Study Protocol

"STUDY OF LOW BACK PAIN IN OBESE PATIENTS"

Abstract

Background:-

Low back ache shelters a various kinds of ache likewise eg, Mechanichal (Sprains and or strains), neuropathic, neoplastic, Sciatica, Trauma or idiopathic which are usually overlap. Lower back pain (LBP) is just manifestation, not a disease. The diagnosis procedures for this circumstance are problematic due to the multiple causes linked with low back pain and the limited specificity of diagnostic imaging and diagnostic injections. In-between Low back ache shows significant connection with obesity. Overweight and obesity is a serious community health inconveniency that contributes to the global trouble of chronic disease as a pandemic condition.(1) Many times we find in literature review that obesity is associated with many co-morbidities likewise HTN (Hypertension) , Diabetes mellitus(T2DM), Gastro-oesophageal reflux, Obstructive sleep apnoea (OSA), certain types of cancer like breast cancer(post-menopausal), endometrial cancer, Gastro intestinal track related cancer etc.[2] Some Musculoskeletal disorders like loss of alignment at various level of spine, Osteoarthritis are also associated with obesity. Back pain is classified as Acute(less than 6weeks), Sub-chronic(6 to 12weeks), Chronic(more than 12weeks). It is important to know relation between Lumbosacral angles and Obesity as overweight and obesity directly affects posture of patient which directly affects spine and vertebra. That's why we need to know relation between lumbosacral angles and Obesity. Person is called Overweight or Obese if his or her is BMI more than 25.0 to 29.9 and more than 30 respectively. In studies which shows relation between obesity and lumbosacral angles, These angles are measured –

1. lumbar lordosis angle (LLA),
2. lumbosacral angle (LSA)
3. sacral inclination angle (SIA)
4. lumbosacral disc angle (LSDA).

Age, posture, race, disease, and surgery can affect these angles between the lumbar spine and sacrum

Aim :- The aim is to Study of Low back pain in Obese patients.

Objective:-

UNDER PEER REVIEW

1. To compare the lumbosacral angles in overweight and obese people with non obese persons.
2. To analyze the relation of Body Mass Index on Lumbo Sacral angles
3. To analyze the relation of Waist-hip ratio on Lumbo Sacral angles

Material and Method :- The study will be conducted on patients of Lower back pain in Department of Orthopedics, at Jawaharlal Nehru Medical College and Acharya Vinobha Bhave Rural Hospital (AVBRH), Sawangi, Wardha

Expected results: - Results would be assessed on basis of clinical evaluation, functional evaluation and radiological evaluation and statistical analysis would be done to conclude the findings.

Key word :- Low back pain, obese patient , lumbosacral angle

INTRODUCTION

Low again pain (LBP) is most common musculoskeletal disease affecting the grownup population, with a occurrence of 84%. Low back pain shelters a band of various types of pain ache likewise eg, Mechanichal (Sprains and or strains), neuropathic, neoplastic, Sciatica, Trauma or idiopathic which are usually overlap. Lower back ache (LBP) is only a manifestation, not a disease. To understand low back pain we need to understand its anatomy which comprises

Lumbar vertebra , Spinal curvature, Ligaments around the vertebra, Normal Hight and Normal anatomy of Intervertebral disc, Joint of Sacrum and iliac, Spinal cord and its branches and plexus. Various factors affect at different part of Lower back which includes Lumbar spine with muscle and ligaments. Stressors like Abnormal posture or Overworked causes stretching or tearing of muscle which is Mechanical back pain. Heavy weight lifting or over jerky movements causes Slipped Disc. Infection Like Tuberculosis makes abscess can causes compression of nerve or cause inflammation which causes pain. Overweight and obesity adds up to these factors and sometime obesity could be single reason for low back pain.

The diagnostic techniques for this circumstance are problematic due to the various causes associated with low back pain and the limited specificity of diagnostic imaging and diagnostic injections. In-among Low back pain indicates extensive reference to obesity. Obesity and overweight are important public health issues that contribute to the global burden of chronic disease[1] Obesity is frequently discovered in literature reviews that it is associated with many co-morbidities including Chronic conditions like Hypertension and Diabetes mellitus(T2DM), Gastro-esophageal reflux, Arthritis, Obstructive sleep apnea(OSA), positive forms of most cancers like breast cancers(post-menopausal),

UNDER PEER REVIEW

endometrial cancers, esophageal cancers, colorectal cancers etc.2 Few research have discovered an affiliation among weight problems and practical impairment of the backbone because of lumbar muscle weak point and stiffness, which may cause LBP and disability. The ache in the lower back is an indication, not an illness.[3] Degenerative processes of the spine axis, different injuries, work posture and congenital abnormalities may all contribute to this. Lumbar region pain is a type of discomfort that affects the lower back and can also affect the sciatic nerve.3, Those who were obese had a 34% and 22% incidence of osteoarthritis and low back pain , respectively. Back pain is classified as acute (12 weeks), Sub-chronic(6-12weeks), Chronic(>12weeks). Excess weight and obesity have a clinically significant influence on lumbosacral spine anatomical angles (lumbosacral angles). The shape and shape of the lumbar spine plays an important role in the incidence of low back pain.[8,9] Several research have examined the correlation between changes in the angles of the lumbar spine and low back pain. Increased lumbosacral angles were linked to a higher frequency of low back ache.[10,11] Although Body Mass Index (BMI) evaluates general obesity, central (truncal) obesity is assessed by Waist-hip ratio.

Age, posture, race, illnesses, and surgery can all have an impact on the lumbosacral angles. [12,13] The consequences of overweight and obesity on these angles, on the other hand, are little understood.

UNDER PEER REVIEW

With the global rise in obesity and the increasing frequency of musculoskeletal disorders, especially lower back pain, , it's more important than ever to understand the impact of increased lumbosacral loading caused by overweight and obesity on lumbosacral angles.. Overweight and obesity are characterized by the BMI and the waist hip ratio.[14]

Patient's treatment is depends upon the stage. Back pain can be treated by Physical therapy and medication treatment. The Aim of reintegration are: education about disease and causes; Probable diagnosis and its management; Life style modification; perform physical therapy exercises; achieve maximum range of motion without pain in the injured area; enhanced, agile and harmonious; restore normal life activities; prevent recurrence of diseases and other injuries.

UNDER PEER REVIEW

AIMS AND OBJECTIVES

AIM

The aim is to Study of Low back pain in Obese patients.

OBJECTIVES

1. To compare the lumbosacral angles in overweight and obese people with non obese persons.

2. To analyze the relation of Body Mass Index on Lumbo Sacral angles
3. To analyze the relation of Waist-hip ratio on Lumbo Sacral angles

MATERIALS AND METHODS

The study will be conducted on low back pain patients at the orthopedic department, Jawaharlal Nehru Medical College (JNMC) and Acharya Vinobha Bhave Rural Hospital (AVBRH), Sawangi, Wardha during the period from **November 2020 to October 2022**

Sample Size – Hundred (100) patients would be included in the present study.50 patient being obese and 50 being with in normal Body Mass Index.

Study type: Prospective Cross sectional study

METHOD OF COLLECTION OF DATA:

Patient presented to orthopedics department of Medical College Jawaharlal Nehru and Acharya Vinobha hospital Bhave Rural, OPD with back pain Sawangi, Wardha during the study period from November 2020 to October 2022. To participate in the study, Subjects will submit a written informed agreement form. Demographic profiles of Respondents and various anthropometric measurements will be graphed using the Data entry

UNDER PEER REVIEW

method. The data comprised age, gender, occupation, weight, height, waist circumference (WC), hip circumference (HC), BMI, and waist circumference. Individuals were placed in the supine position for radiographic imaging of the respective dorsal vertebrae. Height will be measured with a stadiometer and weight will be measured using a Scale, wearing light clothing. Between the subchondral rim and the iliac crest, the waist measurement will be determined on the bare abdomen when standing.

For lightweight clothing, hip circumference is measured on larger garments at its maximum width. 15

The Formula for BMI : weight in kg/height in m2.

It is classified into 5 categories as follows.

1. underweight is identified as 18 and half kg / meter^2;
2. normal is identified as 18 and half to 24.9 kilograms per meter square;
3. Overweight is defined as a body mass index of 25–29.9 kg per metre^2.;
4. Obesity is identified as equal or more than 30 kg per meter^2;
5. Severe obesity is defined as a weight of 40 kilos per square metre.

in line with the World Health Organization's worldwide categorization system[16]

UNDER PEER REVIEW

Waist hip ratio is a measure of central (body) obesity that compares waist circumference to hip circumference. A waist-to-hip ratio of more than 0.90 for males and 0.85 for women is considered central obesity..[15]

Lateral X-ray projections of the dorsal spine will be analyzed. The standard parameters for radiography are as follows:

1. Presence of L1 to L5 vertebrae and S1 to S5 vertebrae
2. The height of the vertebrae increases gradually from first lumbar vertebra to fifth lumbar vertebra
3. Conserving lumbar spine pathology
4. The lumbar vertebral bodies' posterior edges create a continuous curvature.
5. From L1 to L5, the intervertebral disc gaps should have thickened.
6. There should be no signs of illness or congenital abnormalities on radiographs..

To measure the lumbosacral angle an x ray viewing box and goniometer will be required which will include the following:

1. 1. The sacral base and the horizontal plane form the lumbosacral angle (LSA) (Figure 1A)
2. The SIA (sacral inclination angle) is the angle formed by a vertical plane and a tangential line intersecting the posterior border of the SI vertebra (Figure 1B)

R PEER REVIEW

3. The LSDA (lumbosacral disc angle) is the angle formed by intersecting two lines drawn across the inferior end plate of L5 and the superior end plate of S1 (Figure 1C)
4. LLA (lumbar lordosis angle) is the angle formed by the intersection of two perpendiculars of lines drawn between the superior end plate of L1 and the inferior end plate of L5 (Figure 1D).

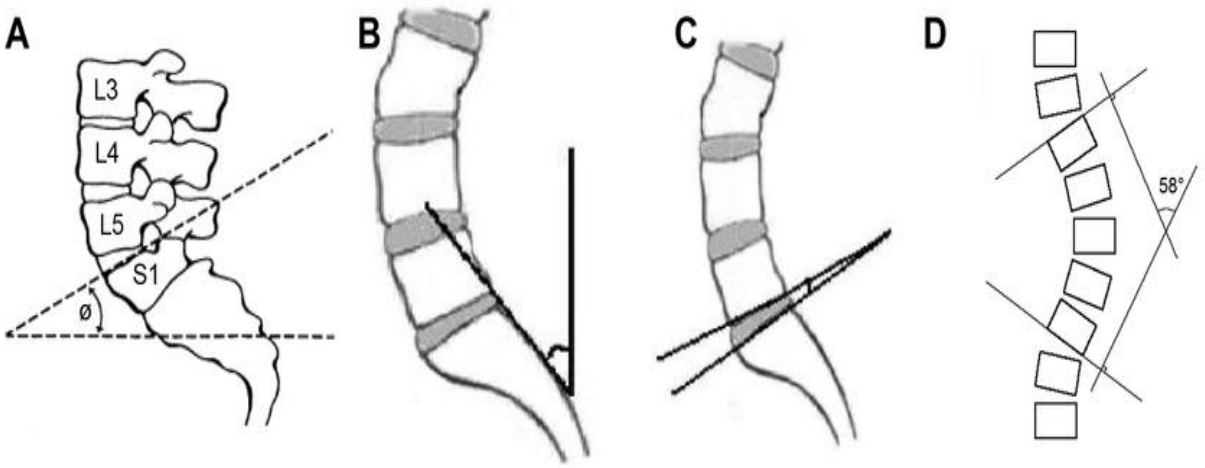

Figure 1 is showing The lumbosacral spine's geometric angles and how to measure it.

F1(A) showing lumbosacral angle is a term used to describe the angle between the spine and the sacrum(LSA).

F1(B) the angle of inclination of the sacrum(SIA).

F1(C) The angle of the lumbosacral disc(LSDA).

F1(D) The angle of lumbar lordosis (LLA).

INCLUSION CRITERIA:

1. Their age range was between 20 and 60
2. The research enrolled only People who had reached spinal maturity (Adult).

EXCLUSION CRITERIA:

1. Subjects that had suffered low-back microtrauma
2. Subjects have clinically observable lumbar spine deformity, scoliosis, or kyphosis
3. Pregnant women

4. Participants who underwent spine surgery or instrumentation were excluded from the research.

STATISTICAL ANALYSIS - **Appropriate** statistical test would be applied to analyze data.

Results:-

Results would be assessed on basis of clinical evaluation, functional evaluation and radiological evaluation and statistical analysis would be done to conclude the findings.

UNDER PEER REVIEW

UNDER PEER REVIEW

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UNDER PEER REVIEW

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