



Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/10776

DOI URL: <http://dx.doi.org/10.21474/IJAR01/10776>



RESEARCH ARTICLE

PREVALANCE AND MANAGEMENT OF SCIATICA IN A TERITIARY CARE HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY

Laddunoori Mounika¹, Velpukonda Mounika¹, Chatla Sharanya¹, Gandra Pallavi¹ and Dr. Vema Kiran²

1. Sree Chaitanya Institute of Pharmaceutical Sciences, Karimnagar, Telangana, 505001.

2. Narsaraopet Institute Of Pharmaceutical Sciences, Narsaraopet, Andhrapradesh, 522601.

Manuscript Info

Manuscript History

Received: 10 February 2020

Final Accepted: 12 March 2020

Published: April 2020

Key words:-

Sciatica, Prevalence, Efficacy,
Management, Observational Study

Abstract

To assess the studies on Sciatica prevalence and management & discuss reasons for variation in estimates provides suggestions for improving accuracy of recording sciatica. Sciatica is a common cause of pain and disability.

Aims & objectives: To study the Prevalance and management of sciatica. To investigate the efficacy and tolerability of analgesic and adjuvants pain drugs typically administered in primary care for the management of patients with sciatica.

Methodology: An Observational study enrolled 712 patients in that 304 patients were diagnosed with sciatica was observed in Renee hospital, Karimnagar, Orthopedic Department. Sciatic pain severity and data collected by patient prescriptions and medical records and lifestyle habits, and also form designed to collect data regarding patient parameters (name, age, sex) & co-morbid conditions.

Results: Complete data were obtained for 304 patients. We had observed data by gender discrimination. Male had 36.18% and female had 63.82%. Female are more prone to sciatica pain compared to male. Based on time and duration of pain for 6 months maximum [i.e. 54.3%] followed by 88 patients [29.95%]. Based on the risk factors obesity [28%] is the major factor followed by smoking [25%].

Conclusion: In the present study prevalence of sciatica is more prone in female patients than the male patients in our study population. Generally age wise distribution, and gender discrimination yielded results.

Copy Right, IJAR, 2020,. All rights reserved.

Introduction:-

Sciatica:

A condition in which pain emanating from the lower back is felt along the distribution of the sciatic nerve in the lower extremity. It typically occurs from L5-S1 nerve roots caused by a non foraminal posterolateral L4-L5 and L5-S1 herniated disc, respectively is manifested as radiculopathy along the path of the affected nerves. Sciatica from the L5 nerve root spreads over the buttock, posterolateral part of the thigh, posterolateral part of the leg, passes over the instep and ends at the big toe. Sciatica from the S1 nerve root covers the buttock, posterior part of the thigh, posterior part of the leg, popliteal fossa area, heel, lateral edge of the foot, and radiates all the way to the little toe.^[1]

Corresponding Author :- Laddunoori Mounika

Address:- Sree Chaitanya Institute Of Pharmaceutical Sciences, Karimnagar, Telangana, 505001.

Sciatic nerve:

It is the thickest nerve in the body the main trunk of the sciatic plexus and carrying axons from spinal segments L4-S3 to the hip and lower extremities. It emerges from the pelvic cavity in the back of the hip through the greater sciatic foramen. The nerve is composed of 2 side-by-side components.

1. Tibial nerve
2. Common fibular nerve. ^[2]

Causes of sciatica:

The major causes of sciatica are:

1. Lumbar Bulging Or Herniated Disc
2. Lumbar Spinal Stenosis
3. Trauma
4. Spondylolisthesis
5. Piriformis Syndrome
6. Spinal Tumors
7. Obesity and Sciatica. ^[3]

Risk factors for sciatica:**Personal Factors:**

It includes – Age, Increasing risk with height, Smoking, Mental stress.

Occupational Factors:

Strenuous physical activity-for eg: Frequent lifting, especially while bending and twisting, driving including vibration of whole body.

Symptoms And Signs Of Sciatica:

Sciatica pain can vary widely, but some common symptoms are given below:

1. Some people have sharp pain in one part of the leg or hip and numbness in other parts.
2. The affected leg may feel weak and thin than other leg.
3. It may feel like middle tingling, dull ache or a burning sensation.
4. Pain that is worse when you lie down.
5. This episode of back pain has lasted longer than 4 week.

Indicators For Sciatica:

Unilateral leg pain greater than low back pain.

1. Pain radiating to foot or toes & numbness and paraesthesia in the same distribution.
2. Straight leg raising test induces more leg pain.
3. Localised neurology-that is limited to one nerve root. ^[4]

Diagnosis:**Examination:**

The following observations are made.

Posture:

The patient stands with a rigid, flattened lumbar spine. The whole trunk is shifted towards on the hips. The trunk is tilted to one side (sciatic tilt or scoliosis). The sideways tilt to exaggerate on attempted bending forwards.

Movements:

The patient is unable to bend forwards; any such attempt initiates severe muscle spasm in the paraspinal muscles.

Tenderness:

There is diffuse tenderness in the lumbo-sacral region. A localized tenderness in the midline or lateral to the spinous process is found in some cases. ^[5]

Tests for sciatic nerve root compression:

Straight Leg Raising (SLR) Test:

Raise the affected leg with the knee in extended position (while preventing knee flexion on the normal side), pain at 40degrees or less denotes positivity and it is suggestive of nerve compression.

Bragard Test:

Gentle dorsiflexion of the ankle precipitates further tension the nerve root on reaching the limit in straight leg raise test.

Lasegue Test:

First the thigh is lifted to 90degrees with knee bent. The knee is then gradually extended. If the nerve sheath is present will experience pain in the back of the thigh or leg and the pain radiates to the back.

Bowstring Sign:

After performing the Lasegue's test, apply firm pressure with the thumb over the posterior tibial nerve in the middle of the popliteal fossa over the hamstring tendon. Now, the posterior tibial nerve is stretched like a bowstring across the popliteal fossa causing pain locally and radiation to the back.

Flip Test:

The patient is seated on the edge of the couch with the hips and knees flexed to 90degrees. Gently extend the knee. When there is root irritation, the patient will flip backwards to relieve the tension on the nerve root. In the absence of root compression, full extension of the knee is possible.^[6]

Investigations:

Plain X-Ray:

In a case of chronic disc prolapsed, the affected disc space may be narrowed and there may be slipping of the vertebral margin posteriorly.

Myelography:

Following myelographic features suggest disc prolapse.

1. Complete or incomplete block to the flow of dye at the level of a disc.
2. An indentation of the dye column.

Root Cut Off Sign:

Normally the dye fills up the nerve root sheath. In cases where a lateral disc prolapsed is pressing on the nerve root, the sheath may not be filled.

CT Scan:

Normally, in an axial cut section, the posterior border of a disc appears concave. In a case where there is disc prolapsed, it will appear flat or convex. There will be loss of pre-theatal fat shadow normally seen between the posterior margin of the disc and theca.

MRI scan:

It shows the prolapsed disc, theca, nerve roots very clearly.

Electromyography(EMG):

Findings of denervation, localized to the distribution of a particular nerve root, helps in localizing the offending disc in cases with the multiple disc prolapse. This test is rarely required.

Treatment:

Principles of Treatment:

Aim of treatment is to achieve remission of symptoms, mostly possible by conservative means. Cases who do not respond to conservative treatment for 3-6 weeks, and those presenting with cauda equine syndrome may require operative intervention.

Conservative treatment:

This consists of the following:

Rest:

It is most important in the treatment of a prolapsed disc. Rest on a hard bed is necessary for 2-3 weeks.^[5]

Medications:**Pain Medications:**

It is a protective mechanism to which the body responds to harmful stimulus. Medications Used To Treat Pain Include:

Analgesics – Ex:

Acetaminophen-650mg, Tramadol-50-100mg.

Nonsteroidal anti-inflammatory drugs (NSAID'S):

Nonsteroidal anti-inflammatory drugs used to reduce inflammation and relieve pain. **Eg** - Aspirin-650mg, Ibuprofen-400mg, Naproxen-250-500mg, Celecoxib -100-200mg.

Muscle relaxants:

Diazepam, Cyclobenzaprine, Clonazepam, Baclofen can be used to treat pain associated with muscle spasms and spasticity.

Anticonvulsants:

It can be used to relieve nerve pain as in trigeminal neuralgia. It can be used to reduce the swelling and inflammation of the nerves.

Eg: Phenytoin-300mg, Clonazepam-1mg, Gabapentin-600-1200mg, Pregabalin-150-600mg.

Epidural Steroid Injections:

This procedure, usually performed under fluoroscopy, involves an injection of steroids and an analgesic numbing agent into the epidural space of the spine to reduce the swelling and inflammation of the nerves.

Facet Injections:

Facet injections are used for patients with low back pain stemming from inflammation or irritation of the facet joint. They may be performed using a fluoroscope (X-ray), which directs a needle through the skin and muscles to the path of the sensory nerves located in the facet joints. At that point, a mixture of numbing medicine and cortisone is injected into the facet joint.

Narcotics (Opioids):

Narcotics are very powerful pain relievers that actually deaden a person's perception of pain. They are used for a short period (2 to 4 weeks) after an acute injury or surgery.

Eg: Codeine-30-60mg, Meperidine-300mg, Oxycodone-5-10mg.^[3]

Surgical treatment:

Surgical intervention for sciatica focuses on removal of disc herniation and eventually part of the disc or on foraminal stenosis, with the purpose of eliminating the suspected cause of the sciatica. Consensus is that a cauda equina syndrome is an absolute indication for immediate surgery. Elective surgery is the choice for unilateral sciatica.

Indications For Operative Treatment Are:

1. Failure of conservative treatment
2. Cauda equine syndrome
3. Severe sciatic tilt.

The disc is removed by the following techniques:

1. Fenestration
2. Laminectomy

3. Hemi-laminectomy
4. Laminotomy^[5]

Physiotherapy:

This consists of

Hot Fomentation:

Heat dilates blood vessels, increasing the flow of oxygen and nutrients to the area, which assists in healing. Applying heat also stimulates sensory receptors in the skin, so the brain focuses less on the pain of sciatica.

Cold Packs:

A cold pack or ice application can reduce inflammation and numb sore tissue, alleviating some of the pain in the sciatic nerve.^[7]

Excercises For Sciatica:

Stretches:

Some simple exercises and stretches you can do at home can help ease pain from sciatica (pain in your buttocks, legs and feet) and improve your strength and flexibility.

Others:

1. Lumbar traction
2. Transcutaneous electric nerve stimulation (TENS)
3. Acupuncture

Complications:

If sciatica is left untreated, then the following complications may arise.

1. Loss of sensory feeling
2. Nerve damage
3. Loss of bladder control
4. Immobility {inability to move leg normally}
5. Leg injury that donot heal properly or recur.^[8]

Surgery Complications:

1. Wound healing
2. Nerve root lesions
3. Flat back syndrome
4. Cauda equina syndrome.

Life style modifications:

Self care measures can help relieve the symptoms of sciatica and also prevent recurrence.

Cold And Hot Packs:

Use alternate cold and hot packs to reduce swelling and relieve discomfort.

Regular Exercise:

Improves flexibility and helps prevent age-related degenerative changes.

Lift Objects Safely:

Always lift from a squatting position. Never bend over and lift with a straight back.

Avoid Sitting Or Standing:

For extended periods. If you sit at work, take regular breaks to stand and walk around.

Use Proper Sleeping Posture:

Take pressure off your back by sleeping on your side or on your back with a pillow under your knees.

Avoid Wearing High Heels:

Shoes with heels that are more than 1½ inches high shift your weight forward, throwing the body out of alignment.

Do Abdominal Crunches:

These exercises strengthen the abdominal muscles that help to support your lower back.

Stretch:

Sit in a chair and bend down toward the floor. Stop when you feel just slight discomfort, hold for 30 seconds, then release. Repeat six to eight times.

Walk/Swim:

Walking and swimming can help to strengthen your lower back.

Methodology:-

Study Site:

RENEE HOSPITAL, Karimnagar, 505001.

Study Design:

A Prospective Observational Study.

Study Period:

This study was carried out for a period of 6 months.

Study Criteria:

Inclusion criteria:

Participating patients that must have been diagnosed with sciatica or presented with any or all of the following symptoms such as radiating pain through the sciatic nerve distribution area, tenderness at the nerve stem, tingling and numbness. Positive Straight leg raise test.

Exclusion criteria:

Participants with back pain or low back pain but no symptoms of sciatica.

Source of Data:

Patient prescriptions and medical records were studied to obtain demographic details. Other information was asked verbally which includes lifestyle, working status, duration of condition, presence of other comorbid conditions (such as Thyroid problem), social habits (smoking, tobacco chewing etc.,).

Data from X-rays, MRI and CT scans.

Ethical Committee Approval:

The protocol of the study including the introduction, objectives, data collection form and methodology was submitted for approval of ethical committee members, the study was approved by Institutional Ethical Committee of Sree Chaithanya Institute of Pharmaceutical Sciences.

Study Procedure:

All the patients who are diagnosed with SCIATICA.

Patient: Data that can be collected includes demographic details (age, gender, and occupation), weight, height, social history (Smoking), past medical history (Trauma/any other surgeries), Duration of presenting pain, causes & pre-disposing factors, diagnostic reports (X-ray, MRI), Non-pharmacological, Pharmacological, Physiotherapy, Surgical treatment.

Data Collection Form:

Appropriate data collection form was designed to collect, document, analyse the data. Data collection form include the provision for collection of information related to all study parameters mentioned above like demographic details of patient (name, age, sex,), social history, Comorbid conditions like thyroid problems.

Results:-

The study “A clinic based observational study on Sciatica was conducted in RENEE Hospital, Karimnagar. A total number of 712 patients who visited hospital to orthopedic department, in that 304 patients were diagnosed with Sciatica having the symptoms of low back ache and pain radiating to lower limbs are participated in the study.

Distribution Of Patients According To Gender:

Table 1:- Gender Wise Distribution Of Patients.

Gender	Number of patients	Percentage
Male	110	36.18
Female	194	63.82

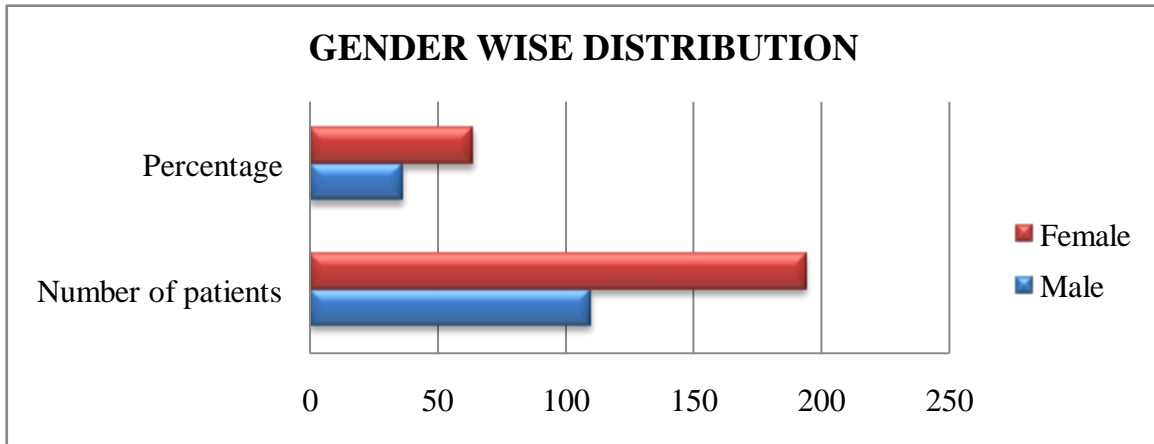


Fig 1:- Gender Wise Distribution Of Patients.

Out of 304 patients, 110 patients were male and remaining 194 patients were female and data was tabulated as shown above. Female patients [63.82%] suffering from sciatica are slightly higher than that of male patients [36.18%]. This states that prevalence of sciatica is more in female patients than the male patients in our study population.

Distribution Of Patients According To Age Criteria:

The study population was divided in to various groups according to their age .

Table 2:- Distribution Of Patients According To Age And Gender.

Age	Number of patients	Percentage
20-29	32	10.52
30-39	84	27.63
40-49	100	32.69
50-59	64	21.05
>60	24	8.0

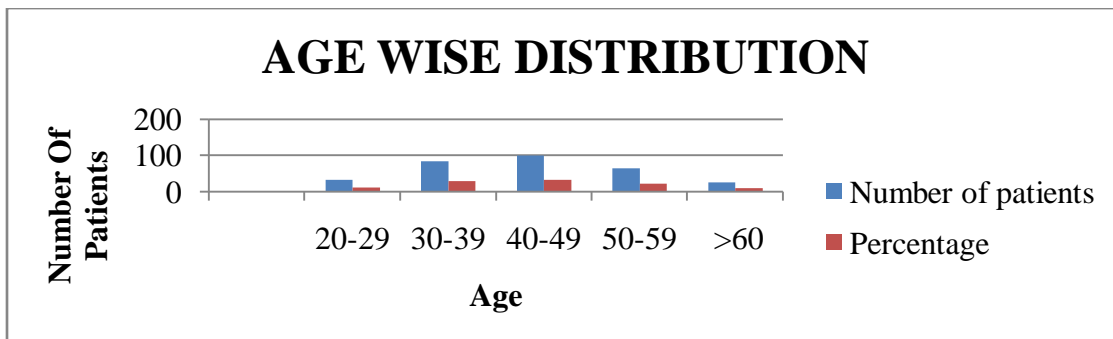


Fig 2:- Distribution Of Patients According To Age And Gender.

In the study population it was observed that both male and female patients were found to be maximum in the age group of 40-49 years [i.e.,32.69%], while 84 patients by the age group 30-39 years [i.e., 27.63%] and then followed by 50-59 age group is 21.05 %. The patients in the other age group were few. So, the maximum prevalence is seen in the 40-49 age group patients.

Distribution Of Patients According To Time And Duration Of Pain

Table 3:- Distribution Of Patients According To Duration Of Pain.

Duration of pain	Number of patients	Percentage
< 1 Week	167	54.93
1-6 months	88	29.95
More than 6 months	49	16.11

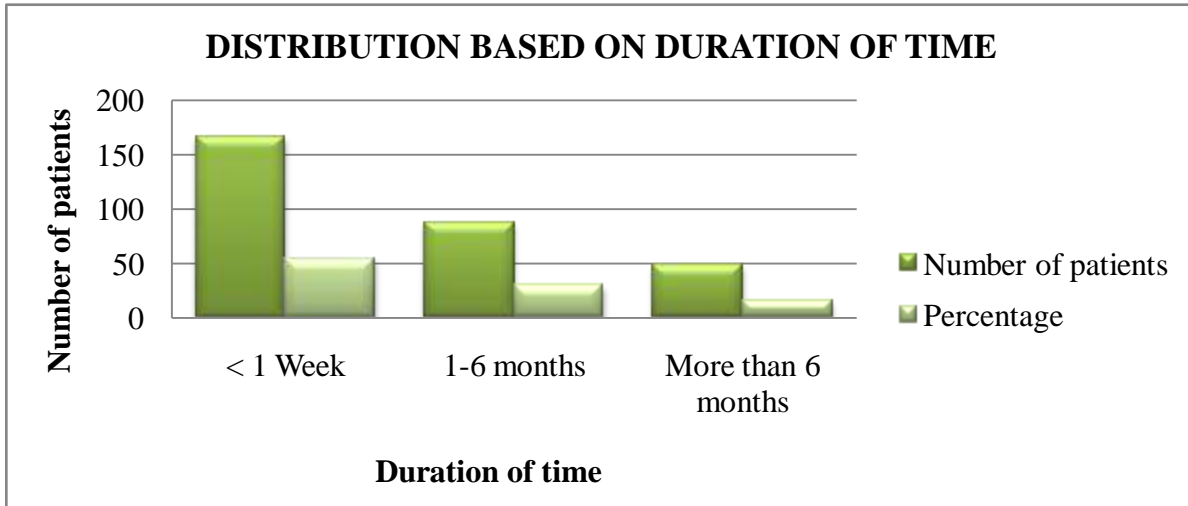


Fig.3:- Distribution Based On Duration Of Pain.

In the study population it was observed that the 167 patients with the duration of low back pain for less than 1 week is maximum [i.e.,54.3%], followed by 88 patients [29.95%] with the duration of pain for 6 months and the number of patients with the duration of pain for more than 6 months is 49 [16.11%] which is minimum.

Distribution Of Patients According To Risk Factors

Table.4:- Distribution Of Patients According To Risk Factors.

Risk factor	Number of patients	Percentage
History of trauma	104	34.22
Obesity	84	27.63
Smoking	76	25
Thyroid problems	40	13.15

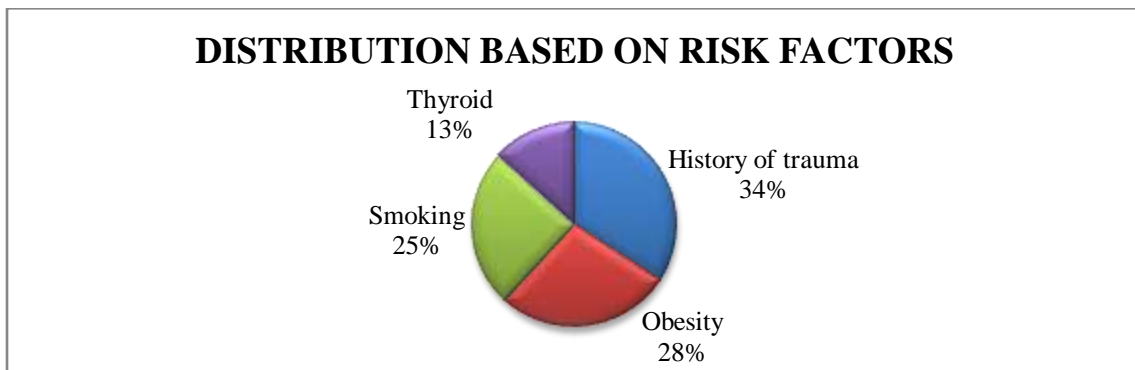


Fig.4:- Distribution Based On Risk Factors.

Overweight, smoking and history of trauma and thyroid problems seems to be the major risk factors in considerable number of patients. Out of 304 patients, 104 patients were having history of trauma (34.22%), followed by obesity (27.63%), then followed by smoking (25%) and thyroid (13.15%). A maximum prevalence is seen in the trauma and least prevalence is seen in thyroid patients.

Distribution Of Patients According To Assessment Of Severity

Table.5:- Distribution Of Patients According To Assessment Of Severity.

Severity	Number of patients	Percentage
Mild	36	11.84
Moderate	52	17.11
Severe	216	71.05

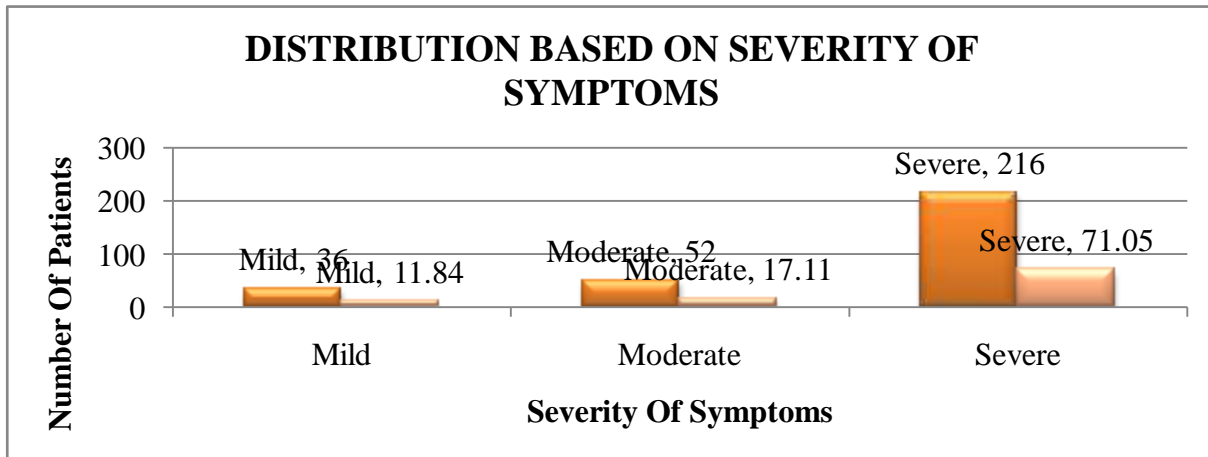


Fig.5:- Distribution Based On Severity Of Symptoms.

In the study, it was observed that the number of patients with the severe sciatica is 216 [i.e., 68.3%], coming to the assessment of moderate pain, the no. of patients are 52 [17.11%] and the no. of patients with mild pain are 27 [10.7%].

Distribution Of Patients Based On Diagnosis

Table.6:- Distribution Of Patients Based On Diagnosis.

Diagnosis	Number of patients	Percentage
X-RAY	76	25
CT SCAN	0	0
Both X-RAY and MRI	228	75

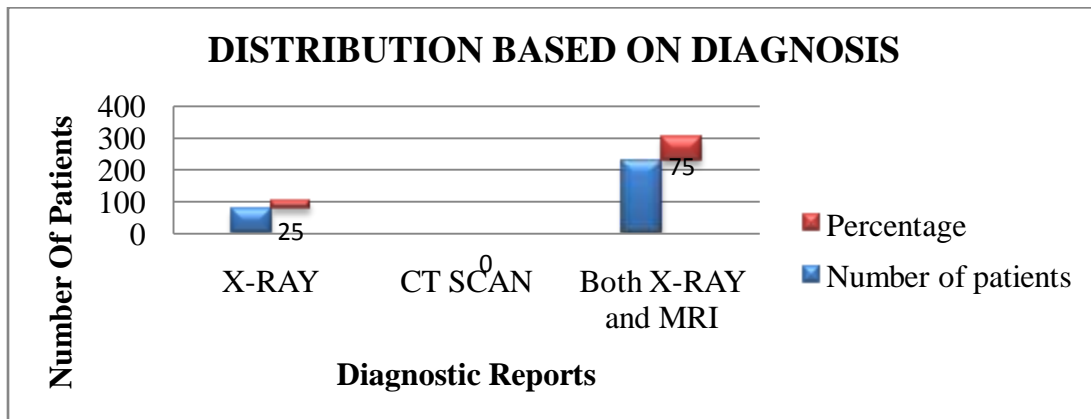


Fig.6:- Distribution Based On Diagnosis.

In the study, out of 304 patients 228 patients (75%) were diagnosed with MRI scan, followed by 88 patients with the x-ray (25%).

Distribution Of Patients According To Classes Of Drugs Prescribed

Table.7:- Distribution Of Patients According To Classes Of Drugs Prescribed.

Classes	Number Of Patients	Percentage
NSAIDS	304	100
Muscle Relaxants	304	100
Vitamin D	304	100
Calcium supplement	304	100
Methyl cobalamine	150	59.5

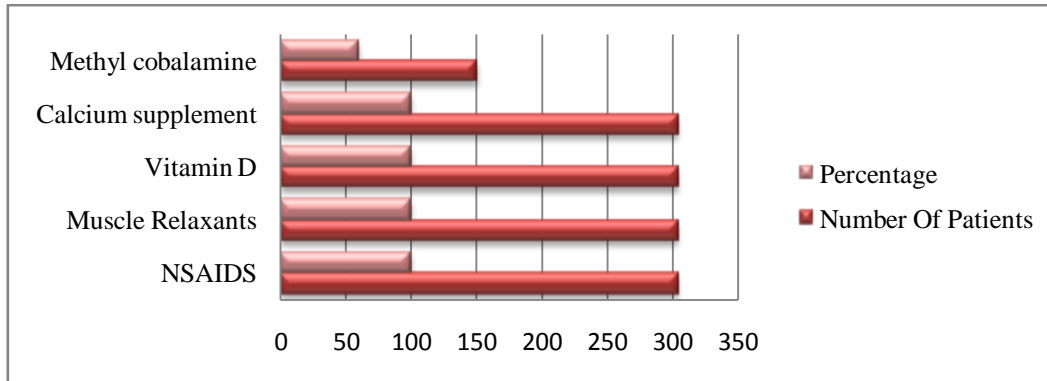


Fig.7:- Distribution Based On Classes Of Drugs Prescribed.

In the study population it was observed that NSAIDS is prescribed for every patient suffering with sciatica. NSAIDS inhibits PG’S, TXA2, and Prostacyclin thereby reducing pain and inflammation. Every patient is prescribed with vitamin D and calcium supplement. Vitamin D helps body absorb calcium, so without enough vitamin D, there won’t be enough calcium. Without enough calcium, bones can weaken, potentially leading to bone and joint pain, or musculoskeletal pain. Patients with sciatica due to sciatic nerve damage are prescribed with methyl cobalamine injection. A vitamin B12 supplement boost helps to ease pain by encouraging body to thicken its protective coating around the nerves, so they don’t “short circuit” and cause pain.

Distribution Of Patients Based On Surgery

Table.8:- Distribution Of Patients Based On Surgery.

TYPE OF SURGERY	NUMBER OF PATIENTS	PERCENTAGE
Laminectomy	9	15.15
Micro lumbar discectomy	48	82.7
Foraminotomy	1	1.85

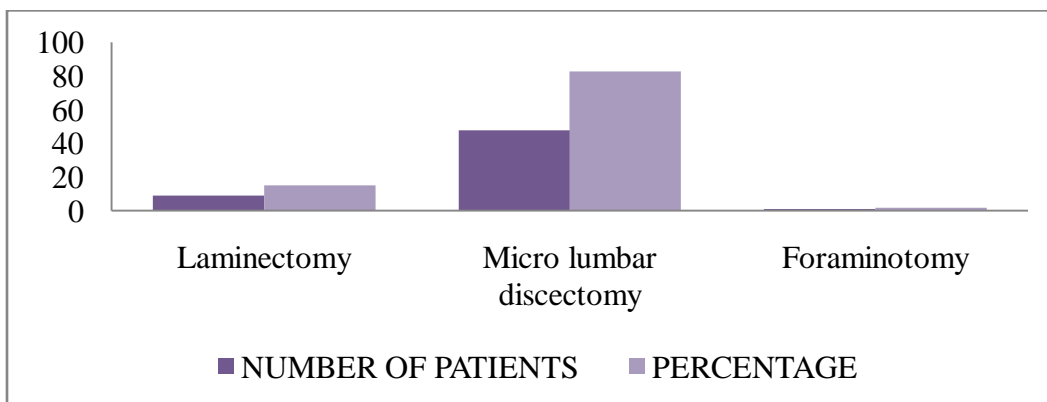


Fig.8:- Distribution Based On Surgery.

In the study population it was observed that about 58 patients had underwent surgery. About 48 patients [82.7%] had underwent MLD followed by 9 patients underwent Laminectomy (15.15). Very few patients had underwent foraminotomy.

Distribution Of Patients According To Complications

Table.9:- Distribution Of Patients According To Complications.

Complication	Number of patients	Percentage
Nerve root lesions	18	5.92
Wound healing	24	7.89
Flat back syndrome	12	3.9
Cauda equina syndrome	2	0.66

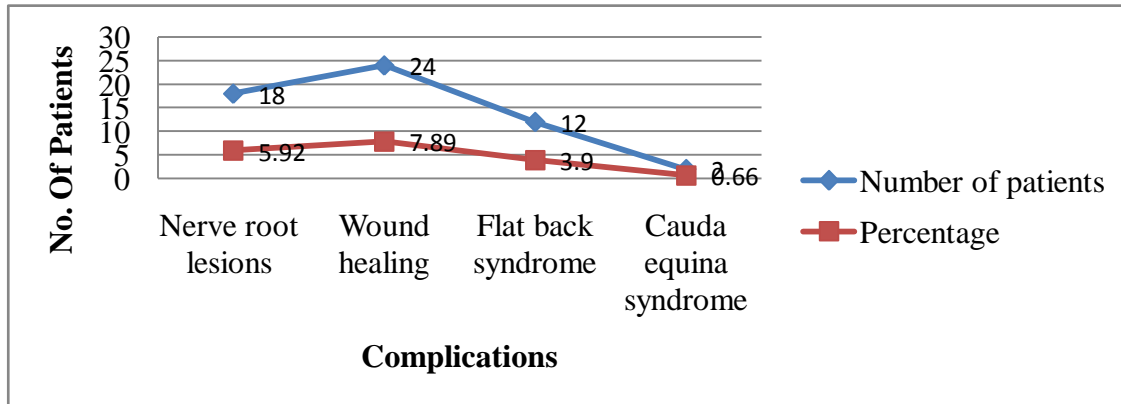


Fig.9:- Distribution Based On Complications.

In the study, majority of patients experiencing wound healing (7.89%) is maximum followed by patients who are having nerve root lesion (5.92%) then followed by flat back syndrome(3.9%). The patients suffering with cauda equine syndrome are very few.

Discussion:-

In this current study, total 712 cases were collected, among them 304 (42.7%) of the participants reported with sciatica. So, only 304 patients with sciatica are included and remaining cases were excluded. Out of 304 patients, 110 patients were males and remaining 194 patients were females. So in this study, the prevalence of sciatica was found to be more in female patients (63.82%) when compare to male patients (36.18%).

In this study population including both male and female, out of 304 patients 100 patients are between the age group of 40-49 years i.e, 32.69%. Maximum prevalence is seen in the 40-49 yrs age group patients. A low prevalence is seen in extreme age groups. Our results are not exactly but nearly comparable to LEENA KAILA-KANGAS etal, states that there is a chance of getting sciatica between 30-64 yrs of age in that physically demanding work in general is a risk factor for sciatica among men.^[9]

In this 304 patients, 104 patients were with the history of trauma, 84 patients were obese, 76 patients were smokers and remaining 40 patients were with thyroid problems. Maximum prevalence is seen in the trauma (34.22%) and least prevalence is seen in thyroid patients (13.15%). Our results are comparable with RAHMAN SHIRI etal , which states that smoking is a moderate risk factor for lumbar radicular pain and clinically verified sciatica.^[10]

In this study, total 304 patients 216 patients were with severe sciatica (71.05%), 52 patients were with moderate pain (17.11%) and remaining 36 patients were with mild pain (11.84%). Out of 304 patients, 228 patients were diagnosed with MRI scan and followed by 88 patients diagnosed with X-RAY, for this there were no relevant studies showing correlation between MRI and X-RAY.

Total 304 patients are prescribed with NSAIDS, Muscle relaxants, Vitamin –D, Calcium supplement, and in this 150 patients are prescribed with Methyl cobalamine. According to LOUISKURITZKY et al , NSAIDS and muscle relaxants are used in treatment of low back pain.^[11]

In total 304 patients 35 patients had underwent surgery. About 22 patients underwent laminectomy. About 11 patients underwent microlumbar discectomy. There were no relevant studies showing correlation between surgeries.

Conclusion:-

Most patients with sciatica in tertiary care hospital were being treated with conservative management but less than half with surgery. Sciatica was observed mostly among males and was significantly correlated with risk factors. Based on the results of this study, it is concluded that, various risk factors are responsible for causing Sciatica, such as advancing age, trauma, thyroid problems, obesity, smoking, occupation related body postures. Among these, disc problem is the risk factor having highest impact on symptomatic Sciatica risk. And most oftenly it is due to disc herniation, bulging, or degeneration which may occurs by external factors like trauma or any other occupation related factors of the person. And the Second major risk factor with high impact on Sciatica is obesity which may further leads to spondylolisthesis. More over in the presence of more than one risk factors the progression to Sciatica is rapid. Mostly MRI can confirm the diagnosis of sciatica rather than the clinical symptoms to know the possible risk factor.

It is further concluded that the majority of case reports in hospital with Sciatica has already progressed to decompensate stage, frequently with complications such as Cauda equina syndrome, nerve root lesions and wound healing. Physiotherapy plays a key role in the management of sciatica.

References:-

1. Taber's, Cyclopedic Medical dictionary, 21 Edition.
2. Alexander R. Vaccaro, Spine Core Knowledge in Orthopaedics.
3. Manish kumar, Gaurav Garg, L. R. Singh, Talever Singh, and L. K. Tyagi, "Epidemiology, Pathophysiology and Symptomatic Treatment of Sciatica, International Journal of Pharmaceutical & Biological Archives 2011;2(4):1050-1061.
4. B W Koes, M W van Tudler and W C Peul, ' Diagnosis and treatment of Sciatica', BMJ 2007;334:1313-7.
5. Maheshwari & Mhaskar " Essential ORTHOPAEDICS", - Fourth Edition.
6. R Alagappan "Manual of Practical Medicine" – FIFTH EDITION.
7. Randall Schultz, Sciatica first aid- – <http://www.spine-health.com>.
8. <http://www.mayoclinic.org/diseases-conditions/sciatica/symptoms-causes/syc-20377435>.
9. LEENA KAILA-KANGAS et al., " History of physical work exposures and clinically diagnosed sciatica among working and nonworking Finns aged 30 to 64 ", 2009 Apr 20;34(9):964-9.
10. RAHMAN SHIRI et al., " The Effect of Smoking on the Risk of Sciatica: A Meta-analysis", 2016 Jan;129(1):64-73.
11. LOUISKURITZKY et al., "Nonsteroidal anti-inflammatory drugs in the treatment of low back pain ", Journal of Pain Research 2012;5 579–590.