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COLLEGE OF HEALTH SCIENCES

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DEPARTMENT OF ANATOMY

ANATOMICAL PROFILE OF NEUROLOGICAL AND MUSCULOSKELETAL DISORDERS AMONG PATIENTS ATTENDING PHYSIOTHERAPY UNIT OF TIKUR ANBESA SPECALIZED UNIVERSITIY HOSPITAL

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A THESIS SUBMITTED TO GRADUATE STUDIES, ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, SCHOOL OF MEDICINE, AND DEPARTMENT OF ANATOMY, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN HUMAN ANATOMY.

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Anatomical profile of neurological and musculoskeletal disorders among patients attending physiotherapy unit of Tikur Anbesa specialized Hospital Ethiopia

A thesis submitted to graduate studies, Addis Ababa University, college of health sciences, school of medicine, department of Anatomy, in partial fulfillment of the requirement for the degree of Master of Science in human anatomy.

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Addis Ababa, Ethiopia

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Declaration

I Sisay Abiy /ID Number of GSR 2113/09 do hereby declare that this Thesis is my original work and that it has not been submitted partially or in full by any other person for an award of master's degree in any other university institution.

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The undersigned certify that they have read and here by recommend to Addis Ababa university College of health science; school of medicine and department of anatomy to accept the thesis submitted by Sisay Abiy and entitled as "Anatomical profile of neurological and musculoskeletal disorders among patients attending physiotherapy unit of Tikur Anbesa specialized Hospital" in partial fulfilment of the requirements for the award of a Master's Degree in medical anatomy.

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Full title of the thesis	Anatomical profile of neurological and musculoskeletal disorder among patients attending physiotherapy unit of Tikur Anbesa specialized Hospital Ethiopia
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Abbreviations and Acronyms

CNS: Central Nervous System

CP: Cerebral Palsy

DDD: Degenerative Disc Disorder

DRERC: Department Research and Ethics Review Committee

ETB: Ethiopian Birr

FP: Facial Palsy

GBD: Global Burden of Disease

GBS: Guillain-Barre syndrome

GDD: Growth and developmental delay

HMIS: Health Management Information System

IVD: Inter vertebral disc

MRI: Magnetic Resonance Imaging

MRN: Medical Record Number

MSD: Musculoskeletal Disease

MSI: Musculoskeletal Impairment

MSP: Musculoskeletal Pain

MoH: Ministry of Health

NICU: Neonatal Intensive Care Unit

OA: Osteoarthritis

OPD: Outpatient Department

PD: Parkinson's disease

PI: Principal Investigators

PNS: Peripheral Nervous System

RTA: Road Traffic Accident

SCI: Spinal Cord Injury

SNNP: South Nation, Nationality and People

SPSS: Statistical Package for Social Science

TASH: Tikur Anbesa Specialized Hospital

UK: United Kingdom

WHO: World Health Organization

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Abstract

Background: Neurological and musculoskeletal disorders can affect different body parts and anatomical structures. Physiotherapy is used in a multitude of disease conditions including musculoskeletal and neurological disorders. It has proved beneficial not only by making patients independent, but also by making them live their life with dignity and confidence.

Objective: The intention of this study was to assess the anatomical profile of neurological and musculoskeletal disorders among patients attending physiotherapy unit of Tikur Anbessa specialized Hospital (TASH), Ethiopia 2018.

Material and Method: Institution based retrospective cross sectional study was carried out at Tikur Anbessa Specialized Hospital (TASH) on charts of Patients presented to physiotherapy unit from May 1-31, 2018. The sample size was 355. The study participants were neurological and musculoskeletal patient visiting physiotherapy unit of TASH. The collected data were entered into the Epi-Data version 4.2 and then exported to statistical package for social science (SPSS) 21 for analysis. Frequency table, percentage and graphs presented categorical data. Chi-square ($\chi 2$) test was applied to see if there was any association between the different variables.

Result: The study participants were comprised of 342 samples among them 192 (56.1 %) were male and 150 (43.9 %) were female. Most 84 (24.6%) of the patients, were between the age group of 45 and 59 years. In this study, neurological disorders were (55.3%) and musculoskeletal disorders (38.6%) were most prevalent. In this study lower limb 109 (31.9%), Back 67 (19.6%) and upper limb 59 (17.3 %) were the first three most affected anatomical regions. Inter Vertebral Disc (IVD) 88 (27.9%), Bone 66 (19.3 %) and joint 55 (17.5%) were the first three most affected structures. Among traumatic cause of disorder Road Traffic Accident RTA (45%) was the leading cause and it was followed by falling (19%) on the other hand Degenerative Disc Disorder (DDD) 94 (37.6 %) and Ostio Arthritis (OA) 32 (12.8 %) were among non-traumatic causes.

Conclusion: The finding of this study shows that neurological and musculoskeletal disorders were common disorders. Lower limb and back were the most affected anatomical regions. IVD and bone were the most affected anatomical structures. RTA and Falling were among the common traumatic causes of musculoskeletal and neurologic disorders while DDD, OA and stroke were among non-traumatic causes.

Keywords: Musculoskeletal, Neurological disorder, Tikur Anbesa specialized hospital, Ethiopia

1. INTRODUCTION

1.1. Background

Physiotherapy is a treatment method that focuses on the science of movement and helps people to restore, maintain and maximize their physical strength, function, motion and overall well-being by addressing the underlying physical issues. It encompasses rehabilitation, injury prevention and health promotion/fitness. Physiotherapists offer treatments relating to the following conditions: Cardiorespiratory, Cancer, Incontinence, and Women's health concerns, Musculoskeletal, Neurological, Orthopedic and Pain (1).

Additionally, it is used to treat emotional, behavioral or mental dysfunction, remove negative symptoms such as anxiety or depression, modify or reverse problem behaviors, help the individual cope with situational crises such as bereavement, pain, or prolonged medical illnesses, improve the individual's relationships, manage conflict or enhance positive personality growth and development (2).

Physical therapists are an integral part of inpatient and outpatient treatment of neurologic and musculoskeletal injuries and disabilities. They also can assist with and augment the care of patients with cardiac, pulmonary, and developmental disorders. Physiotherapy rehabilitation aims to optimize patient function and wellbeing, it helps the patient get back to daily activities, work and leisure (3).

Neurological disorders are diseases of the central and peripheral nervous system. In other words, a disorder of the brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles. These disorders include epilepsy, Alzheimer disease and other dementias, cerebrovascular diseases including stroke, migraine and other headache disorders, multiple sclerosis, Parkinson's disease, neuroinfections, brain tumors, traumatic disorders of the nervous system due to head trauma, and neurological disorders as a result of malnutrition. Hundreds of millions of people worldwide are affected by neurological disorder(4).

Musculoskeletal disorders are a disease conditions that affect: joints, such as osteoarthritis, rheumatoid arthritis, and psoriatic arthritis, gout, ankylosing spondylitis; bones, such as osteoporosis, osteopenia and associated fragility fractures, traumatic fractures; the spine, such as back and neck pain; and muscles.

Musculoskeletal conditions affect people across the life course in all regions of the world. While the prevalence of musculoskeletal conditions increases with age, younger people are also affected, often during their peak income-earning years (5).

The Global Burden of Disease (GBD) study provides evidence of the impact of musculoskeletal conditions, highlighting the significant disability burden associated with these conditions. In the 2016 GBD study, musculoskeletal conditions were the second highest contributor to global disability, and lower back pain remained the single leading cause of disability. While the prevalence of musculoskeletal conditions varies by age and diagnosis, between 20%–33% of people across the globe live with a painful musculoskeletal condition (6).

Neurological and musculoskeletal disorders can affect different body parts and also different anatomical structures. Physiotherapy is used in a multitude of disease conditions including musculoskeletal and neurological disorders. Physiotherapy has proved beneficial not only by making patients independent, but also by making them live their life with dignity and confidence.

1.2.Statement of the problem

Neurological and musculoskeletal disorders are among the leading cause of disability worldwide. According to the Global Burden of Disease study of the 2016 musculoskeletal conditions were the second highest contributor to global disability, and lower back pain remained the single leading cause of disability. In addition the prevalence of musculoskeletal conditions varies by age and diagnosis, between 20%–33% of people across the globe live with a painful musculoskeletal condition (6). In Iran multiple traumas were observed in about 25% of the victims among this leg (tibia and fibula) (37.6%) and forearm (radius and ulna) (19.3%) had the most frequent fractures. Shoulder dislocations were the most common joint dislocations, accounting for 2.7% of the cases (7).

According to a population-based neuroepidemiological survey of 102,557 individuals in India; 3,206 individuals were diagnosed with neurological disorders. (8).

A Community based cross sectional study done in Uganda over 3000 study subjects also reported a total of 98 (7.2 %) neurological cases were observed. Among this cases, Peripheral neuropathy had 33 cases, chronic headaches 20 cases, stroke 14 cases, epilepsy 13 cases, pain syndromes 10 and tremors had 8 cases (9). In Saudi Arabia spinal cord disorder was common disorder among this the most commonly affected were lumbar spine (53.1%) and cervical spine (27.1%), and pain was the most common disorder (10). In case of Ethiopia road traffic collisions were the main cause of spine (36.4%) and spinal cord (32.9%) injuries. And 42.9% had both spine and spinal cord injuries. Most often the cervical spine was involved (33.0%) and 103 (26.7%) patients had paraplegia (11). To give attention and design preventive mechanism of these disorders, identifying the anatomical profile of these disorders is help full for training professionals, qualifying instrument and proper organization of physiotherapy centers. However, there are no studies conducted that identifies the anatomical profile of this disorder. Therefore, this study intended to fill this gap.

1.3.Significance of the study

Physiotherapy is used in a multitude of disease conditions which could be of musculoskeletal neurological conditions. This study intended to identify the affected anatomical region and the structure mostly involved in neurologic and musculoskeletal disorder among patients attending physiotherapy unit of TASH.

The data obtained in this study, could help to develop countermeasures that could reduce the number and severity of these disorders. It also may be used by concerned bodies for planning and evaluating and develop preventive measures. In addition the study may provide baseline information to carry out further research on related topics.

2. LITRATURE REVIEW

Physiotherapy is a treatment method that focuses on the science of movement and helps people to restore, maintain and maximize their physical strength, function, motion and overall well-being by addressing the underlying physical issues. As professionals, physiotherapists are experts at providing treatment for: Preventing injury and disability; managing acute and chronic conditions; Improving and maintaining optimal physical performance; Rehabilitating injury and the effects of disease or disability; Educating patients to prevent re-occurrence of an injury. Patients may be referred to or seek assistance from a physiotherapist for a variety of health issues and receive valuable assistance. Physiotherapists offer treatments related to the following conditions: cardiorespiratory, cancer, incontinence, women's health concerns, musculoskeletal, Neurological, orthopedic and pain (1).

2.1. Neurological Disorders

Neurological disorders are diseases of the central and peripheral nervous system. In other words, a disorder of the brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles. These disorders include epilepsy, Alzheimer disease and other dementias, cerebrovascular diseases including stroke, migraine and other headache disorders, multiple sclerosis, Parkinson's disease, neuroinfections, brain tumors, traumatic disorders of the nervous system due to head trauma, and neurological disorders as a result of malnutrition. Hundreds of millions of people worldwide are affected by neurological disorders (4).

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Community based prospective cross sectional study in United Kingdom (UK) reported 100,230 that clients was followed prospectively for the onset of neurological disorder and 27,658 (25%) were diagnosed with the neurological disorder among this 205, diabetic polyneuropathy 54, compressive neuropathy 49 peripheral neuropathy 15, CNS infection 12, the most prevalent was stroke 9 (12).

A population-based neuroepidemiological survey conducted on 102,557 individuals in in Southern India detected 3,206 individuals with neurological disorders. According to this study the prevalence of neurological disorders among women (3,617) was higher compared with men (2,657) (13).

A retrospective study conducted in the Physical Therapy Department, King Fahd Hospital of the University, Dammam, Saudi Arabia stated that (28.1%) of all referred patients (5,929) had spinal disorders. The most common disorders affected the lumbar spine (53.1%) and cervical spine (27.1%), and pain was the most common disorder. Neck pain (60.5%) was more common in patients 30 age groups. Spondylitis and low back pain were more prevalent in women (7.8% and 76.2%) than in men (73.9% and 3.3%). Low back pain represented three-quarters of the disorders that affected the lumbar spine, and other disorders (such as spondylosis, disc disorders, and radiculopathy) did not exceed 10%. The most common disorders related to the cervical spine were pain (36.8%), spondylosis (31.3%), and disc disorders (24.3%)(10).

A retrospective review of 46 case files of patients with traumatic spinal cord injuries, treated by the Orthopedic and Physiotherapy Units at the Nnamdi Azikiwe University Teaching Hospital in Nigeria from January 1, 2001 to December 31, 2005 found that most of the injuries, 64.7%, were occur as a result of a fall from a height. The most common level of injury was of the thoracic spine, 17 (50%); followed by the lumbar spine, 11 (32.4%); and cervical spine, 6 (17.6%) (8).

According to a hospital based cross sectional study of patterns of patients with spine and spinal cord injury seen at the Emergency Outpatient Department (OPD), Tikur Anbessa Specialized Hospital (TASH), fall from height and Road traffic collisions were the main cause of spine and spinal cord injuries in 36.4% and 32.9% of the patients respectively. And 42.9% had both spine and spinal cord injuries. Most often the cervical spine was involved (33.0%) and 103(26.7%) patients had paraplegia (11).

The Observational study conducted on 120 asymptomatic Indian subjects with Magnetic Resonance Imaging (MRI) and studied 380 discs by 4 different age groups. Among disc herniation 273 discs (71.8%) were normal and 107 discs (28.2%) had pathological changes in the form of bulge 68(17.8%), protrusions 30(7.8%) and extrusions 9(2%)(14).

According to population based cross sectional study from northeast China on 4,052 permanent residents, aged 40 years or older; the overall prevalence of stroke was 7.2%. Of all stroke cases, 91.7% were ischemic stroke and 8.3% were hemorrhagic stroke. The prevalence rates of dyslipidemia, smoking and hypertension were ranked as the top three cerebrovascular risk factors and were 62.1%, 61.8% and 57.3% respectively (15).

A Cross-sectional analysis of a nationwide health survey in South Korea, the prevalence of Facial Palsy (FP) was 0.12%. It was more prevalent in women and the prevalence rate increased with age (15).

According to the 3-Year Review of Cranial Nerve Palsies from the University of Port Harcourt Teaching Hospital Eye Clinic, Nigeria, The 3rd and 6th cranial nerves were affected in seven patients each (29.2%) and five patients (20.8%) had 7th cranial nerve palsy. Approximately 38% of patients with cranial nerve palsies had systemic disorders (16.7% systemic hypertension; 12.5% DM) (16).

2.2.Musculoskeletal Disorders

Musculoskeletal disorders are a disease conditions that affect: joints, such as osteoarthritis, rheumatoid arthritis, and psoriatic arthritis, gout, ankylosing spondylitis; bones, such as osteoporosis, osteopenia and associated fragility fractures, traumatic fractures; the spine, such as back and neck pain; and muscles. Musculoskeletal conditions affect people across the life-course in all regions of the world. While the prevalence of musculoskeletal conditions increases with age, younger people are also affected, often during their peak income-earning years(5).

The Global Burden of Disease study provides evidence of the impact of musculoskeletal conditions, highlighting the significant disability burden associated with these conditions. In the 2016 GBD study, musculoskeletal conditions were the second highest contributor to global disability and lower back pain remained the single leading cause of disability. While the prevalence of musculoskeletal conditions varies by age and diagnosis; between 20%–33% of people across the globe live with a painful musculoskeletal condition (6).

According to a nationwide survey of musculoskeletal disorders among 22,475 non self-employed workers in Taiwan, among the sampled workers 37% had musculoskeletal disorder. Female workers (39.5%) had a significantly higher overall prevalence than male workers (35.2%) low

back and waist were the most frequently affected body parts 18.3% among males and 19.7 % among females. Followed by the shoulder (14.4%, 17.4%), upper back (4.4%, 5.4%), elbow (5.6%, 5.6%), hand and wrist (10.7%, 10.3%), hip and thigh (3.5%, 4.6%), knee (3.7%, 3.7%) and ankle (3.2%, 3.6%) male and female respectively (17).

According to 5 year surveillance of musculoskeletal disorder, the upper limb was most often affected, followed by neck or back; there were relatively few cases of the lower limb. For the cases reported by occupational physicians, a frequent problem was pain of ill-defined pathology, particularly at the hand, wrist, arm or shoulder (18).

According to a population survey 0f 6000 adults in Greater Manchester UK, the most common sites of pain would be back 23%, followed by knee 19% and shoulder 16%. (19).

A cross-sectional study conducted in Chuquisaca, Bolivia on 1,062 randomly selected school teachers reported the period prevalence of Musculoskeletal Disease (MSD) in any region was 86%, 63% and 15% for the last 12-months, 7-days and 12- months prevalence of work limiting pain respectively and 48%, 26% and 5% for musculoskeletal disorders in three or more parts of the body. The 12-months prevalence of musculoskeletal disorders ranged from 26% for wrist/hands to 47% for neck (20).

According to a survey of musculoskeletal disorder among 581 workers in Brazil, the prevalence of musculoskeletal disorders, considering of all body segments, was 50.1%. It was higher among women than men at distal upper extremities (34.6% and 11.6%, respectively) and also in the region of the neck, shoulder or upper part of the back (27.4% and 17.6% respectively). There was no difference between genders for the prevalence of lower back pain (21.2% and 21.4% respectively) (21).

According to research done on, 392 office workers of the Ahvaz Jundishapur University of Medical Sciences Out of 392 individuals, Most signs were in the back region 51% and then in the neck region 36.7% (22).

According to a study done in Massachusetts, the total incidence of nerve injuries within 90 days of upper or lower-limb trauma was 1.64%. The category of limb trauma with the highest rate of nerve injury was a crush injury (1.91%). 49% of the samples were selected on the basis of a limb dislocation, which had an associated nerve injury (1.46%). A lower-limb fracture resulted in a

nerve injury 1.77% of the time. Nerve injury to any peripheral nerve in the upper limb was associated with a wound of the upper limb, at a rate of 1.85%. Fractures of the pelvis had a concomitant nerve injury to the sciatic, femoral, or lumbosacral plexus at a rate of 1.76%, whereas humeral fractures were associated with radial or ulnar nerve injuries at a rate of 1.03%. This study reported that the prevalence of peripheral nerve injury was as follows: Brachial Plexus 0.03 %, Radial or ulnar 1.03%, Median 0.87%, Sciatic 0.89%, Peroneal or Tibial 0.47%, Peroneal or Tibial 0.07% and Sciatic, lumbosacral plexus, or femoral 1.76% (23).

According to retrospective study done in Swedish Hospital, Sweden, the majority of the top 15 peripheral nerve injuries were on the upper extremity level, and it was also evident that hand level injuries were the most common peripheral nerve injuries. Injury of the radial nerve at wrist and hand level (262 cases) and multiple nerves (178 cases) were also represented in the top 15 injuries. Injury of brachial plexus; 613 cases stands out as the only injury not at the hand level to have more than 500 reported cases during the study period. Injury of the ulnar, median, radial, and cutaneous sensory nerves at the forearm level and injury of the radial nerve at the upper arm level were also among the top 15 injuries. Only 2 lower extremity nerve injuries were among the 15 most common. Injury of the peroneal nerve at the lower leg level; 271 cases and injury of the sciatic nerve in the hip and thigh level were 128 cases. Injury of facial nerve; 182 cases were the only cranial nerve in the top 15 (24).

A cross sectional population survey carried out in London on 312 stated that 160 (51%) people reported shoulder pain. The one month period prevalence ranged from 31% to 48% (25).

A cross-sectional study of 2086 subjects from National Capital Region (NCR) in India reported that prevalence of overall MSD symptoms was 25.9%, Pain in back (14.0%), limbs (5.5%) and knees (3.1%) were found to be the most common. Backache (lower/upper) was responsible for more than 50% of the total morbidity (26).

A retrospective study in Saudi Arabia Trauma Center conducted on 591individual finds that Bilateral femoral fractures (5.9%) and femoral neck fractures (4.6%) were more among male patients, whereas acetabular fractures (6.9%) were more among female patients, whereas fracture of neck of femur (6.9%) and tibia (15.5%) were more among patients aged from 30 to < 60 years (27).

According to a retrospective descriptive hospital-based study conducted in Iran, for one year multiple traumas were observed in about 25% of the victims. Leg (tibia and fibula) (37.6%) and forearm (radius and ulna) (19.3%) had the most frequent fractures. Shoulder dislocations were the most common joint dislocations, accounting for 2.7% of the cases. (7).

According to prospective case series performed on the patients admitted to the Shafa Yahyaian Hospital through the emergency ward within 6 months on 1287 patients with upper limb fracture. About 113 patients suffered injuries at shoulder joint or its surrounding bone. The most common traumatic mechanisms in this group included falls from the standing position (49.2%), direct hit (19.5%), and then falling down (12.58%). Humerus fractures were observed in 68 patients. (28).

According to a retrospective study, which involved records of all patients who presented for radiographic examination at Celian Clinic, Ughelli, between July 2013 and July 2014, 216 bone fracture cases were reviewed. The majority of the fractures were observed in the femur, and least in the patella. Road traffic accident (RTA) was observed to be the leading cause of bone fractures, fractures were observed to occur more in the lower extremity with the femur being the most fractured bone accounting for 49 (22.69%) followed by the tibia/fibula 37 (17.13%). The most fractured bone in the upper extremity was the humerus 28 (12.96%) followed by the clavicle with 20 (9.26%) of the fractures. Skull fractures accounted for 8 (3.70%), mandible 2 (0.83%). The radius constituted 6 (2.78%), while 2 (0.93%) of the fractures occurred in the ulna. The study also showed that 4 (1.85%) phalangeal fractures, 2 (0.93%) spinal, 25 (11.57%) Tibial and 8 (3.70%) fibula fractures were observed during the period. The foot comprised 4 (1.85%), the pelvis 3 (1.39%) and the ribs 9 (4.17%) of the entire fractures respectively.

The least fractured bone was the patella with a single case recorded accounting for (0.46%) of the total fractures studied. The femur was the most fractured long bone with 19 (38.78%) (29).

A systematic review done in Cabrini Monash University, Monash, Victoria, Australia on the prevalence of neck pain reported that, the overall prevalence of neck pain in the general population ranges between 0.4% and 86.8% (mean: 23.1%); point prevalence ranges from 0.4% to 41.5% (mean:14.4%) and 1 year prevalence ranges from 4.8% to 79.5% (mean: 25.8%). Prevalence is generally higher in women, higher in high-income countries compared with low- and middle-income countries and higher in urban areas compared with rural areas (30).

According to a cross-sectional analysis in the community-based Johnston County Osteoarthritis Project, on a cohort that is representative of the U.S. population; utilizing data from 1,672 Shoulder symptoms were reported by 12.8% of participants, while 8.2% reported neck symptoms, and 12.6% reported symptoms in both sites (31).

A cross-sectional study conducted in Saudi Arabia at a government institution stated that the prevalence of neck pain was 113(24.1%) in the past week and 265 (56.5%) in the past year. There were 17 participants (3.6%) who claimed to have sustained trauma to the neck; 2(0.4%) were hospitalized because of neck pain. 62 (13.2%) of the participants claimed that neck pain affected their student life, in the form of frequent absences from school and difficulties in performing their usual duties. 31 (6.6%) had been seen by a physician, physiotherapist, or other health professionals for neck pain. There were 125 (26.7%) participants who claimed that neck pain occurred after a specific movement of the body and 190 (40.5%) claimed that neck pain occurred after prolonged sitting.

The prevalence of back pain was 190 (40.5%) in the past week and314 (67.0%) in the past year. Seventy participants (14.9%) claimed to have sustained some form of trauma to the back; 14 (3.0%) were even hospitalized because of back pain. There were 116 (24.7%) who claimed that back pain affected their life and 63 (13.4%) consulted a physician, physiotherapist, or other health professionals because of back pain. 33 participants (7.0%) claimed that back pain was accompanied sciatica.

The prevalence of shoulder pain was 120 (25.6%) in the past week and 214 (45.6%) in the past year. Of these, 34 (7.2%) claimed to have sustained trauma to their shoulder, and 7 (1.5%) were hospitalized because of shoulder pain. 53 participants (11.3%) claimed that shoulder pain affected their life and performance of daily duties. 32 participants (6.8%) consulted a physician, physiotherapist, or other allied health professionals. There were 103 (22.0%) students who claimed to participate in activities that required lifting heavy load overhead. There were 118 (25.2%) students that participated in activities that included vibration or repetition of certain movements (32).

According to cross sectional study on 858 people aged 58 years living in the West of Scotland and on the same individuals four years later, aged 62 years. Joint pain was prevalent among survey respondents in the West of Scotland. For all joints, pain was more often reported by

women than by men, and this was most notable for reported pain in the hands. The most common type of joint pain among women was neck pain (36.6%) and among men was knee pain (30.6%). And the prevalence in each joint was as follows Neck pain 255 (29.7%), Back pain 255 (29.7%), Shoulder pain 219 (25.5%), Elbow pain 99 (11.5 %), Wrist pain 90 (10.5%), Pain in hands 192 (22.4 %), Hip pain 158 (18.4 %), Knee pain 275 (32.1%), Pain in ankles 124 (14.5%) and Pain in toes 128 (14.9%) (33).

According to cross-sectional higher institution based study in TASH Ethiopia on 422 adult patients with major fracture/s on the limbs. Pathological fractures were encountered only in 2 (0.5%) patients. Nearly half (202, 48%) of the traumatic fractures were due to road traffic accidents. The highest frequency of fracture occurred on the femur (68, 15%), tibiofibular bones (63, 14%) and the humerus (61, 13.5%). The transverse fracture pattern was seen in about half of the fractures. Compound fracture occurred in 90 (21.3%) of the cases. 34 (7.6) of the fractures involved the hand and only 13 (2.9%) involved the foot bones (34).

3. OBJECTIVE

3.1.General objective

- ✓ To determine the anatomical profile of neurological and musculoskeletal disorder among patients attending physiotherapy unit of TASH Ethiopia 2018.

3.2.Specific Objective

- ✓ To describe the most affected Anatomical region.
- ✓ To describe the most affected Anatomical structure.
- ✓ To identify the common causes of musculoskeletal and neurological disorders.

4. MATERIALS AND METHODS

4.1. Study Area and Period

The study was conducted from May 1 to June 30, 2018 in TASH, which is a teaching hospital of the Addis Ababa University. It is located in Ethiopia capital city, Addis Ababa. It is the largest general public hospital and one of University Hospitals in the country. The medical faculty, now the school of medicine, is the oldest and the largest among the health training institutions in the country and staffed by the most senior specialists.

The TASH provides a tertiary level referral treatment and is open 24 hours for emergency services. The hospital is administered by AAU and is the largest and oldest teaching hospital among all in Ethiopia providing teaching for about 300 medical students and 350 Residents every year. The Black Lion hospital offers diagnosis and treatment for approximately 370,000-400,000 patients a year. The hospital has 800 beds, with 130 specialists, 50 non-teaching doctors. The emergency department sees around 80,000 patients a year. It offers services in general and specialty levels, including Internal Medicine, Pediatrics and Child Health, Neonatal Intensive Care Unit (NICU), Surgery, orthopedics, physiotherapy Gynecology& Obstetrics, Neurology, Urology, Psychiatry, Ophthalmology, Dermatology, Dentistry, Radiology, Pathology, Laboratory and Pharmacy services(35).

4.2. Study period

The study was conducted retrospectively from May 1 up to June 30, 2018

4.3. Study design

Hospital based retrospective cross sectional study was carried out on the hospital charts of all patients visited physiotherapy unit of this hospital.

4.4. Population

4.4.1. Source population

All neurological and musculoskeletal patients visited physiotherapy unit of Tikur Anbessa Specialized Hospital.

4.4.2. Study population

All neurologic and musculoskeletal patients visited physiotherapy unit of Tikur Anbessa specialized hospital from January 1 – December 31, 2017 and that fulfill the inclusion criteria.

4.5. Inclusion and Exclusion criteria

4.5.1. Inclusion criteria

- ✓ All neurologic and musculoskeletal patients who visited the physiotherapy unit of TASH during the study period were included.

4.5.2. Exclusion criteria

- ✓ Neurologic and musculoskeletal patient's chart that had incomplete data greater than 20% of the variables was excluded.
- ✓ Neurologic and musculoskeletal patient's chart which was lost from record office at the time of data collection was excluded.

4.6. Sample Size determination and Sampling Technique

4.6.1. Sample size determination

There is no study conducted so far in Ethiopia that assesses the anatomical profile of neurologic and musculoskeletal disorders among patients. Therefore the estimated prevalence of these disorders was 50%. And the sample size required for this study was determined by using single population proportion formula

$$n_i = \frac{(Z\alpha/2)^2\, p\,(1-p)}{d^2}$$

Where:

ni= minimum sample size required for the study

Z= standard normal distribution (Z=1.96), CI of 95% = 0.05

P= prevalence of musculoskeletal and neurologic disorder in the hospital; Hence; p=50 % (0.5) was used

d=Absolute precision or tolerable margin of error= 5 % (0.05)

$$n_i = \frac{(1.96)^2 \times 0.5\,(1-0.5)}{(0.05)^2} = 384$$

The total population was 4662 (adult-3,528 (75%), pediatrics= 1,134 (25%)) which is less than 10,000 therefore by using a correction formula the final sample size was:

$$\text{n final} = \frac{n}{1+n/N} = \frac{384}{1+\frac{384}{4662}} = 355$$

By proportional allocation 89 samples were taken from pediatrics and 266 was taken from adults.

4.7. Sampling Procedure

The Medical Record Number (MRN) of all patients was collected from physiotherapy unit Health Management Information System (HMIS) registration book of the hospital within the study period. It was collected in two categories as pediatrics and adult. The MRN of all patients was assigned a consecutive number according to registration date in HMIS. Then a Systematic random sampling method was used to take samples MRNs in each age group. Skip interval (K=13) was obtained by dividing the total number of the population by the total sample size. Every 13th MRN was selected for the sample size and the initial starting MRN was identified by a lottery method to take sample systematically in each group. After taking sample MRNs by systematic random sampling method, the card was searched from patient's chart room by card room staffs.

4.8. Study variables

4.8.1. Dependent variable

- Anatomical profile of neurological and musculoskeletal disorders.

4.8.2. Independent variables

- Age
- Sex
- Address
- Affected anatomical region
- Affected anatomical structure
- Cause of the disorders

4.9. Definitions of terms and operational definitions

Anatomical profile: description of the anatomical characteristics of disease condition by anatomical region or structure.

Musculoskeletal disorder: disease condition which affects the musculoskeletal system.

Neurological disorder: disease condition which affects the nervous system.

Trauma: a body wound or shock produced by sudden physical injury, as from violence or an accident.

Anatomical region: Compartmentalization of human body into 9 regions, namely CNS, Head, Neck, Upper limb, Lower limb, Abdomen, Pelvis/perineum, back and PNS

Anatomical structures: A particular complex part of human body organ or tissue.

Brachial plexopathy: is a neurological affliction that causes pain or functional impairment of the ipsilateral upper extremity. It may result from medical conditions and from violent stretching, penetrating wounds, or direct trauma.

Growth and developmental delay: refers to when a child's development lags behind established normal ranges for his or her age.

4.10. Data Collection tool and Procedures

Data was collected using structured checklist which was adapted from previous literature. First MRNs were obtained from the HMIS registration book through systematic random sampling method to get the main file of the patient from the patient's chart room. Next in the patient's chart room; from the main card the necessary details were sought in terms of age, sex, anatomical region, anatomical structure and causes of disorders. Finally, based on the eligibility criteria of the study, a card which had variables for the study was used. Then; all variables were collected from the main card information. Five trained BSc degree nurses were assigned to collect the data from medical cards and two BSc degree nurses were supervising data collectors in the process of data collections. Timely supervision was undertaken by the principal investigator (PI) during the data collection period.

4.11. Data quality control

To maintain data quality, training was given for data collectors and for supervisors for 2 days. Properly designed data collection materials were developed. The supervisors were cross-checked the record for omission and error daily and adjustment (editing or cleaning) was done before storage and analysis.

4.12. Data analysis and Interpretation

The data were checked after each data collection for its completeness and it was entered into EPI-Data version 4.2 and analyzed using SPSS version 21. For categorical data, descriptive statistics like frequency and percentage were computed and presented by of tables, bar graphs and pie chart. Continuous variables were summarized using mean, median, mode and standard deviation. Chi-square ($\chi 2$) test was applied to see if there was any association between the different categorical variables. A statically significant association was declared at p-values <0.05.

4.13. Ethical consideration

Ethical clearance was obtained from Department Research and Ethics Review Committee (DRERC) of Addis Ababa University, medical faculty, anatomy department. Then this ethical clearance and cooperation letter was sent to the TASH outpatient department director to obtain consent to perform data collection. The raw data obtained was secured and was not accessed by anyone except the Principal investigator.

4.14. Dissemination of the results

The findings of the study will be submitted to the School of health science, AAU and it will be communicated to TASH. For broader dissemination, the manuscript will be submitted to one of the journals for publication.

5. RESULT

5.1. Socio-demographic characteristics

The total number of neurologic and musculoskeletal patients visited physiotherapy unit of Tikur Anbesa Specialized Hospital from January 1 – December 31, 2017 were 4662. Among these 355 charts were selected for this study. However, only 342 charts were completely fielded. Therefore, in this study the data obtained from 342 charts were analyzed. From the total charts reviewed 192 (56.1 %) were male and 150 (43.9 %) were female resulting in a male to female ratio of 13:10. The patient's age ranges from 2/12 to 85 years with a mean age of 34.7 years and a standard deviation of ±21. 2 years. The median and the mode of the participant's age were 35 and 50 years, respectively. Most 84 (24.6%) of the patients were between the age group of 45 and 59 followed by 30-44 81 (23.7 %) and 0-14 78 (22.8 %) and the least were patients whose age were ≥ 75 9 (2.6%) year. Most 249 (72.8 %) of the patients were from Addis Ababa and 65 (19%) were from Oromia followed by 13 (3.8%) from the Amhara region (Table1).

Table 1: Socio-demographic characteristics of neurological and musculoskeletal patients who visited physiotherapy unit of TASH

Variable		Frequency	Percentage
Sex	Male	192	56.10%
	Female	150	43.90%
Age	0-14	78	22.80%
	15-29	55	16.10%
	30-44	81	23.70%
	45-59	84	24.60%
	60-74	35	10.20%
	≥ 75	9	2.60%
Address	Addis Ababa	249	72.80%
	Oromia	65	19.00%
	Amhara	13	3.80%
	SNNP	10	2.90%
	Dire Dawa	2	0.60%
	Hareri	3	0.90%

5.2. Affected anatomical region and structure

In this study, concerning the prevalence of disorders among patients visited the physiotherapy unit of TASH, neurologic disorders were 55.3% and among these 61%were males and 39% were female, hence, neurologic disorders were the commonest reason by which patient's visit TASH. Musculoskeletal disorders were the second most prevalent, accounting for 38.6% of total patients. Among these, 51% were male and 49.2% were female and the rest of disorders were GDD. (Figure 1).

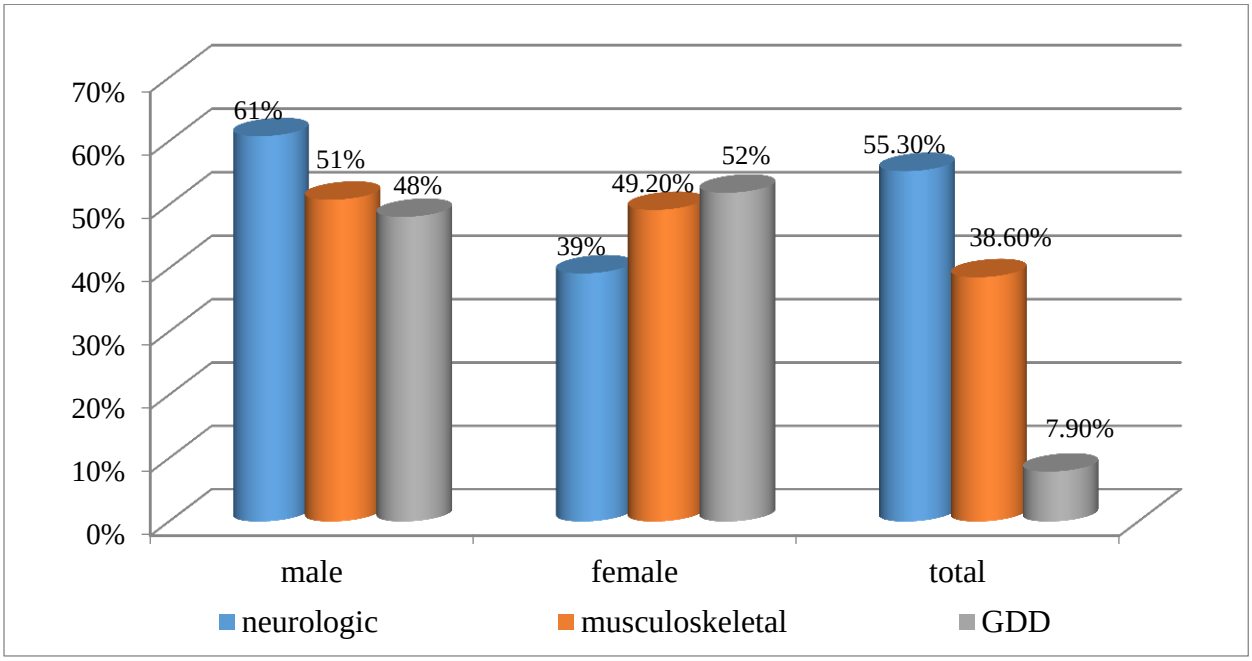

Figure 1: The distribution of neurological and musculoskeletal patients who visited Physiotherapy unit of TASH.

Regarding the affected anatomical region in the present study, among studied anatomical regions, the most affected region was lower limb 109 (31.9%), out of which 55 (28.60%) were male and 56 (37.30%) were female. And the second most affected was back 67 (19.6%) out of which 26.0% were male and 19.3% were female. The third commonly affected body part was the upper limb 59 (17.3%) and neck, pelvis and perineum 5 (1.5) and Head 1 (0.3 %) were among the least affected body regions (Table 2).

Table 2: The magnitude affected anatomical region of neurological and musculoskeletal patients who visited Physiotherapy unit of TASH

Variables	Frequency	Percent
Head	1	0.3
Neck	5	1.5
Upper limb	59	17.3
Lower limb	109	31.9
Pelvis and perineum	5	1.5
CNS	55	16.1
Back	67	19.6
PNS	14	4.1
Mixed	27	7.9
Total	342	100

Note: CNS-Central Nervous System

PNS-Peripheral Nervous System

Figure 2 shows that central nervous system was the commonly affected anatomical region in all age groups; However, The CNS was, specially, the most affected region in 0-14 year age group 28%. The lower limb was another commonly affected region and it was most common in the 30-44 years age group (51%). Back problem was more in older age groups.

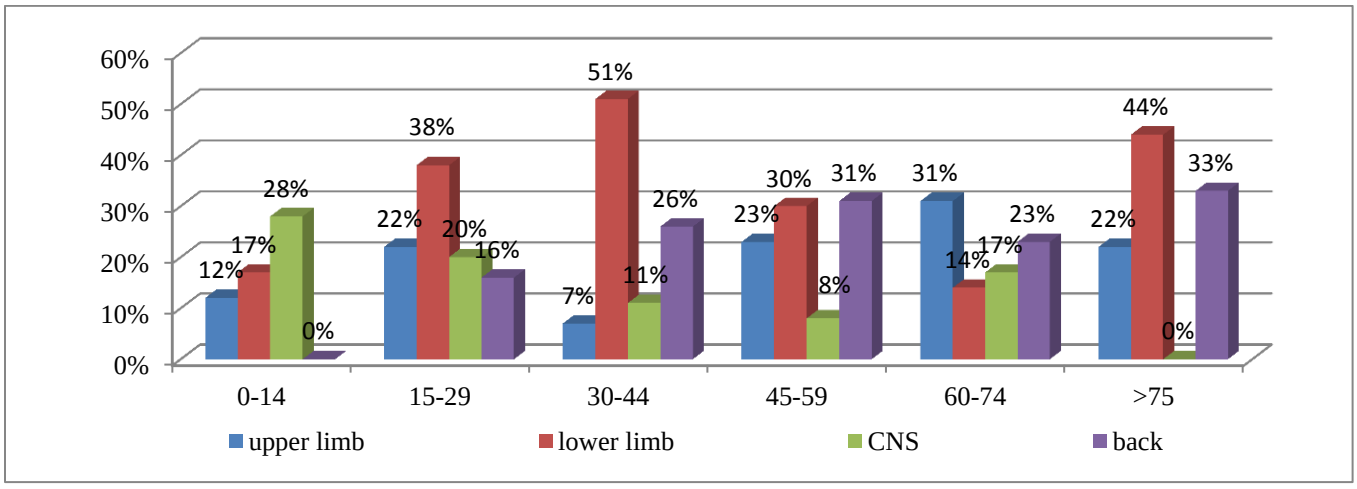

Figure 2: The distribution affected body region by age group of neurological and musculoskeletal patients who visited Physiotherapy unit of TASH

Regarding the affected anatomical structures in this study; the most commonly affected anatomical structure was IVD 88 (27.9%). Bone 66 (19.3 %) and joint 55 (17.5%) were the second and the third commonly affected structures respectively. In this study muscle was the least affected structure (Table 3).

Table 3: Magnitude of the affected structure of neurological and musculoskeletal patients who Visited Physiotherapy unit of TASH

Structure affected	Frequency	Percent
Bone	65	20.6
Joint	55	17.5
Nerve	47	14.9
Brain	41	13
IVD	88	27.9
Spinal cord	15	4.8
Muscle	4	1.3
Total	315	100

Concerning the distribution of the affected anatomical structures within different age groups as it is shown in Figure 3 even though IVD was commonly affected anatomical structure among most of the age group, it was the most commonly affected anatomical structures among the age group of 60-74 (47%).

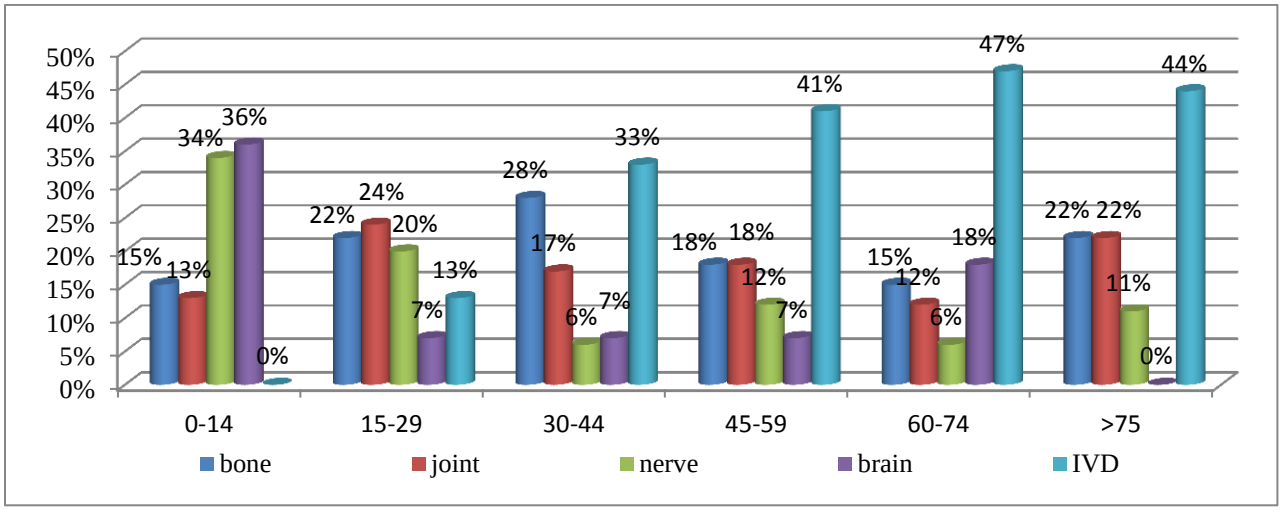

Figure 3: Structure affected by age of neurological and musculoskeletal patients who visited Physiotherapy unit of TASH.

Among the injured bone studied in this study; the three most affected bones were tibia 16 (24.2 %), femur13 (19.7 %) and radius 8 (12.1 %). And Followed by fibula 6 (9.1 %), patella 5 (7.6 %), and metacarpal bones 5 (7.6 %) being 4^{th}, 5^{th} and 6^{th} respectively. Clavicle, tarsal, metatarsal, sacral and vertebral bones were among the least affected 1 (1.5) (Table 4).

Table 4: The magnitude of the affected bone of musculoskeletal and neurological patients who visited Physiotherapy unit of TASH

Affected bone	Frequency	Percent
Clavicle	1	1.50%
Humerus	3	4.50%
Radius	8	12.10%
Ulna	3	4.50%
Metacarpal	5	7.60%
Hand phalanges	2	3.00%
Femur	13	19.70%
Patella	5	7.60%
Tibia	16	24.20%
Fibula	6	9.10%
Tarsal	1	1.50%
Metatarsal	1	1.50%
Sacrum	1	1.50%
Vertebrae	1	1.50%
Total	66	100.00%

Among the affected joint studied in this study the knee joint (50.9%) was the mainly affected joint; while elbow joint and shoulder joint (18.2%) each were the second most affected and ankle joint (5.5%) was the least affected (Figure 4).

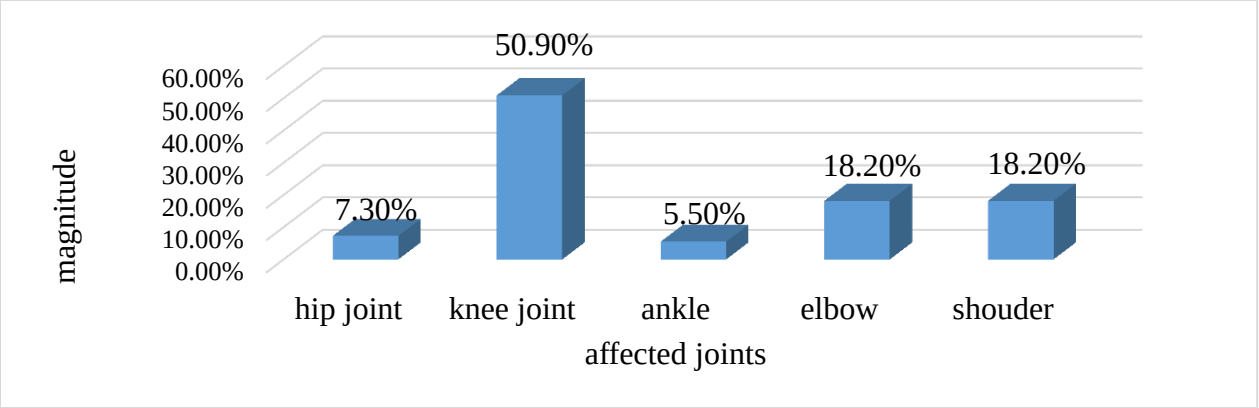

Figure 4: The magnitude the affected joint of neurological and musculoskeletal patients who visited Physiotherapy unit of TASH.

As it is described in the Table 7 among the affected nerves encountered in this study; the facial nerve was the only cranial nerve affected. Among the spinal nerves brachial plexus 8 (17.8 %) was the first. The sciatic nerve and its division fibular nerve 4 (8.9 %) each were the next. Radial 3 (6.7 %), Tibial 2 (4.4 %) and femoral nerve 1 (2.2 %) were among the least affected nerve (Table 5).

Table 5: The distribution of the affected nerve of neurological patients who visited Physiotherapy unit of TASH

Affected nerve	Frequency	Percent
Facial (cranial)	11	24.40%
Radial	3	6.70%
Sciatic	4	8.90%
Femoral	1	2.20%
Tibial	2	4.40%
Fibular	4	8.90%
Brachial plexus	8	17.80%
Multiple Peripheral nerves	12	26.70%
Total	45	100.00%

5.3. Causes of neurological and musculoskeletal disorder

Regarding the causes of neurological and musculoskeletal disorders 85 (24.9%) of disorders were caused by trauma and 257 (75.1%) of the disorders were non traumatic cause. Most of musculoskeletal disorders were caused by 85.9% traumatic and most 77.0% of neurologic disorders were caused by non-traumatic causes. Among traumatic cause of disorder RTA (45%) was the leading cause and falling (19%) was the second most common traumatic cause, penetrating injury (10%) and stick injury 18.1. While bullet injury (4%) and sport related (2%) activities were the least causes (Figure 5).

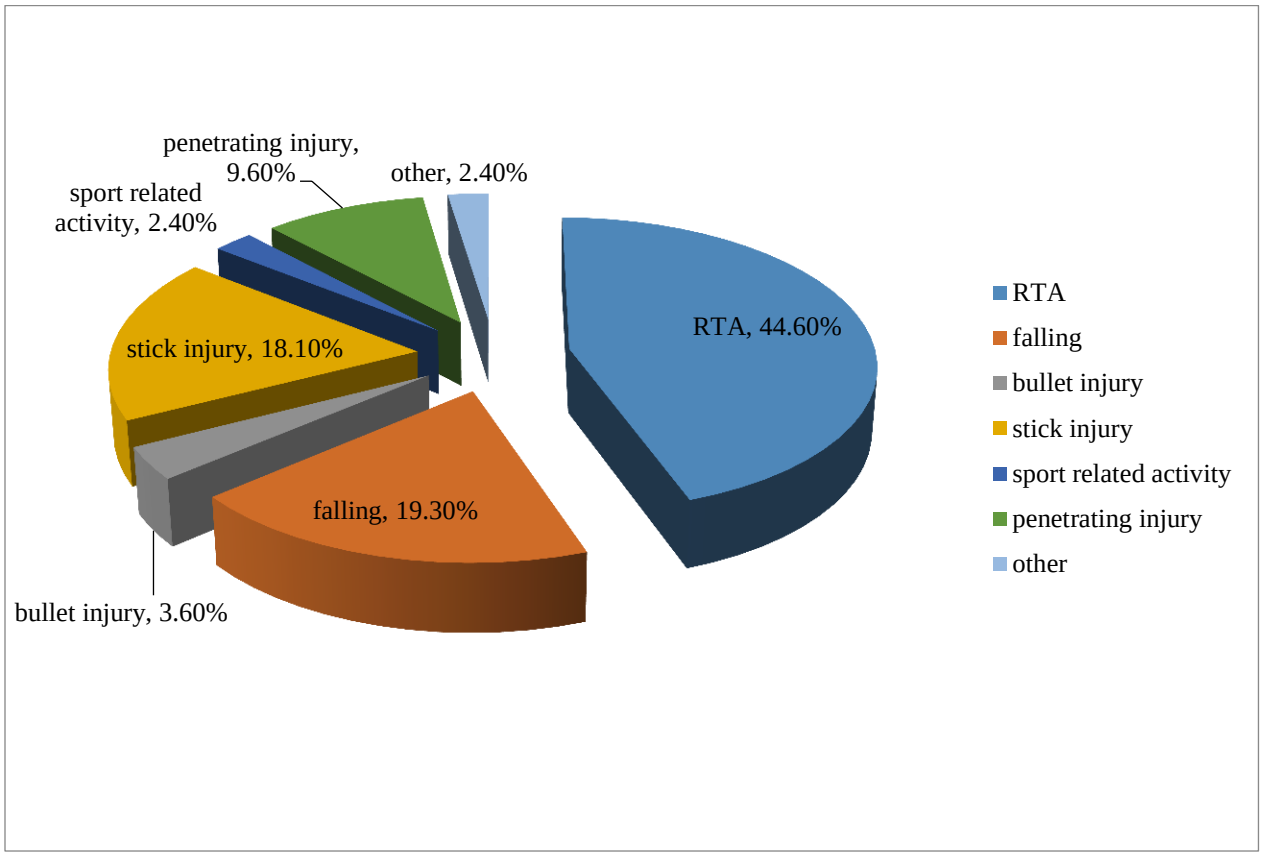

Figure 5: The distribution of traumatic causes of the disorders among neurological and musculoskeletal patients who visited Physiotherapy unit of TASH.

Regarding non-traumatic causes of neurologic and musculoskeletal disorders Degenerative Disc Disease (DDD) 93 Ostio Arthritis (OA) 31 and stroke 15 were the three most common non traumatic causes disorders in a physiotherapy unit of TASH. And Growth and Developmental Delay (GDD) 25 GBS 11 and CP 8 were the first three most common non traumatic causes of disorders among pediatric patients. Joint stiffness, frozen shoulder and cord compression were among the least common causes in both age categories (Table 6).

Table 5: The distribution of non-traumatic cause of the disorders among neurological and musculoskeletal patients who visited Physiotherapy unit of TASH

None traumatic cause	Age group		Total
	0-21	>21	
Stroke	6	15	21
GBS	11	1	12
PD	0	1	1
MS	2	0	2
OA	1	31	32
GDD	25	2	27
DDD	1	93	94
Frozen shoulder	1	3	4
Neuropathy	5*	7	12
Joint stiffness	3	3	6
Joint contracture	0	3	3
CP	8	0	8
Myelopathy	2	3	5
Nerve palsy	3	7	10
Movement d/o	0	5	5
Cord compression	1	1	2
Infection	3	3	6
Total	72	178	250

Note: * Symbol represents brachial plexopathy for pediatrics.

The association of the causes of disorders and some other selected variables by chi square analysis is shown in Table 7. As shown in the table there was a statistically significant difference between the causes of disorders and age group and affected body part with p-value of 0.045 and <0.001 respectively, and some anatomical structures like bone, joint, brain and IVD with p value of <0.001, 0.019, <0.001 and <0.001 respectively.

Table 6 Association of selected variable of neurological and musculoskeletal patients who visited Physiotherapy unit of TASH

Variables		Causes of disorder		Total	P-value
		Trauma	Non trauma		
Sex	Male	44 (22.9%)	148 (77.1%)	192(100%)	0.348
	Female	41(27.3%)	109 (72.1%)	150(100%)	
Age group	≤21	16(17.2%)	77(82.8%)	93(100%)	0.045
	>21	69(27.7%)	180(72.3%)	249(100%)	
Body part	Extremity	79(47%)	89(53%)	168(100%)	0.000
	Non-extremity	6(3.4%)	168(96.6%)	174(100%)	
Affected anatomical structure					
Bone	Yes	64 (97%)	2 (3%)	66 (100%)	0.000
	No	21 (7.6%)	255(92.4%)	276(100%)	
Joint	Yes	7(12.5%)	49(87.5)	56(100%)	0.019
	No	78(27.3%)	208(72.7%)	286(100%)	
Nerve	Yes	10(20.8%)	38(79.2%)	48(100%)	0.487
	No	75(25.5%)	219(74.5%)	294(100%)	
Muscle	Yes	1(25%)	3(75%)	4(100%)	0.995
	No	84(24.9%)	254(75.1%)	338(100%)	
Brain	Yes	1(2.5%)	40(97.5%)	41(100%)	0.000
	No	84(30.6%)	190(69.3%)	274(100%)	
IVD	Yes	1(1.1%)	87(98.9%)	89(100%)	0.000
	No	84(33.1%)	170(66.9%)	254(100%)	

Note: Extremity –upper and lower limb

Non extremity - body parts other than upper and lower limb

6. DISCUSSION

This study was conducted one year, retrospectively, on three hundred forty two neurological and musculoskeletal cases in the physiotherapy unit of Tikur Anbessa specialized Hospital. The finding of this study indicates that most of the patients in this unit were neurological patients (55.3%) followed by musculoskeletal disorders (38.6%).

All anatomical regions affected by musculoskeletal and neurological disorder were included in the present study. Among the affected anatomical region in this study, the most affected anatomical region was lower limb (31.9 %) while the second and the third were back (19.6 %) and upper limb 17.3% respectively. This finding is in line with the study conducted in Nigeria, which reported that, lower extremity injury was most commonly affected, with the femur being the most fractured bone accounting for (22.69%) followed by the tibia/fibula (17.13%) (30). The possible justification for this similarity may be due to the similarity in study design which is cross sectional retrospective and the RTA was the leading cause of injury for the study conducted in Nigeria and also for the present study. In addition, both studies were conducted in the general population.

However the finding of this study contradicts with the findings of the study conducted in the UK and India, which reported that, back was the most affected anatomical region (19, 26). The possible explanation for this inconsistency may be the large sample size included in their study compared to the present study.

Among anatomical structure affected by musculoskeletal and neurologic disorder the present study identify that, the most affected structure was IVD 27.9% it was also the commonest cause of back pain. This was followed by Bone 19.3 % and joint 17.5% which were the second and the third respectively. This finding is in agreement with A retrospective study conducted King Fahd Hospital of the University, Dammam, Saudi Arabia, which stated that (28.1%) of patients (5929) had spinal disorders (10). The possible reason for the similarity may be since both of the studies were conducted retrospectively and were institution based study based study.

In the present study, among the studied affected bones the first three commonly affected were tibia (24.2 %), femur (19.7 %) and radius (12.1 %). Clavicle, tarsal, metatarsal, sacrum and vertebral bone were among the least affected (1.5%). This finding is in line with the finding of A

retrospective descriptive hospital- based study in Iran, which indicate Tibial fracture was most common (37.6%) (8). The possible reason for this similarity may be, since both studies were hospital based and were conducted in the general population. On the other hand the finding of the present study is inconsistent with the finding of retrospective study conducted in Nigeria, which showed that, the femur is the most affected bone with a magnitude of 22.69% (29). The possible explanation for this difference may be, due to the study in Nigeria include only fracture cases compared to our study which include non-fracture cases. This finding is also in contradiction with the finding of a study conducted in TASH in 2009 which reported that the femur was the most affected bone (68, 15%) (34). The possible reason for this difference may be the former study include only adult major limb trauma.

In this study joint disorder was also a significant problem that made patients visit the physiotherapy unit. In the present study out of the patients with joint disorder, the knee joint was the most affected (50.9%) and osteoarthritis was a common cause of disorder while elbow joint and shoulder joint (18.2%) each were next to the knee joint. In addition to this ankle joint (5.5%) was the least affected joint. The finding of the current study is in agreement with Cross sectional study conducted on 858 people in the West of Scotland whose report indicate that knee joint was the most affected joint (32). The possible justification for this similarity may be due to the similarity in the study design.

Among the spinal nerve injuries assessed in this study brachial plexus (17.8 %) was the most affected and brachial plexopathy was the common cause. The sciatic nerve and its division fibular nerve (8.9 %) each were also commonly affected next to it. Radial nerve (6.7 %), Tibial nerve (4.4 %) and femoral nerve (2.2 %) were among the least affected nerve.

The findings of this study contradict with the study conducted in Massachusetts, which reported that Radial and ulnar nerve1. 03% were the most affected nerves (23). The possible explanation for this contradiction may be due to inclusion of pediatric patients in the present study.

In the present study, Facial nerve (24%) was the only cranial nerve that was affected. This finding is in contradiction with the finding of a study conducted in Nigeria, which reported that five patients (20.8%) had the 7th cranial nerve palsy (16). The possible reason for this difference may be due to the study in Nigeria was conducted only for cranial nerve injury in the eye clinic

compared to the present study which was conducted among general population in physiotherapy unit.

Out of all causes of musculoskeletal and neurologic disorder, the findings of this study identified that RTA (45%) was the leading cause among traumatic causes of disorder followed by falling (19%), penetrating injury (10%) and stick injury. In addition to these bullet injuries (4%) and sport related activities (2%) were among the least frequent cause of these disorders. This finding is in agreement with the findings of retrospective study conducted in Nigeria, which reported that RTA was the e leading cause of injury (29). The possible justification for this similarity may be due to the similarity in study design which is cross sectional retrospective and RTA was the leading cause of injury for the study conducted in Nigeria and also for the present study.

Concerning the non-traumatic cause of neurologic and musculoskeletal disorder the current study identified that degenerative disc disease (DDD) 93(37.6 %) Ostio arthritis (OA) 31(12.8 %) and stroke 15 were the three most common non traumatic causes adult patient disorders in physiotherapy unit of TASH. This finding is against to the finding of Community based cross sectional study conducted in Uganda which reported that peripheral neuropathy was the most common cause (9) It also contradicts with the finding of Cross sectional study conducted in the UK whose finding indicate that diabetic poly neuropathy was the common cause these disorders (12). The possible reason for this contradiction may be due to the difference in socioeconomic status and environmental factors in the present study and in the study done in the UK and Uganda.

7. Conclusion

The findings of this study showed that neurological and musculoskeletal disorders were common among patients attending physiotherapy unit of TASH. Among the affected anatomical regions, lower limb and back were the most affected. Inter vertebral disc and bone were the most affected anatomical structures. Road traffic accidents and Falling were also among the common traumatic causes of musculoskeletal disorders. On the other hand, Degenerative disc disorders, Ostio arthritis and stroke were among the non-traumatic causes.

8. Limitation of the study

- ✓ Since the study was conducted retrospectively, there were variables that were not studied that might have an influence on the causes of neurological and musculoskeletal disorders.
- ✓ Due to poor chart documentation of patient information in the study area, it was difficult to increase the scope of this study.
- ✓ This study was done in one hospital and data were collected over one year period retrospectively, so the findings may fail to reflect the true picture of neurological and musculoskeletal disorders in the general population.
- ✓ Since there was a shortage of literature related to this topic it was difficult to discuss the findings of this study.

9. Recommendation

Based on my finding I recommend the following things:

- ✓ Better safety measures have to be designed for children at home and at school and for an adult at workplace to protect them from falling injury.
- ✓ Future researchers have to do a nationwide prospective study on the risk factors and prevention of this disorder.
- ✓ Health professionals should properly collect and register Patient's medical information.
- ✓ Physiotherapy unit should be expanded and be well organized in terms of equipment and professionals across the hospitals in Ethiopia.

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ANNEX

Annex I: Checklist

Patient ID----------

1. Socio-demographic characteristics				
Question no	question	Choice	Code	Remark
101	Sex	Male	1	
		Female	2	
102	Age	0-14	1	
		15-29	2	
		30-44	3	
		45-59	4	
		60-74	5	
		≥75	6	
103	Address	Addis Ababa	1	
		Oromiya	2	
		Amhara	3	
		SNNP	4	
		Diredawa	5	
		Gambela	6	
		Afar	7	
		Benshangulgumz	8	
		somale	9	
		Tigray	10	
		Hareri	11	
		Other	12	

Part 2 Assessment of affected region structure				
201	What is type of disorder?	Neurologic	1	
		Musculoskeletal	2	
		Developmental	3	
202	What is the affected anatomical region?	CNS	1	
		Head	2	
		Neck	3	
		Upper limb	4	
		Lower limb	5	
		Abdomen	6	
		Pelvis and perineum	7	
		back	8	
		PNS	9	
		mixed	10	
		GDD		
203	What is the affected anatomical structure?	Bone	1	
		Joint	2	
		nerve	3	
		muscle	4	
		Brain	5	
		Spinal cord	5	
		IVD	6	

204	What is the affected bone?	Scapula	1	
		Clavicle	2	
		Humerus	3	
		Radius	4	
		Ulna	5	
		Carpal bone	6	
		metacarpal	7	
		Hand phalanges	8	
		Hip bone	9	
		Femur	10	
		Patella	11	
		Tibia	12	
		Fibula	13	
		Tarsal bone	14	
		metatarsal	15	
		Leg phalanges	16	
		Sacrum	17	
		Coccyx	18	
		Vertebrae	19	
		Cranial vault	20	
		Cranial base	21	
		Facial bone	22	
		Others (specify)	23	

205	What is the affected joint?	Hip joint	1	
		Knee joint	2	
		Ankle joint	3	
		Wrist	4	
		Elbow	5	
		Shoulder	6	
		Intervertebral	7	
		Temporo mandibular joint	8	
		Others	9	
206	What is the affected nerve?	Cranial (facial nerve)	1	
		Radial	2	
		Ulnar	3	
		Musculoskeletal	4	
		Median	5	
		Sciatic	6	
		Femoral	7	
		Tibial nerve	8	
		Fibular	9	
		Other (specify)	10	
204	What is the cause of illness?	Trauma	1	
		Non-trauma	2	

205	If it is traumatic cause what is it?	RTA	1	
		Falling	2	
		Penetrating injury	3	
		Bullet injury	4	
		Other	5	
206	What type of none traumatic cause is it?	Stroke	1	
		GBS	2	
		PD	3	
		MS	4	
		OA	5	
		GDD	6	
		DDD	7	
		Frozen shoulder	8	
		Neuropathy	9	
		Joint stiffness	10	
		Joint contracture	11	
		Transverse myelitis	12	
		CP	13	
		Myelopathy	14	
		Nerve palsy	15	
		Movement D/o	16	
		Cord compression	17	
		Infection	18	