24 questions measure the following domains: physical, psychological, social relationships, and the environment. It can be used both in healthy as well as in individuals with chronic diseases and conditions. Besides being cross-cultural, the WHOQOL instruments value the individual perception, allowing for assessing QL in different groups and situations (24).

The ComQol scale encompasses a contemporary understanding of QL. It was designed to be self-administered. This scale was developed to be appropriate to any subgroup, i.e., the adult population in general, individuals with an intellectual disability or any cognitive impairment, 11 to 18-year old adolescents attending school. ComQol has seven domains: material well-being, health, productivity, intimacy, safety, community, and emotional well-being (24).

The LSQ-R is a subjective well-being scale that assesses an individual's current level of satisfaction in several life domains. It also requires respondents to examine life problems. The LSQ-R is embedded into a larger survey, the Life Situation Questionnaire (LSQ), which measures a broad range of SCI outcomes, including those related to employment, medical treatments, social activities, and subjective well-being. Based on the analysis of articles that used different measurement scales to assess the QL in individuals with SCI, it was possible to identify that QL encompasses psychological and social well-being, emotional functioning, health status, functional performance, satisfaction with life, social support, and living standard(8).

1.1 Statement of the Problem

There is a lot of retrospective research done to assess the quality of life for traumatic spinal cord injury worldwide and in our continent too. However, there is a scarcity of research done to assess the quality of life of non-traumatic spinal cord injury. And there is no single research in our set up. Nontraumatic spinal cord injury is a common cause of disability and infectious causes of myelopathy increase the burden in developing countries like us. There is not much data in our setup that clarify the common cause of non-traumatic spinal cord injury. Because of the scarcity of resources, there is no adequate rehabilitation unit that could affect negatively the quality of life of our patients. So data that allow us to know factors that affect the Quality of life of our patients will be our next quality improvement strategy of our sectors. We hope that the results of this study translated into a better understanding of our patient's health-related quality of life enabling us to provide them with a better standard of care by following a multidisplanry approach.

1.2 Significance of the study

This study tried to assess the health-related quality of life of non-traumatic spinal cord injury patients in TASH and ZMH. We tried to identify some of the demographic factors associated with poor Quality of life. We tried. to assess the common cause of non-traumatic spinal cord injury.

Comparing health-related Quality of life of our patients to the rest of the world so that areas to be improved can be identified for intervention. Also, it can be used as a baseline study for future researches concerning health-related quality of life of non-traumatic spinal cord injury.

2 . Literature Review

Non-traumatic spinal cord injuries (NTSCI) are a form of spinal cord injury (SCI) that originate from a distinct pathology (i.e., neoplasms, infections, degenerative disc disorders, vascular disorders) and are associated with reduced long-term health, survival, and life expectancy. There is a great variation in terms of epidemiology for common etiologies of non-traumatic spine injuries but Infectious and inflammatory/autoimmune causes are described in most literature. Compressive bony etiologies also make a great contribution along with no etiology can be found sometimes. (1)

In a 5-year prospective study done by McKinley, of SCI admissions, 39% of SCI admitted to the rehabilitation medicine unit at a tertiary trauma center were nontraumatic in etiology (spinal stenosis, 54%; tumor, 26%). Compared to subjects with traumatic SCI, those individuals with nontraumatic SCI were significantly ($p < .01$) older and were more likely married, female, and retired. Injury characteristics revealed significantly more paraplegia and incomplete SCI within the nontraumatic SCI group ($p < .01$)(4).

In Africa, research done at Uganda Kampala (5), Compressive bone lesions accounted for more than 48% of the cases; majorities were Pott's disease and metastatic disease. No diagnosis was identified in up to 30% of cases in most studies; in particular, definitive diagnoses of non-compressive lesions were rare and a majority was clinical diagnoses of transverse myelitis and HIV myelopathy. According to this paper, Age and HIV were major determinants of etiology. This research has only represented a few east and west African countries which makes the less representative ability for the whole continent but put some important conclusions including investigating infectious etiology as one cause of NTSCI including HIV, HTLV1, TB, and neurosyphilis.

There is no population-based study done in Ethiopia, but few reports from the record of hospital admission of SCI patients in Tibur Anbesa specialized hospital. Over seven years from 1981 to 1988 about 223 adult non-traumatic paraplegia and paraparesis patients were admitted[45]and over four years period from December 1990 to December 1993, 130 patients with non-traumatic spinal cord injury were reported admitted to the Tikur Anbessa Hospital, Department of Internal Medicine, Addis Ababa. Paraplegia (77%) and quadriplegia (23%) were the commonest presenting complaints. Sensory level, sphincter dysfunction was found in 70%, 54% of the cases

respectively. Tuberculous spondylitis was found to be the leading cause accounting for 35 (26.9%), and HIV-1 myelopathies was the second common type accounting for 22 (16.9%) of spinal cord disease. Metastatic cord compression, tropical spastic paraparesis, (progressive non-compressive myelopathy), cervical spondylosis, primary cord tumors, and transverse myelitis were also not uncommon (3).

In a research done by NJ Fidèle1, Amanuel and et. al(13), 2015 on Spectrum of non-traumatic myelopathies in Ethiopian patients: a hospital-based retrospective study, of all 105 patients analyzed, the male to female ratio was 1.7, the mean age was 38.5 years and Weakness, sensory symptoms (including sensory level), back pain and sphincter dysfunction were the dominant features. Etiologies were dominated by spinal tuberculosis (23.8%) followed by spinal cord neoplastic lesions (primary (10.5%) and secondary neoplasms 8.6%). Other important etiological causes were transverse myelitis (16.2%), degenerative cervical spondylotic myelopathy (15.2%), amyotrophic lateral sclerosis (4.8%), and neuromyelitis optica/multiple sclerosis (3.8%). The mortality rate was 9.5%. Among the patients who died, 40% had chest infection as a complication and 70% presented with complete weakness. According to this research, Infection remains a major cause of spinal cord disease and early detection and treatment of complications may reduce the high rate of mortality and morbidity observed.

In research done by Redda Tekle Haimanot, Amsalu Feleke and et.al in 2005 on endemic of neurolathyrism in northern Ethiopia (14), the study identified 424 cases of lathyrism which occurred over many years in the woreda which has a population of 171,976, which gives a prevalence of 2.5/1000. Specifically, the survey revealed that there were 48 cases with onset occurring in 1997, 54 in 1998, 55 in 1999, 38 in 2000, and 37 in 2001. The study further revealed that there is an ongoing endemic of lathyrism in this typical highland woreda of northern Ethiopia.

Quality of life after spinal cord injury is significantly determined by many factors. For example, in the United States, up to 1 million people per year suffer from traumatic spinal cord injury of which up to 9.7 billion dollars per year is needed for treatment and rehabilitation purposes (2). Particularly for Africa and Ethiopia exact figure is not available and also both preventive and treating phases of this devastating injury is seems to be in the primitive era.

In research done by Linda B, Peter W, Prue W et.al…,(6)on 2019 At Australia, Satisfaction with life, health, and well-being: comparison between non-traumatic spinal cord dysfunction and traumatic spinal cord injury, There were 41 participants: NTSCD (n = 14) and TSCI (n = 27). The quality of life was assessed by SF-36. The conclusion was both NTSCD and TSCI scored lower than the Australian non-disabled sample mean. There were significant differences between NTSCD and TSCI for SF-36 domain's physical functioning, role limitations physical and vitality ($p < 0.05$). Median scores for both groups in all eight domains were lower than the means of the comparative Australian sample. There were more apparent difficulties for people with NTSCD in completing desired functional tasks than those with TSCI.

In research Predicting life satisfaction after spinal cord injury in a Canadian Sample done in Canada, Toronto Rehabilitation Institute by M Track, SL Hitzig, BC Craven et.al in 2008(7), the sample size was 781 participants & among participant 80.7% was traumatic and 19.0% was Non-traumatic. Quality of life was assessed by the Satisfaction with life scale (SWLS) and the conclusion was persons who had been injured longer, who were unable to work, who had more health complications, who had a psychological complication, and who rated their overall health as low were less likely to participate in their communities. Unlike the life satisfaction model, the number of complications was significant in predicting participation, suggesting that issues associated with aging (that is, poor health) may be more influential on different aspects of QOL.

3. Objectives

3.1. General objective:

- To identify the health-related quality of life in patients with non-traumatic myelopathy at two neurology referral clinics Of TASH & ZMH.

3.2. Specific objective:

- To identify a common cause of non-traumatic spinal cord injury in our setup
- To identify factors that contribute to negative health-related quality of life in non-traumatic spinal cord injury
- To compare the quality of life between the cause of non-traumatic spinal cord injury

4. Methods and Materials

4.1. Study setting and design

- The study was conducted at Tikur Anbessa Specialized Hospital (TASH), Zewditu Memorial Hospital (ZMH).
- The study design is a facility-based, descriptive, cross-sectional survey among patients with non-traumatic spinal cord injury.

4.2. Source and study population:

- All patients with a diagnosis of non-traumatic myelopathy attending TASH and ZMH.

4.2.1. Inclusion criteria:

- All patients who are diagnosed to have non-traumatic spinal cord injury with radiological or laboratory confirmation and age ≥ 13 years.

4.2.2. Exclusion criteria

- known psychiatric illness before the diagnosis of NTSCI
- Any patients with a history of trauma before the illness

4.3. Study variables:

- Independent variables:
  - -Age
  - -Sex
  - -Diagnosis
  - -Address (Rural or urban)
  - -Marital status
  - -Level of myelopathy
  - -Duration of myelopathy
  - -Comorbidity

- Dependent Variables:
  -Health-related quality of life assessed by SF-36

4.5 Study period-from March 2020-October 2020

4.6-Sample Size-Non probability (convent sampling technique) used

The sample size for the study was determined using a formula;

$n = \frac{(Z\alpha/2)^2 P(1-p)}{d^2}$ Where: n = required sample size

Z α/2= Critical value=1.961.

p= 50%. P-value is taken as 49.3% was taken from a similar study published in our country (Spina & Perucca, 2002); whereas d= precision (marginal error) =0.05

Therefore: $n = \frac{(1.96)^2(0.49X0.51)}{(0.05)^2} = 384$

Since the study population is less than 10,000 the final sample size was determined by the formula $nf = \frac{n}{[1 + n/N]}$; where nf = Final Sample Size

$nf = \frac{384}{[1 + 384/45]} = 40$

Hence, the data was designed to be collected from 50 NTSCI from TASH & ZMH clinics.

4.7. Data collection and analysis

Data collected by taking through the patient's medical records checking radiographic and laboratory results.

1. For assessment of health-related Quality of life, patients interviewed with a prepared questioner face to face or on phone.
2. Individual patient's quality of life is interpreted using the SF-36 health quality assessment tool. The SF -36 assesses eight health-related quality of life phenomenon: 1) limitations in physical activities because of health problems (PH, 6 questions); 2) limitations in social activities because of physical or emotional problems (SF, 6 questions); 3) limitations in usual role activities because of physical health problems –Role Physical (RP, 4 questions); 4) bodily pain (BP, 2 questions); 5) general mental health (psychological distress and well-being) (MH, 10 questions); 6) limitations in usual role activities because of emotional problems (RE); 3 questions) vitality (energy and fatigue) (VT, 3 questions); and 8) general health perceptions (GH, 6 questions). The mean scores within the general population are 50 and the standard deviations are 10 for all eight domains.
3. The evaluation of the results done by attributing scores to each question, which then transformed into a scale ranging from 0 to 100, where 0 corresponds to the worst quality of life and 100 to the best.
4. Each dimension will be analyzed separately. The scores of the questionnaire were analyzed in three low (0 - 33), moderate (34 - 66), and high levels (66 - 100).
5. The data was cleaned and coded. The statistical analyses performed using SPSS for Windows software (version 25.0; SPSS, Inc., Chicago, IL).
6. A multivariate analysis, using the factors that are found to be significant on univariate analysis, done A p-value of less than 0.05 considered significant.

4.8 Ethical consideration:

This study was conducted following the ethical principles stated in applicable guidelines on good clinical practice, whichever represents the greater protection of the individual. The medical director of TASH and involved departments especially the Department of Neurology approved

5. Result

Sociodemographic data

A total of 50 patients were enrolled in the study period. 46(92 %) patients were from BLH and 4(8%) patients were from ZMH. 23(46%) of them were males and 27(54%) were females with a male to female ratio of 1:1.1. There is no significant association between gender and HRQOL.

The majority of our patients were between the age of 21-30(28 %). The minimum age reported was 18 years and the maximum age was 72 years. The mean age was 42.5±14.33. There is no significant association between age and HRQOL.

Level of education

The educational level of our patients was assessed and 22(44%) of our patients Highest level of education received were high school, 9(18%) didn't attend any education, 8(16%) of patients highest level of education was college and above, 7(14%) of patients finished primary high school and 4 (8%) of patients can write and read-only. There is no association between level of education and health-related quality of life.

Marital status

28(56%) of our patients were married, 14(28%) were single, 5(10%) of patients were divorced and separated 3 (6%) of the patients were widowed. There is no significant association between marital status and HRQOL. The marital status has no association with each SF 36 Domain.

Occupation

23(46%) of our patients are currently unemployed because of the myelopathy and 20(40%) of the patients are self-employed. 6(12%) patients are working in Government organizations and 1(2%) patient work at a Non-government organization. Unemployed have a significant association with low HRQOL (OR=0.014, 95% CI 0.004-0.0092, P-value =0.0021)

20(40%) of our patients were living with their partner, 13(26%) were living with their children and 13(26%) were living with relatives. 4(8%) of patients live alone. Patients who live alone have a significant association with lower HRQOL (OR=0.009, 95% CI 0.001-0.097, P-value=0.035).

Monthly income

Of all the patients, 24(48%) of them had a monthly income of >1500 birr and 4 (8%) patients were between 1000-1500birr. 22(48) of them had monthly income was below 1000 birr. There is no association between monthly income and HRQOL.

Table 1. Sociodemographic data

Variable	Total
Gender	
Male n, (%)	23(46)
Female	27(54)
Age	
<20	2(4)
21-30	14(28)
31-40	9(18)
41-50	11(22)
51-60	9(18)
61-70	4(8)
71-80	1(2)
Level of education	
Not at all	9(18)
Write and read	4(8)
Primary school	7(14)
High school	22(44)
College and above	8(16)
Marital status	
Single	14(28)
Separated	3(6)
Married	28(56)
Divorced	2(4)
Widowed	3(6)
Occupation	
Unemployed(lose a job because of myelopathy)	23(46)
Self-employed	20(40)
NGO	1(2)
Government organization	6(12)
Monthly income	
<500 birr	16(32)
500-1000 Birr	6(12)
1000-1500 Birr	4(8)
>1500 Birr	24(48)
Living condition	

Alone	4(8)
With partner	20(40)
With Relative	13(26)
With children	13(26)

Clinical data

The level of myelopathy was also assessed according to the involvement of the limbs and 45(90%) patients were paraparesis and 5 (10%) were Quadriparetic. There is no significant association between the level of myelopathy and HRQOL.

Of these patients, spastic Parsis were seen in 30(60%) patients and flaccid Parsis were seen in 12(24%) patients. 8(16%) of patients were normotonic.14 (28%) of the patients have a sensory level and the remaining patients had no sensory level.

18(36%) of the patients were bowel and bladder incontinent and the remaining were not. There is a significant association between HRQL and sphincter dysfunction (OR =1.600, 95%CI: 1.223-2.093, P-Value of 0.002).

30(60%) were using a wheelchair for walking, 8(16%) were using a walking stick,

2(4%) were using crunch and 10(20%) patients were walking unsupported. Patients who walk supported have significantly lower HRQOL than unsupported patients (OR-0.009, 95%CI: 0.001-0.097, P-Value 0.01).

Retroviral (HIV) infection was reported in 9(18%) Patients. 21(42%) patients were having comorbidities including HIV infection. The remaining 29 (58%) had no known comorbidities.

Duration of myelopathy was reported between 3month and 6 months in 19 (38%) of the patients and between the 6month-12 month in 12(24%) of the patients. Duration of more than 1 year was reported in 19(38%) patients. The duration of myelopathy shows no significant association with HRQOL.

Table 2. Clinical Data

Variable	Total
Level of myelopathy	
Paraparesis	45(90)
Quadriparesis	5(10)
Tone	

Spastic	30(60)
Flaccid	12(24)
Normal	8(16)
Sensory level	
Yes	14(28)
No	36(72)
Bowel and bladder Function	
Incontinent	18(36)
Continent	32(72)
Comorbidity	
Yes	21(42)
No	29(54)
Mode of walking	
Unsupported	10(20)
Walking stick	8(16)
Crunch	2(4)
Wheelchair	30(60)
Duration of myelopathy	
<3 month	8(16)
3month-6 month	11(22)
6month-12 month	12(24)
>12 month	19(38)

The most common cause of non-traumatic myelopathy was compressive myelopathy seen in 21(42%) of the patients. The second commonest cause was Transverse myelitis seen in 17(34%) of the patients. HIV myelopathy was seen in 4(8%) patients. Tuberculosis myelitis, viral myelitis, and multiple sclerosis were seen in 2 (4%) patients each, and Neurolatrism and vascular myelopathy were seen in 1 (2%) patients each.

HRQOL (Assessed with SF-36 Questionnaire)

From 50 patients who were assessed with SF 36 questionnaire in the domain of limitation in physical activity, 33(66%) of patients were in the low (0-33) range, 8 (16%) were in the moderate (34-66) range, and 9(18%) of them in the high level (66-100). The mean was 25.6±34.82.

In the domain of role limitation due to physical health, 38(76%) were in the low range (0-33), 2(4%) were in the moderate range (34-66) and 10(20%) were in the higher range (66-100). The mean was 19±37.4.

In the domain of role limitation due to emotional problem 10(20%) patients were in the lower range (0-33), 24(48%) were in the moderate range (34-66) and 16(32%) of them were in the higher range (66-100). The mean was 19.9±37.4.

In the domain of energy (fatigue) 20(40%) of patients were in the low (0-33) range, 18(36%) were in the moderate (34-66) range and 12(24%) were in the high level (66-100). The mean was 46±25.51 years.

In the domain of pain 13(26%) were in the lower range (0-33), 15(30) of the patients were in the moderate range (34-66) and 22(44%) were in the higher range (66-100). The mean was 55.5±31.

In the domain of emotional well-being which assess psychological distress and well-being, 10 (20%) of the patient were in the low range (0-33), 24(48%) were in the moderate range and 16(32%) were in the high range (67-100). The Mean was 55.76±24.61.

In the domain of general health, 22(44%) of patients were in the low range (0-33), 18 (36%) of patients were in the moderate range (34-66) and 10 (20%) patients were in the higher range (67-100). The mean was 31.2± 20.11.

In the domain of social functioning, 22(44%) of patients were the lower range (0-33), 18(36%) were in the moderate range (34-66) and 10(20%) were in the higher range (67-100). The mean was 42.0±31.61.

In the domain of health change, 25(50%) of patients were in the lower range (0-33), 8(16) of the patients were in the moderate range, 17(34%) were in the high level (67-100). The mean was 42±37.2.

HRQOL which assesses the quality of life by compiling the 8 domain of SF36 Shows that 29(58%) of the patients were in the low (0-33) range, 12(24%) of patients were in the moderate range (34-66). 9(18%) of patients were in the higher range (67-100) The mean was 37.08±25.41).

Table 3.

Variable	Low(0-30)	Moderate(31-60)	High(61-100)
Physical score	33	8	9
Role limiting physical	38	2	10
Role limiting Emotional	10	24	16

Energy	20	18	12
Mental health	10	24	16
Social health	22	18	10
Pain	13	15	24
General health	22	18	10

6. Discussion

In our study, most of our patients were female with a mean age of 42.5±14.33. More than half of our patients were married. Our finding is similar to the research done by McKinley et.al., which Compared non-traumatic SCI patients with traumatic SCI, those individuals with nontraumatic SCI were significantly older and were more likely married, female, and retired(14).

The most common cause of non-traumatic spinal cord injury is a compressive bony lesion with Tuberculosis spondylitis being the predominant etiology, which is similar to the research done by Musubire et al, at Uganda Kampala which shows Compressive bone lesions accounted for more than 48% of the cases; in particular Pott's disease and metastatic disease (7). Definitive diagnoses of non-compressive lesions were rare and a majority was clinical diagnoses of transverse myelitis and HIV myelopathy (7)which is similar to our study in which transverse myelitis and HIV myelopathy were the second and third common cause.

From the record of hospital admission of SCI patients in Tikur Anbesa specialized hospital, over seven years from 1981 to 1988 about 223 adult non-traumatic paraplegia, 130 patients with non-traumatic spinal cord injury were reported admitted to the Tikur Anbessa Hospital Tuberculous spondylitis was found to be the leading cause accounting for 35 (26.9%), and HIV-1 myelopathies was the second common type accounting for 22 (16.9%) of spinal cord disease(3), which is similar to our study.

In the same study paraplegia (77%) was the common myelopathy level and were the commonest presenting complaints. Sensory level and sphincter dysfunction were found in 70% and 54% of the cases respectively. Similar to our study, most of our patients were paraplegia. 14(28%) of the patients have a sensory level and 18(36%) of the patients were bowel and bladder incontinent.

The mean score of HRQOL in every eight domains was low. the physical functioning 25.6±34.82, the role of the physical domain was 19±37.4, energy domain was 46±25.51, mental health domain was 55.76±24.61, Social functioning domain was 42.0±31.61, body pain domain was 55.55±31, general health domain was 31.2±20.11 and the role of emotion was 19.9±37.4.additionally the total score of HRQOL done by combining the 8 domains mean was 37.08±25.41. In research was done by Linda B et. al(6) in 2019, a comparison between non-traumatic spinal cord dysfunction and traumatic spinal cord injury, Median scores for both

groups in all eight domains were lower than the means of the comparative Australian sample. There were more apparent difficulties for people with NTSCD in completing desired functional tasks than those with TSCI. In our study Median scores in all eight domains were not compared with the Ethiopian sample population but taking the standard score means 50 ±10, our patients have significantly lower HRQOL. The role physical and role of the emotional domain were significantly affected. body pain domain was least likely affected.

A significant correlation between being young and a perceived higher QL.(25) however the research done by Kreuter et.al, found that age was not significantly correlated with spinal cord injury patients HRQOL(26).

In our study marital status was not related to HRQOL. It was reported that The Divorce rate was higher in patients with spinal cord injury (27) however, marital status was not significantly correlated with HRQOL in the study performed by Kreuter et. al(26)

The research was done by Park SE, Elliott S, Noonan VK et al, to assess the Impact of bladder, bowel, and sexual dysfunction on the health status of people with thoracolumbar spinal cord injuries living in the community found that patients with bowel and bladder incontinent reported a lower SF-36 PCS (P = 0.008) and SF-36 MCS (P = 0.06) compared to those without, which is similar with our study that patients with bowel and bladder incontinent have lower HRQOL. (27)

In our study, there was a significant correlation between the mode of walking with HRQOL. Patients who walk unsupported have better HRQOL. It was a similar finding with the research done by Nitil B Jane, Marianne Sullivan, et al, which assess Factors Associated with Health-Related Quality of Life in Chronic Spinal Cord Injury found that ambulatory mode (use of hand-propelled or motorized wheelchair, use of crutches or canes, or walking independently) were independently associated with HRQOL(28).

In similar study patients, Those working in full- or part-time jobs had a better HRQoL on the functioning, mood, and global HRQoL domains (28). The same is true in our study that patients who are employed have better global HRQOL.

7. Conclusion

The commonest non-traumatic myelopathy in our study is compressive myelopathy, the second commonest one is transverse myelitis, and the mean age of the patients was 42.5±14.33. Most patients' levels of myelopathy were paraparesis, Patients with non-traumatic myelopathy have a lower health-related quality of life .patients who walk supported, unemployed and patients with sphincter dysfunction have low HRQOL. Marital status, sex, income, and living condition do not have a significant association with health-related quality of life.

8. Recommendation

- The role physical and role of the emotional domain were significantly affected so that physiological and emotional support should be part of the rehabilitation therapy
- Government and non-government organization should involve NTSCI patients by forming platforms to suit employment of this group of patients.
- Patients who live alone have lower HRQOL so social support is mandatory.

8. Limitation

Because the COVID 19 pandemic patients were not able to visit the neurology clinic so we were forced to use the phone to interview the patients. There was a lack of phone numbers, incorrect no, and unresponsive phone calls. There is no SF 36 assessment done at the community level so we couldn't compare our patients HRQOL to our community.

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