GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 1 (346) Январь 2024

ТБИЛИСИ - NEW YORK

ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press. Published since 1994. Distributed in NIS, EU and USA.

GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

GEORGIAN MEDICAL NEWS
No 1 (346) 2024

Содержание:

GEORGIAN MEDICAL NEWS
No 1 (346) 2024

CORRELATION OF SPINOPELVIC PARAMETERS WITH DISABILITY STATUS IN PATIENTS WITH DEGENERATIVE LUMBAR DISEASES

Krishnan KR Ganesh[1]*, Rajarajan D[2], Balaji S[3], Ramkumar S[4], R Nandakumar[5].

[1]*Senior Resident, Department of Orthopedics, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, Pillaiyarkuppam, Pondicherry, India.*

[2]*Assistant Professor, Department of Orthopedics, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, (deemed to be university) Pillaiyarkuppam, Pondicherry, India.*

[3]*Assistant Professor, Department of Orthopedics, Indira Gandhi Medical College and Research Institute, Pondicherry, India.*

[4]*Assistant Surgeon, Government Hospital, Virudhachalam, India.*

[5]*Professor, Department of Orthopedics, Mahatma Gandhi Medical College and Research Institute, Sri Balaji Vidyapeeth, (deemed to be university) Pillaiyarkuppam, Pondicherry, India.*

Abstract.

Lumbar degenerative disease usually manifests in spine clinics. This study examines the spino-pelvic characteristics of lumbar degenerative disease patients as well as the clinical ramifications in the Indian population which help in early identification of sagittal spine anomalies.

Purpose: To study the spinopelvic parameters and correlate them with disability status in patients with degenerative lumbar diseases.

Methods and study design: This cross-sectional observational study focused on patients aged 40 to 60, diagnosed with degenerative lumbar spine diseases, seen at the Orthopedics Outpatient Department. Thorough history, clinical examination, and disability assessment were conducted using the modified Oswestery Disability Questionnaire (ODI). Radiological evaluation included measuring spinopelvic parameters—Pelvic Incidence (PI), Pelvic Tilt (PT), Sacral Slope (SS), and Lumbar Lordosis (LL)—correlated with disability. Disability status was determined through the Oswestry Low Back Pain Disability (ODI) Questionnaire.

Results: Among the study population, the difference in mean of Pelvic Tilt, Sacral slope, Lumbar lordosis, Pelvic incidence across disability status was not statistically significant. BMI and sacral slope showed positive correlation to sacral slope and negative correlation to Pelvic Tilt, Lumbar Lordosis, ODI.

Conclusion: This study concluded there was no association between spinopelvic characteristics and level of disability in degenerative lumbar disease. Early detection of spinopelvic changes can aid in early intervention, slow down disease progression, and lessen impairment brought on by degenerative disc diseases.

Key words. Lumbar vertebrae, lumbar disc disease, physiotherapy.

Introduction.

In spine clinics, lumbar degenerative diseases are a common occurrence, encompassing various conditions like degenerative lumbar spondylolisthesis, lumbar spinal stenosis, and degenerative disc disease. Individuals affected often experience symptoms such as low back pain, difficulty walking, numbness, and tingling in the lower limbs, as well as difficulty maintaining continuous upright posture [1]. Some cases of lumbar degenerative diseases progress over time, leading to chronic pain and limitations in daily activities.

Recognizing the importance of comprehensive care for lumbar degenerative diseases, there is a growing emphasis on evaluating spinopelvic features. Spino-pelvic sagittal parameters consist of spinal and pelvic parameters. The Sagittal Vertical Axis (SVA) serves as a crucial measure of sagittal balance, while Thoracic Kyphosis (TK) and Lumbar Lordosis (LL) denote the spinal curvature angles. Pelvic Incidence (PI), a stable metric reflecting pelvic morphology throughout adulthood, is a key pelvic parameter. Sacral Slope (SS), influenced by pelvic position, determines the curvature of the lower lumbar spine, closely associated with LL. Pelvic Tilt (PT) indicates pelvic flexion or posterior tilt, influencing pelvic spatial orientation. When the pelvis flexes, PT decreases, while it increases with posterior pelvic tilt [2]. These pelvic orientations play a vital role in maintaining sagittal balance.

Understanding and assessing these spinopelvic parameters are essential for developing effective management strategies tailored to individual patients with lumbar degenerative diseases [3]. By comprehensively evaluating spinal and pelvic characteristics, clinicians can better understand and address the complex interplay between spinal alignment, pelvic morphology, and postural dynamics, thereby optimizing patient care and outcomes. Different pelvic parameters are present in patients with degenerative lumbar diseases (DLD). Finding the risk factors for the onset of degenerative lumbar illnesses and determining the severity of clinical symptoms may both be aided by investigating the pelvic parameters. Spinopelvic radiographic measurements are essential tools for assessing spine alignment.

Spino-pelvic sagittal parameters's normal values differ substantially from person to person. Sagittal parameters in the elderly differ from those in young people due to degenerative deformities. To restore the sagital balance and improve the effectiveness of treatment, the sagital spine alignment must be properly corrected. Therefore, early detection of any abnormalities in the parameters of the sagittal spine aids in better treatment outcomes and may even be utilised as a prognostic indication. In this study, the spino-pelvic parameters of patients with lumbar degenerative illness are examined, along with the clinical implications in the Indian population.

Materials and Methods.

This cross-sectional observational study was conducted in the Orthopedics department of a tertiary care hospital in Pondicherry, after the approval of ethical committee over a period of one and half years (January 2021 -June 2022). Patients

with degenerative lumbar spine diseases were assessed clinically and radiologically. A study by Qiang et al. [4] was used to calculate sample size and it was calculated to be 65 patients. Patients presenting to the Orthopedics Outpatient Department with symptomatic low back ache with or without leg pain and diagnosed to have a degenerative lumbar spine disease who are in the age group of 40 to 60 years were included. Patients who have undergone any previous spine surgery, those with spinal disease due to trauma or tumour and patients with limb length discrepancy were excluded.

All the patients satisfying the study criteria underwent a thorough history taking and clinical examination and disability assessment with the help of modified Oswestery disability questionnaire (ODI). The patient was subjected to radiological evaluation of the lumbosacral spine with hip joint lateral view with the patient in erect identical posture.

The Figure 1 shows the Positioning of the patient for taking X ray LS spine lateral. The radiographic procedures required for the treatment of the patient, namely, pinopelvic parameters namely Pelvic incidence (PI), Pelvic tilt (PT), Sacral Slope (SS) and Lumbar lordosis(LL)are measured, documented, and correlated. The Pelvic Incidence (PI) represents the algebraic sum of the Sacral Slope (SS) and the Pelvic tilt (PT): PI = SS + PT were measured from each radiograph.

Figure 1. *Positioning of the patient for taking X ray LS spine lateral.*

Figure 2 shows the Plain radiograph LS spine lateral of a 43-year-old female with diagnosis of L3-L4 Degenerative spondylolisthesis. Disability status was assessed using Oswestry Low Back Pain Disability (ODI) Questionnaire and data was analysed using Statistical Package for the Social Sciences (SPSS) Software Version 22. Descriptive status, mean, SD were repeated for necessary outcome variables. t-Test were performed to check whether there is significant difference in pelvic parameters among patients with degenerative lumbar diseases. The values obtained were compared with standardized values for Indian population and correlated.

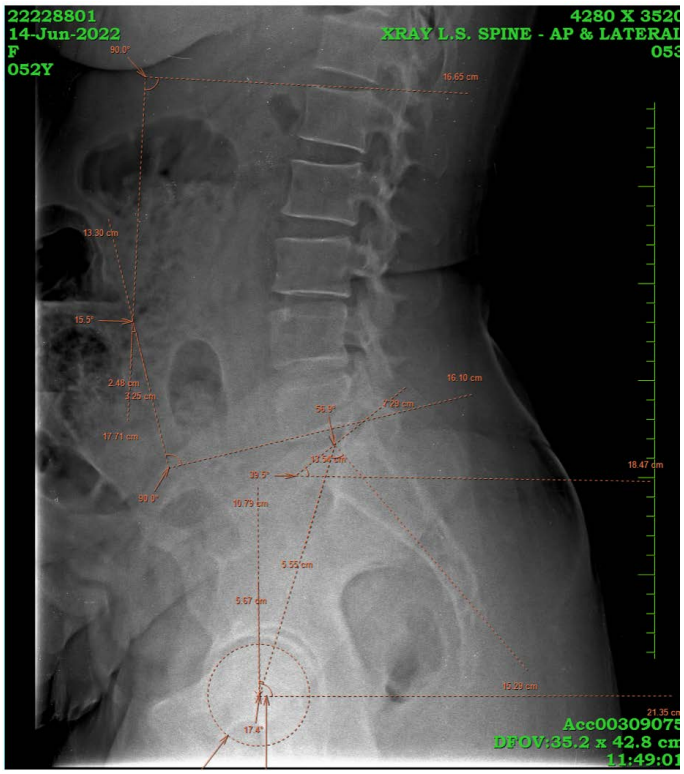

Figure 2. *Plain radiograph LS spine lateral of a 43-year-old female with diagnosis of L3-L4 Degenerative spondylolisthesis with parameters measured Lumbar Lordosis - 44.8 degrees, Sacral slope - 33.6 degrees, Pelvic tilt - 19.5 degrees, Pelvic incidence - 61.4 degrees, ODI - 46% Severe disability).*

Results.

A meticulous examination of the data ensued, employing the elegant measures of mean and standard deviation for quantitative variables, while categorical variables were adorned with the regal garments of frequency and proportion. To embellish the presentation further, the data was adorned with a tapestry of visual delights, including bar diagrams, pie diagrams, and box plots, each offering a unique perspective on the data's intricate patterns. Delving deeper into the fabric of the data, the association between categorical explanatory variables and quantitative outcomes was meticulously scrutinized. The illustrious ANOVA method was invoked to bestow upon us insights into statistical significance, allowing us to discern the subtle nuances within our data. For correlation between two continuous variables, we turned to the venerable Pearson correlation, an elegant ballet of numbers that reveals the intricate interplay between our variables. With reverence, we interpreted correlation values, assigning them to categories of

Table 1. *Comparison of mean of parameter across disability status (N=65).*

Parameter	**Between Groups**				**P Value**
	Minimal	Moderate	Severe	Crippled	
PELVIC TILT	12.1 ± 0.001	15.28 ± 8.22	14.72 ± 8.97	6.80 ± 1.55	0.568
SACRAL SLOPE	34.90 ± 0.001	30.30 ±8.24	34.78 ± 7.48	30.55 ±11.24	0.216
LUMBAR LORDOSIS	22.00 ± 0.001	32.58 ±14.03	35.86 ± 12.7	32.100 ±13.85	0.664
PELVIC INCIDENCE	47.00 ± 0.001	45.38 ± 9.68	49.62 ± 8.44	37.400 ± 12.86	0.188

weak, moderate, strong, or very strong, each telling a tale of the data's underlying structure. Negative signs whispered tales of opposing forces, while positive signs heralded harmonious positive alliances between variables. We judged the P-value, for a value less than 0.05 signaled a proclamation of statistical significance.

In data analysis, the venerable SPSS software, in its majestic version 22, served as our trusted conductor, guiding us through the pathways of statistical inquiry with precision. Among the study population, the mean age was 49.41 ± 6.03 with a female preponderance of 56.2%. The mean height of patients in our study population was 159.95 ± 9.84, the mean weight was 65.86 ± 10.99 and the mean BMI was 25.7 ± 3.08.

In our study on 65 patients, the mean Pelvic Tilt was 14.79 ± 8.36. the mean Sacral Slope was 31.9 ± 8.15, the mean Lumbar Lordosis was 33.52 ± 13.45 and the mean Pelvic Incidence was 46.6 ± 9.48.

Among the study population with Disability Status, 33.85% of them were Severe, 61.54% of them were Moderate, 3.08% of them were Crippled. The table 1 shows the Comparison of mean of parameter across disability status.

The difference in mean of Pelvic Tilt, Sacral slope, Lumbar lordosis, Pelvic incidence across disability status was not statistically significant. (p value >0.05). There was no correlation found between BMI Vs Sacral slope and correlation found between BMI Vs Pelvic Tilt, Lumbar Lordosis, ODI. There was no correlation found between ODI Vs Pelvic Tilt, Pelvic Incidence, Sacral Slope, Lumbar Lordosis. The mean Oswestry Disability Index score in our study was 0.44 ± 0.14.

Discussion.

The significance of spino-pelvic parameters in musculoskeletal disorders remains a topic of intrigue, with clinical implications underscored by numerous publications linking Pelvic Incidence (PI) to degenerative disc diseases. Duval-Beaupe`re et al. [5] elucidated the pivotal role of pelvic parameters in describing pelvic position relative to the sacrum, prompting spinal adaptations reflected in Lumbar Lordosis (LL), which increases as Sacral Slope (SS) rises to maintain trunk balance upright. Understanding factors contributing to suboptimal health status is imperative for informed clinical decision-making. Studies on adult spinal deformity patients have highlighted spinopelvic malalignment's correlation with diminished patient-reported health status, guiding surgical planning. However, Gao et al.'s retrospective study suggested a weak association between sagittal radiographic parameters and pretreatment health-related quality of life (HRQOL) in Degenerative lumbar scoliosis patients. Fu et al.'s multicenter prospective analysis revealed age-specific variations in radiological parameters' correlation with pain and disability, emphasizing differing tolerances to sagittal malalignment across age groups. In elderly patients, sagittal malalignment drove pain and disability, while scoliosis magnitude correlated with these factors in younger adults with adult spinal deformity [6-9]. In our study, among the study population, the mean age was 49.41 ± 6.03 years. Among the study population, 56.25% of them were female, 43.75% of them were male. The mean Pelvic Tilt was 14.79 ± 8.36, the mean Sacral Slope was 31.9 ± 8.15, the mean Lumbar Lordosis was 33.52 ± 13.45, the mean Pelvic Incidence was 46.6 ± 9.48. and the mean ODI was 0.44 ± 0.14 in our study. These values were statistically significant and was similar to the normal values of the spinopelvic parameter as mentioned by Singh Et al in his study [10].

We also noted a negative correlation between BMI and sacral slope and there was positive correlation found between BMI and pelvic tilt, lumbar lordosis and ODI. This result was consistent with a study conducted by Se´bastien Schuller et al. [11].

In the current investigation, no discernible correlation was observed between Oswestry Disability Index (ODI) scores and pelvic tilt, pelvic incidence, sacral slope, and lumbar lordosis. The multifaceted nature of degenerative lumbar diseases entails various factors influencing clinical symptoms, with considerable heterogeneity observed among patients experiencing low back pain. Variables such as age, gender, occupation, and individual pain perception exert notable influences on symptomatology. Our study underscores the pivotal role of spinal-pelvic parameters, including their ratios, in shaping the clinical presentation of severe degenerative lumbar diseases. While previous research has highlighted the association between pelvic and spinal morphologies and degenerative disc diseases, our findings diverge as we found no significant correlation between disability index and pelvic parameters. This outcome aligns with the study conducted by Zhengguang Wang et al., where lumbar lordosis correlated with pelvic tilt, but no correlation was evident between sacral slope and pelvic incidence. Notably, their study's larger sample size and multicentric nature may contribute to this discrepancy, as prior correlation assessments between pelvic parameters and disability status in degenerative spinal diseases were not undertaken in the South Indian population.

Similarly, Sayf S. A. Faraj et al. discovered statistically significant correlations between pelvic parameters and ODI, alongside sagittal radiographic parameters, yet no significant correlations were observed with health-related quality of life (HRQOL). This finding echoes recent studies focusing on adult spinal deformity patients, indicating a limited association between HRQOL scores and spinopelvic parameters.

In the context of degenerative lumbar scoliosis, which presents distinct pathophysiological features, a parallel association with pelvic parameters akin to our study's findings was noted. Chapman et al.'s evaluation of symptomatic De Novo

Degenerative Lumbar Scoliosis (DNDLS) similarly revealed a very weak overall association between HRQOL scores and spinopelvic parameters, consistent with our study's outcomes. These collective findings underscore the intricate interplay between spinal-pelvic parameters and clinical symptomatology, highlighting the importance of comprehensive assessments in understanding and managing degenerative lumbar diseases. There is no correlation in our study maybe because of the small sample size and single centric study conducted by us; correlation of pelvic parameters and disability status in degenerative lumbar diseases has not been done much and need further study to arrive at a final conclusion [12-14].

Conclusion.

Degenerative disc diseases can develop due to malalignment in spinopelvic parameters .This can be identified at the earliest and lifestyle modifications can be done to prevent the accelerated disease progression.

1. In the current study, which was carried out by us to determine the relationship between spinopelvic parameters and level of disability in degenerative lumbar disease, we discovered that neither factor was correlated.

2. Early detection of spinopelvic changes can aid in early intervention, slow down disease progression, and lessen impairment brought on by degenerative disc diseases.

Ethical approval: Yes
CTRI registration: Yes
External financial aid: NIL
Conflict of interest: NIL
All authors have contributed significantly.

REFERENCES

1. Lazennec JY, Ramaré S, Arafati N, et al. Sagittal alignment in lumbosacral fusion: relations between radiological parameters and pain. Eur Spine J. 2000;9:47-55.
2. Duval-Beaupere G, Schmidt C, Cosson P. A barycentremetric study of the sagittal shape of spine and pelvis: the conditions required for an economic standing position. Ann Biomed Eng. 1992;20:451-62.
3. Yu CH, Wang CT, Chen PQ. Instrumented posterior lumbar interbody fusion in adult spondylolisthesis. Clin Orthop Relat Res. 2008;466:3034-3043.
4. Wang Q, Sun CT. Characteristics and correlation analysis of spino-pelvic sagittal parameters in elderly patients with lumbar degenerative disease. J Orthop Surg Res. 2019;14:127.
5. Duval-Beaupère G, G Robain. Visualization on full spine radiographs of the anatomical connections of the centres of the segmental body mass supported by each vertebra and measured in vivo. International orthopaedics. 1987;11:261-9.
6. Wang Z, Wang B, Yin B, et al. The relationship between spinopelvic parameters and clinical symptoms of severe isthmic spondylolisthesis: a prospective study of 64 patients. European Spine Journal. 2014;23:560-8.
7. Gao A, Wang Y, Yu M, et al. Association Between Radiographic Spinopelvic Parameters and Health-related Quality of Life in De Novo Degenerative Lumbar Scoliosis and Concomitant Lumbar Spinal Stenosis. Spine. 2020;45:E1013-E1019.
8. Fu Kai-Ming G, Bess S, Shaffrey CI, et al. Patients with adult spinal deformity treated operatively report greater baseline pain and disability than patients treated nonoperatively; however, deformities differ between age groups. Spine. 2014;39:1401-7.
9. Weinstein SL. Bristol-Myers Squibb/Zimmer award for distinguished achievement in orthopaedic research. Long-term follow-up of pediatric orthopaedic conditions. Natural history and outcomes of treatment. The Journal of bone and joint surgery. 2000;82:980-90.
10. Singh R, Yadav SK, Sood S, et al. Spino-pelvic radiological parameters in normal Indian population. SICOT-Jvol. 2018;4:14.
11. Schuller S, Charles YP, Steib J-P, et al. Sagittal spinopelvic alignment and body mass index in patients with degenerative spondylolisthesis. European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society. 2011;20:713-9.
12. Wang Z, Wang B, Yin B, et al. The relationship between spinopelvic parameters and clinical symptoms of severe isthmic spondylolisthesis: a prospective study of 64 patients. European Spine Journal. 2014;23:560-8.
13. Faraj SSA, De Kleuver M, Vila-Casademunt A, et al. Sagittal radiographic parameters demonstrate weak correlations with pretreatment patient-reported health-related quality of life measures in symptomatic de novo degenerative lumbar scoliosis: a European multicenter analysis. Journal of neurosurgery. 2018;28:573-580.
14. Chapman TM, Baldus CR, Lurie JD, et al. Baseline Patient-Reported Outcomes Correlate Weakly With Radiographic Parameters: A Multicenter, Prospective NIH Adult Symptomatic Lumbar Scoliosis Study of 286 Patients. Spine. 2016;41:1701-1708.