

Examining the Prevalence of Musculoskeletal Disorders among Lawyers: An Observational Study

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Abstract: *This observational study investigates the prevalence of musculoskeletal disorders MSDs among lawyers, analyzing the impact of various work environments and practices on their physical well-being. With a sample size of 80 lawyers across different experience levels, the research employs a self-made questionnaire to identify the occurrence of MSDs in relation to factors such as prolonged sitting, standing, and physical activities like stair climbing. The findings reveal significant instances of MSDs, particularly among lawyers in their initial years of practice, attributed to factors including workload pressure, physical workload, and postural challenges. The study emphasizes the necessity of ergonomic interventions and lifestyle modifications to mitigate the risks associated with the professions demands. Through its analysis, it aims to contribute to the development of strategies for improving lawyers health and productivity.*

Keywords: Musculoskeletal disorders, Musculoskeletal pain, Lawyers, Work-related health, Ergonomics, Occupational health

1. Introduction

A lawyer is a person who practices law^[2]. Trained and licensed to prepare, manage, and either prosecute or defend a court action as an agent for another and who also gives advice on legal matters that may or may not require court action^[3]. The profession requires several hours for reading about the Acts in a day in sitting prolonged static posture, including bending and flexing of neck. The architecture of courts in India requires a lot of stair climbing, prolonged hours of standing while presenting cases to the judge.

In industrially developed nations, disorders of the musculoskeletal system are progressively increasing and are resulting in significant costs. Work-related musculoskeletal disorders are defined as damage to or disease of muscles, nerves, tendons, joints, and cartilage or spinal discs resulting from risk factors in the working environment. Studies have shown that these diseases increase as the average age of the society rises^[4].

Because workers maintain the same posture over long work days and often several years, even natural postures like standing can lead to MSDs like low back pain. Postures which are less natural, such as twisting of or tension in the upper body, are typically contributors to the development of MSDs due to the unnatural biomechanical load of these postures^{[5][6]}.

2. Need of Study

It is observed that, practicing lawyers have varied field of working places. They work in the court, have their own office and also provide services from home. They also have varied lifestyle in which standing in the court for prolonged hours and prolonged sitting for their cases. Hence, the study will be performed to identify whether there are any musculoskeletal disorders.

3. Aims & Objectives

Aim:

The study the prevalence of musculoskeletal disorders in lawyers using self- made questionnaire.

Objectives:

To identify musculoskeletal disorders in various years of experience.

4. Methodology

Study design: Observational study

Duration of the study: 6 months

Study subject: Lawyers

Sample size: 80

Material: Validated self- made questionnaire.

Inclusion criteria:

- Lawyers who will be willing to participate in the study.
- Age group of 20-60 years. ^[1]
- Practicing for more than 1 year. ^[1]
- Male and female employees.

Exclusion criteria:

- Pre-existing musculoskeletal conditions, comorbidities.

Procedure:

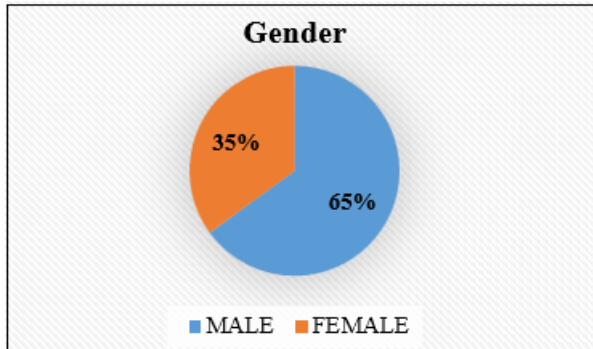
The study includes 80 lawyers with 1-5 years, 5-10 years, 10-15 years and more than 15 years of experiences, with 20 individuals in each group.

For the survey, a self-made questionnaire drafted following with due deliberations of relevant information. The questionnaire was asked through face-to-face interaction via Google form among the law practitioners.

Plan of Study

Permission was taken by the Institutional Ethics and Research Committee at DY. Patil School of Physiotherapy. All study participants signed the written consent voluntarily after which the study was performed and the study conclusion was drawn.

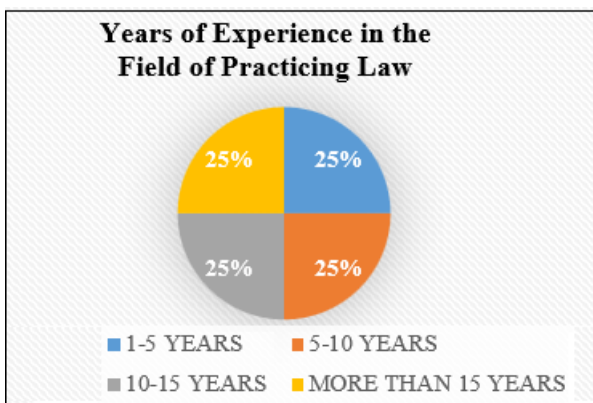
5. Data Presentation and Interpretation



Graph 1

Male	52	65%
Female	28	35%
Total	80	100%

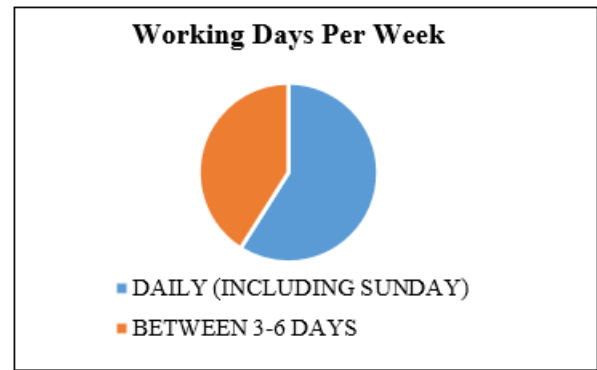
It was observed that, out of 80 subjects, 65% were males and 35% were females.



Graph 2

1-5 Years	20	25%
5-10 Years	20	25%
10-15 Years	20	25%
More Than 15 Years	20	25%
Total	80	100%

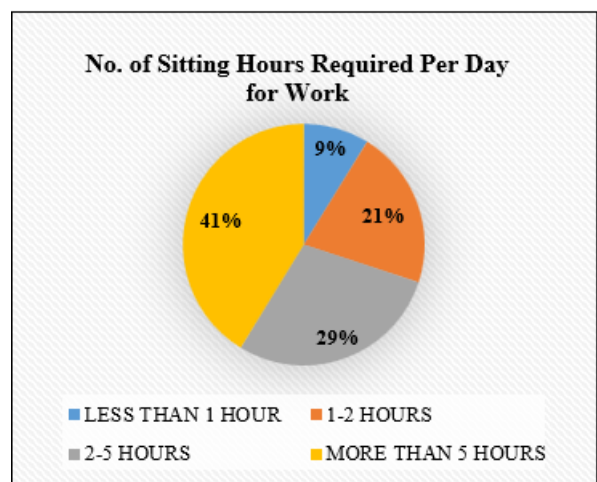
It was observed that, each group of years of experience had 20 subjects each.



Graph 3

Daily (Including Sunday)	47	59%
Between 3-6 Days	33	41%
Total	80	100%

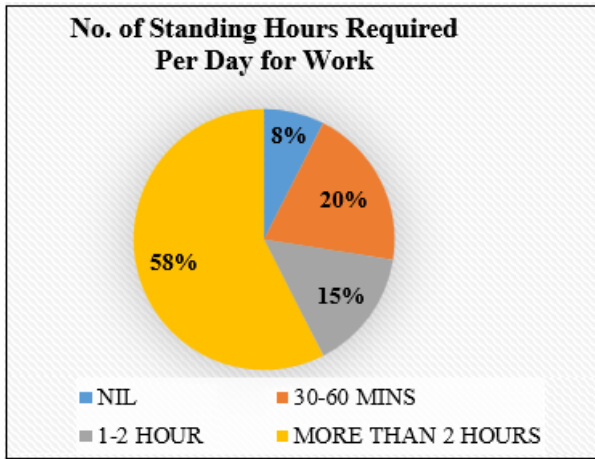
It was observed that, out of 80 subjects, 59% of the law practitioners are required to work daily (including Sundays) while 49% of the same work between 3-6 days of the week.



Graph 4

Less than 1 Hour	7	8.8%
1-2 Hours	17	21.3%
2-5 Hours	23	28.7%
More than 5 Hours	33	41.3%
Total	80	100%

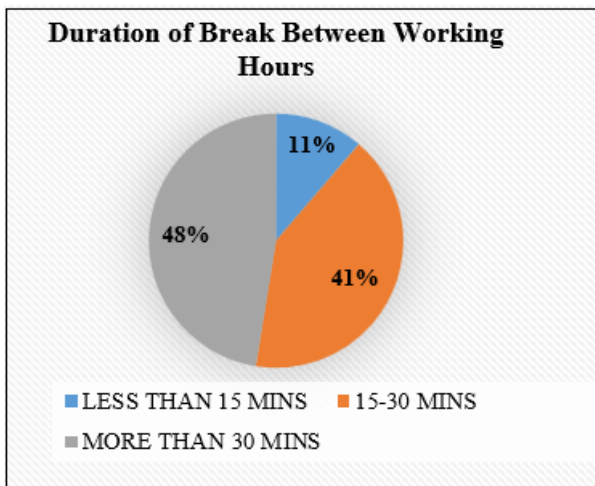
Thus, it was observed that 41.3% of subjects are required to sit for more than 5 hours for the work, followed by 28.7% for 2-5 hours, 21.3% for 1-2 hours and 8.8% for less than 1 hour.



Graph 5

Nil	6	7.5%
30-60 Mins	16	20%
1-2 Hour	12	15%
More than 2 Hours	46	57.5%
Total	80	100%

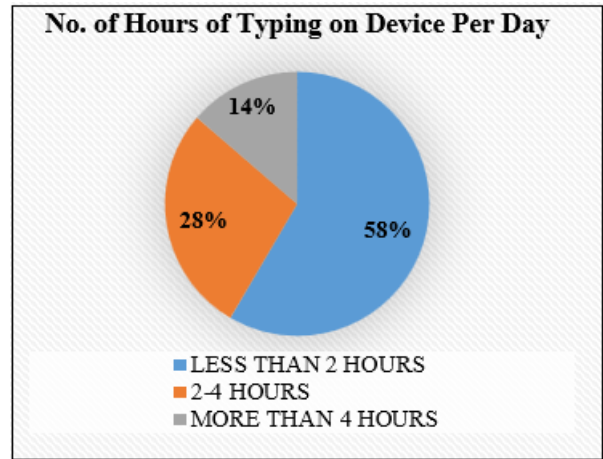
It was observed that majorly 57.5% of the subjects were subjected to standing for work for more than 2 hours, followed by 20% for 30-60 mins., 15% for 1-2 hour and 7.5% required no standing for their work.



Graph 6

Less than 15 Mins	9	11.3%
15-30 Mins	33	41.3%
More than 30 Mins	38	47.5%
Total	80	100%

It was observed, 47.5% of the subjects received more than 30 mins of break time, followed by 41.3% with 15-30 mins of break while 11.3% received less than 15 mins of break.

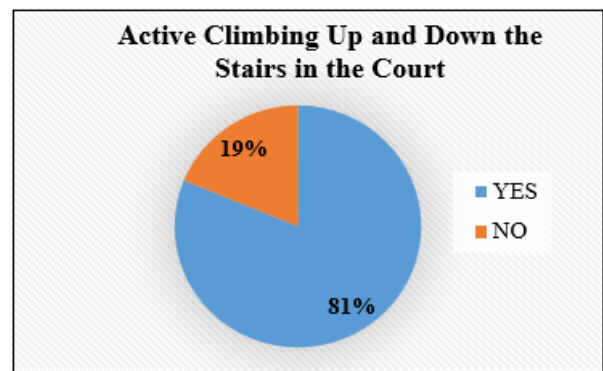


Graph 7

Less than 2 hours	30	52.6%
2-4 hours	20	35.1%
More than 2 hours	7	12.3%
Total	57	100%

It was observed that only 68.8% (57) of the subjects required typing on laptop/computer.

Out of which, 52.6% required less than 2 hours, 25.1% required 2-4 hours of typing while 12.3% required more than 4 hours.

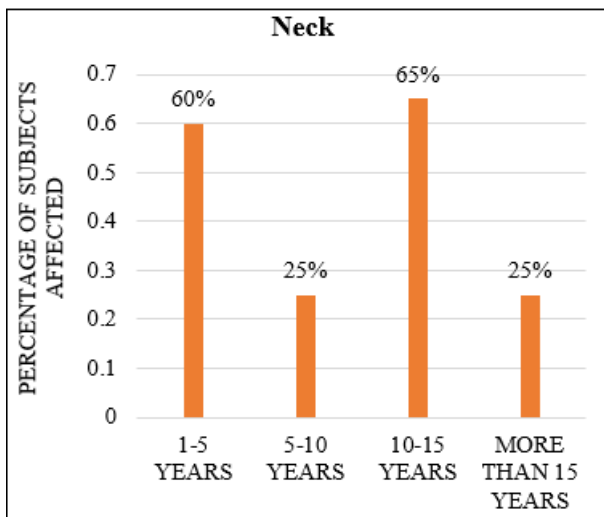


Graph 8

Yes	65	81.3%
No	15	18.8%
Total	80	100%

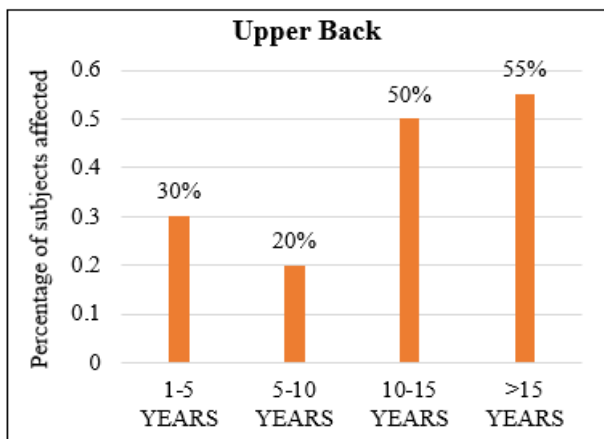
It was observed that 81.3% of the subjects were required to climb up and down the stairs throughout the day in the court. Also, 66.3% of the subjects wore Formal Shoes to work.

Graphs Depicting Musculoskeletal Pain with Respect to Various Body Regions:



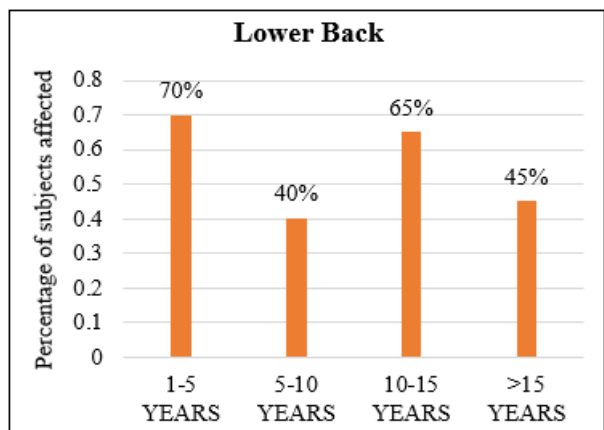
Graph 9

1-5 Years of Experience	12	360%
5-10 Years of Experience	5	25%
10-15 Years of Experience	13	65%
>15 Years of Experience	5	25%



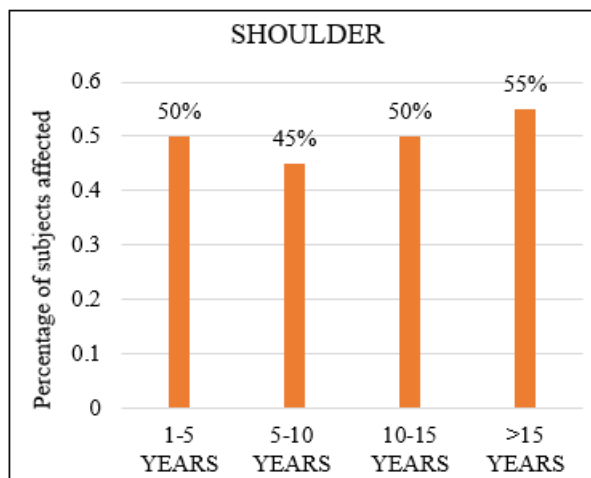
Graph 10

1-5 Years of Experience	6	30%
5-10 Years of Experience	5	20%
10-15 Years of Experience	10	50%
>15 Years of Experience	11	55%



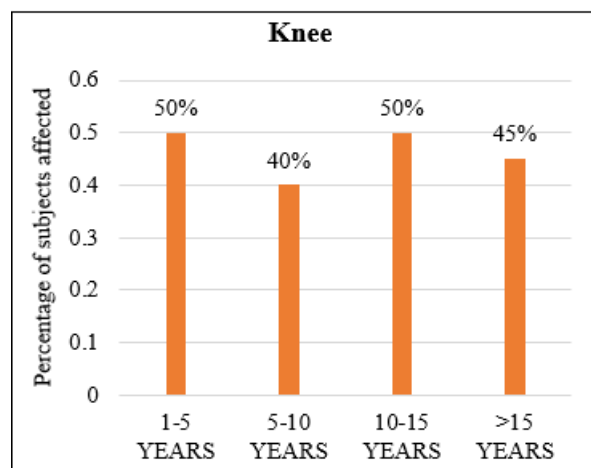
Graph 11

1-5 Years of Experience	14	70%
5-10 Years of Experience	8	40%
10-15 Years of Experience	13	65%
>15 Years of Experience	9	45%



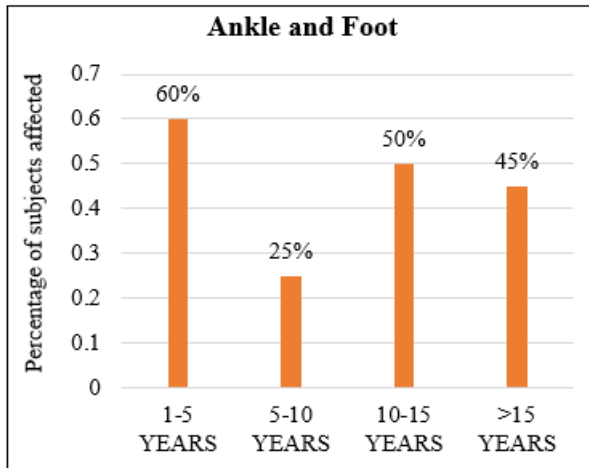
Graph 12

1-5 Years of Experience	10	50%
5-10 Years of Experience	9	45%
10-15 Years of Experience	10	50%
>15 Years of Experience	11	55%



Graph 13

1-5 Years of Experience	10	50%
5-10 Years of Experience	8	40%
10-15 Years of Experience	10	50%
>15 Years of Experience	9	45%



Graph 14

1-5 Years of Experience	12	60%
5-10 Years of Experience	5	25%
10-15 Years of Experience	10	50%
>15 Years of Experience	9	45%

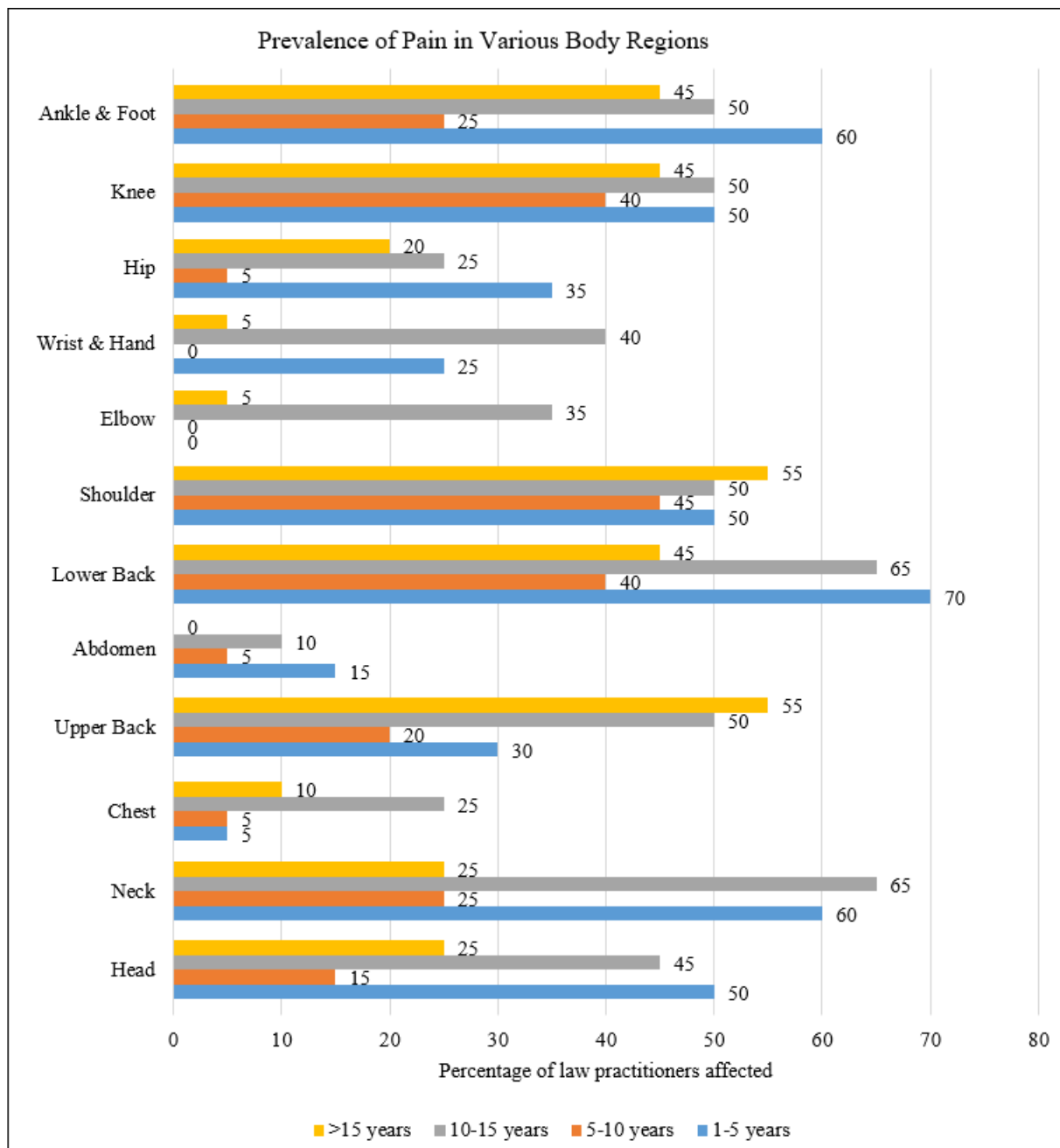
Detailed analysis of count of musculoskeletal pain in individual body regions according to years of experience are as follows:

- Head:** The maximum count falls under the range of 1-5 years (10), which is followed by 10-15 years (9), which further goes down to >15 years (5) and 5-10 years (3) respectively.
- Neck:** The maximum count falls under the range of 10-15 years (13), which is followed by 1-5 years (12), which further goes down to >15 years (5) and 5-10 years (5). [graph 9]
- Chest:** The maximum count falls under the range of 10-15 years (5), which is followed by >15 years (2), which further goes down to 1-5 years (1) and 5-10 years (1).

- Upper Back:** The maximum count falls under the range of >15 years (11), which is followed by 10-15 years (10), which further goes down to 1-5 years (6) and 5-10 years (5) respectively. [graph 10]
- Abdomen:** The maximum count falls under the range of 1-5 years (3), which is followed by 10-15 years (2), which further goes down to 5-10 years (1) and >15 years (0) respectively.
- Lower Back:** The maximum count falls under the range of 1-5 years (14), which is followed by 10-15 years (13), which further goes down to >15 years (9) and 5-10 years (8) respectively. [graph 11]
- Shoulder:** The maximum count falls under the range of >15 years (11), which is followed by 1-5 years (10) and 10-15 years (10), which further goes down to 5-10 years (9). [graph 12]
- Elbow:** The maximum count falls under the range of 10-15 years (7), which is followed by >15 years (1), which further goes down to 1-5 years (0) and 5-10 years (0) respectively.
- Wrist and Hand:** The maximum count falls under the range of 10-15 years (8), which is followed by 1-5 years (5), which further goes down to >15 years (1) and 5-10 years (0) respectively.
- Hip:** The maximum count falls under the range of 1-5 years (7), which is followed by 10-15 years (5), which further goes down to >15 years (4) and 5-10 years (1) respectively.
- Knee:** The maximum count falls under the range of 1-5 years (10) and 10-15 years (10), which if followed by >15 years (9), which further goes down to 5-10 years (8) respectively. [graph 13]
- Ankle and Foot:** The maximum count falls under the range of 1-5 years (12), which is followed by 10-15 years (10), which further goes down to >15 years (9) and 5-10 years (5) respectively. [graph 14]

Percentage of law practitioners experiencing musculoskeletal disorders with respect to various body regions given in a tabular form below:

	1-5 Years of Experience	5-10 Years of Experience	10-15 Years of Experience	>15 Years of Experience
Head	50	15	45	25
Neck	60	25	65	25
Chest	5	5	25	10
Upper Back	30	20	50	55
Abdomen	15	5	10	0
Lower Back	70	40	65	45
Shoulder	50	40	50	55
Elbow	0	0	35	5
Wrist & Hand	25	0	40	5
Hip	35	5	25	20
Knee	50	40	50	45
Ankle & Foot	60	25	50	45



6. Discussion

- a) According to the study, the group of **1-5 years of experience** have extensive musculoskeletal disorders because they are responsible for running about and they have workload pressure from their superiors.
- Their job is lifting files, typing, going up and down stairs and working for long duration due to which they experience hip, knee, low back, abdomen, ankle and foot and head pain.
 - Another reason for the same is most of them newly graduate and have comparatively less exposure to real work environment which leads to pressure and stress.
 - Work-related risk factors for young people comprise physical workload, long-term unnatural working positions, repetitive work, work under pressure, bullying, job insecurity, professional challenges, and extreme weather conditions. [7]

- b) Moving onto the criteria of **5-10 years of experience**, this group is generally accustomed to work therefore facing least problems.

- This age group is far from the age-related musculoskeletal issues and are accustomed to their work with adaptations of their body.
- The application and modification of physical stress on tissues of the human body to elicit positive adaptations and avoid injury. [8]

- c) Coming to **10-15 years of experience**, they comparatively have less workload since they have associates working under them, who are responsible for the running abouts.

- It was observed that this group particularly exercised and had their walking schedule in the morning before coming to work.
- Since they have more of sitting work causing neck, elbow and wrist and hand pain. Sitting can also weaken

back muscles. Those who sit for long periods of time tend to hunch their shoulders and head forward, causing tight chest muscles and weaker upper-back muscles (imbalance). The abs and muscles of the lower back are also prone to muscular imbalances.^[9]

- Due to age related factors, they experience maximum knee, ankle and foot pain. Age may be one of the strongest risk factors for osteoarthritis with others being gender (women have higher rates and report more severe symptoms), overweight/obesity, joint misalignment (varus or valgus deformity), and prior trauma.^[10]
- d) Lastly **more than 15 years of experience**, considering postures of forward headed, protracted shoulders with respect to age factor, they experience maximum pain in the regions of upper back and shoulder.
- They are observed to have the least work load and physical inactivity. Physical inactivity was associated with a higher prevalence of chronic musculoskeletal disorder.^[11]

7. Conclusion

- The study concludes as **1-5 years of experience with maximum** musculoskeletal disorders while **5-10 years of experience with least** musculoskeletal disorders.
- The observational study conclusively reveals a notable prevalence of musculoskeletal disorders among lawyers, particularly affecting those in the early stages of their careers. This trend underscores the pressing need for ergonomic adjustments and health-focused practices within the legal profession. Addressing these disorders requires a holistic approach, encompassing regular physical activity, ergonomic workplace design, and awareness of posture maintenance. Furthermore, it highlights the importance of supportive footwear and the role of physiotherapy in promoting musculoskeletal health. Although limited by its sample size and self-reporting methodology, the study's insights pave the way for future research and interventions aimed at safeguarding the well-being of legal professionals. By fostering an environment that prioritizes health, the legal industry can enhance its members quality of life and professional longevity.

8. Clinical Implications

- As a physiotherapist, we can recommend daily self-stretching with aerobic exercises like walking, jogging, swimming.
- While maintaining a good posture at work using ergonomic strategies as well as performing postural exercises to avoid muscle imbalances.
- Keeping one self hydrated throughout the day.
- Wearing appropriate and supportive formal shoes.

9. Limitations of the Study

- 1) This study has a small sample size. A large sample size would have been more appropriate in order to generalize the study's findings.

- 2) Due to the self-report nature of the study, participants may have exaggerated the results or individuals may have answered questions in a manner in which they may believe to be favourable.
- 3) Unequal distribution of male and female law practitioners.

References

- [1] Irina M. Goncharenko, LBP at workplace : prevalence and risk factors, 2020 volume 9. Issue 2 (June), page 1-6
- [2] Henry Campbell Black, Black's Law Dictionary, 5th ed. (St. Paul: West Publishing Co., 1979), 799.
- [3] Lawyer | Definition, Responsibilities, & Facts | Britannica
- [4] Punnet L, Wegman DH. Work-related musculoskeletal disorders: The epidemiologic evidence and debate. *J Electromyogr Kinesiol.* 2004;14:13–23, <https://doi.org/10.1016/j.jelekin.2003.09.015>
- [5] "CDC - NIOSH Publications and Products - Musculoskeletal Disorders and Workplace Factors (97-141)". www.cdc.gov. 1997. doi:10.26616/NIOSH/PUB97141. hdl:2027/coo.31924078629387. Retrieved 2016-03-24.
- [6] *Safety, Government of Canada, Canadian Centre for Occupational Health and "Work-related Musculoskeletal Disorders (WMSDs) - Risk Factors : OSH Answers"*. www.ccohs.ca.
- [7] oshwiki.osha.europa.eu/musculoskeletal-disorders-among-children-and-young-people-prevalence-risk-factors-preventive
- [8] Michael J Mueller, Katrina S Maluf, Tissue Adaptation to Physical Stress: A Proposed "Physical Stress Theory" to Guide Physical Therapist Practice, Education, and Research, *Physical Therapy*, Volume 82, Issue 4, 1 April 2002, Pages 383–403, <https://doi.org/10.1093/ptj/82.4.383>.
- [9] oshwiki.osha.europa.eu/en/themes/musculoskeletal-disorders-and-prolonged-static-sitting
- [10] Zhang Y, Jordan JM. Epidemiology of osteoarthritis yuqing. *Clin Geriatr Med* 2011;26(3):355–69.
- [11] Physical inactivity is associated with chronic musculoskeletal complaints 11 years later: results from the Nord-Trøndelag Health Study
- [12] Helene Sulutvedt Holth,