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Occupational Therapy

THE IMPACT OF WORK FROM HOME PRACTICES ON MUSCULOSKELETAL HEALTH AND ERGONOMICS DURING THE COVID-19 PANDEMIC

Vanashree C Nalawade*	Assistant Professor, Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India. *Corresponding Author
Akanksha S Madhavi	Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India.
Jenimariya M Kuriyanal	Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India.
Huda S Khan	Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India.
Almas Begum A Kader	Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India.
Sandhya S Jaiswal	Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India.
Siddhrupi S Iyer	Occupational Therapy Department, D. Y. Patil University Nerul, Navi Mumbai 400706. Maharashtra, India.

ABSTRACT **BACKGROUND:** Concerns of musculoskeletal discomfort and the subsequent challenges in day-to-day living, gain more standing in the midst of an international crisis like Covid-19, making it crucial to critically assess the multifold ergonomic implications of work from home.

OBJECTIVES:

1. Primary objective: To study the impact of Work from Home practices on musculoskeletal health and ergonomics among IT/Computer professionals working in Maharashtra.

2. Secondary objectives:

a. To study the severity of involvement on different joints of the body due to varying Work from Home practices.

b. To understand the workspace configuration and musculoskeletal discomfort faced due to the newly created WFH environment.

Study Design: A cross-sectional study was conducted and voluntary response sampling technique was used.

METHODS: 72 willing participants responded to the questionnaire via online survey. Consent from participants was taken from the same Google form. The scale Nordic Musculoskeletal Questionnaire was used to identify musculoskeletal discomfort in different joints of the body arising due to Work from Home during lockdown.

RESULTS: Statistical calculations were done. A strong association was found between posture, work habits, duration of work and workspace configuration with musculoskeletal discomfort faced by the population of IT/Computer professionals.

CONCLUSION: Work from Home practices and poor ergonomics have a detrimental effect on the musculoskeletal health of IT/Computer professionals working in Maharashtra.

KEYWORDS : Work from home, musculoskeletal discomfort, computer professionals

INTRODUCTION

The world drastically changed in December 2019, with the first human cases of a novel coronavirus being reported in Wuhan, China. Countries worldwide have enforced incisive measures to mitigate transmission by restricting movement and close contact, which while in accordance to the Centers for Disease Control (CDC) standards, have led to a cascade of far-reaching social health and economic consequences (Douglas M et al; 2020). One such measure was the mandatory shift to telework or Work from Home (WFH) for those employed in sectors where work from a remote location is possible (Oakman J et al; 2020). Actualizing or emulating physical and ergonomic dimensions of a workplace at home gives leeway to adopt faulty postures that increase the load on the spine. The use of laptops, tablets and mobile phones further exemplify this issue, as reported by several papers studying the variance in laptop postures and muscle activity at different computer display heights (Straker L et al; 2008).

Rationale Of The Study

Concerns of musculoskeletal discomfort and the subsequent challenges in day-to-day living gain more standing in the midst of an international crisis, making it likewise crucial to critically assess the multifold ergonomic implications of WFH. The most Indian homes are not designed to suit the needs of a work environment and many may not necessarily have a dedicated work area or the internet facilities. We have thus attempted to bridge the gap with our study, by focusing on the musculoskeletal aspects of work from home on IT professionals.

AIMS AND OBJECTIVES

AIM: To study the impact of Work from Home practices on musculoskeletal health and ergonomics among IT/Computer professionals working in Maharashtra.

OBJECTIVES:

1.To study the severity of involvement on different joints of the body due to varying Work from Home practices.

2. To understand the workspace configuration and musculoskeletal discomfort faced due to the newly created WFH environment.

MATERIALS AND METHODOLGY

Study Setting: An online survey was carried out using google forms and distributed through social media to the willing participants fulfilling the inclusion criteria, who were approached to fill in the questionnaire. Individuals who filled in the questionnaire consented to participate in the study.

Study Design: A cross-sectional study was conducted and voluntary response sampling technique was used

Study Material: It included Ergonomics related questions like work area, preferred position, lighting, level at which device was placed and posture during work were also asked. The scale Nordic Musculoskeletal Questionnaire (NMQ) was used to identify musculoskeletal discomfort in different joints of the body arising due to Work from Home during lockdown.

Participants: 72 willing participants responded to the questionnaire between the duration of 15th December 2020 to 15th January 2021.

The following inclusion and exclusion criteria were implemented while selecting the study population –

INCLUSION CRITERIA:

1. IT/Computer professionals working from home in Maharashtra
2. Age range 25 years to 40 years
3. All genders

EXCLUSION CRITERIA:

1. Individuals giving history of surgeries in the past (< 12 months)

RESULTS

- The findings from the survey suggest that the maximum population is between the age group of 25-30 years with mean age group of 28.78 years.
- 25% of the total sample size were pure IT professionals. The other category of computer professionals were people in data entry, accounting for 23%. 17% of the population was found to be involved in handling telephone and email correspondence.
- 35% of the population preferred sitting on a chair with back support and table surface to work on with their devices. However, 11% of people sat on a chair but had to bend and perform work in spite of having a proper work area. About 10% of the population sat on bed/sofa/couch with laptop on the lap in order to carry out their job.
- At home, maximum people worked under well-lit and bright area without causing much strain on the eyes. 53% participants kept the devices at eye level and 44% below eye level which was mostly around chest level or even lower.
- 48.6% of population had to frequently sit for long hours in one position due to excessive workload. At the same time, 41.7% had to sometimes bend their head and the rest of the body forward while working. Performance of repetitive tasks during work was very frequent for 38.9% of people.
- In order to assess the affectations on posture arising from conditions and demands of the job during lockdown, Nordic Musculoskeletal Questionnaire (NMQ) was implemented and the following results were obtained:

1. During the last 12 months when asked about pain, ache, discomfort or numbness in any of joint, only 20% denied any issues and the rest 80% had affectations at least in one joint. Around 7% had combined issues in the neck, upper back, hip and lower back and these prevented them from carrying out normal activities (Figure 1).

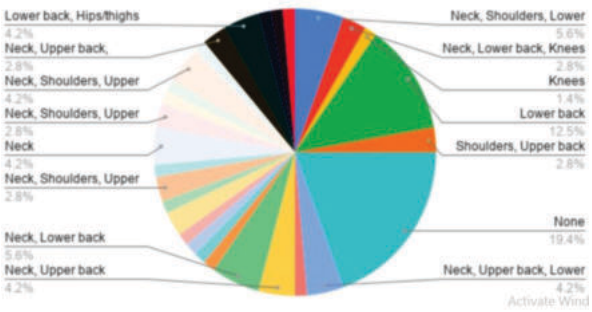

Figure 1: Pain/Ache/Discomfort in various body areas experienced in last 12 months

2. More than 50 % of the population reported pain and discomfort in the past week prior to filling the questionnaire, in different parts of the body which arose due to Work from Home during Covid-19 pandemic (Figure 2).

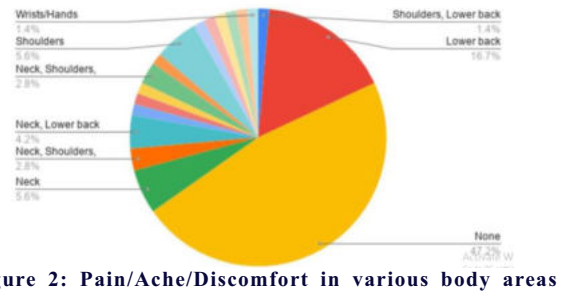

Figure 2: Pain/Ache/Discomfort in various body areas experienced in the last 7 days

DISCUSSION

Our study documented and focused on the effects of sitting posture, duration of work, repetitions, and physical exertion leading to MSD in the form of Low Back Pain (LBP), neck, shoulder, upper and lower back, wrist, hand, knee problems etc.

- We found that among all the other areas, LBP was frequently reported (12.5% chronic pain, 16.7% acute pain) in the given population. Similar results were seen in a study conducted by Choobineh et al. (2011) who reported that LBP was found to be the most common problem among office workers.
- Static loading and sitting for long periods of time have been reported to cause a reduction in lumbar lordosis when compared to standing. Cho in the year 2015, also concluded with chronic spino-pelvic imbalance. In present study, more than 50% of the population maintained static postures for more than 8 hours per day.
- 5.2% of the population complained of acute neck pain, while 5.6% with chronic pain at neck, shoulder and lower back areas. Chronicity of neck and shoulder problems may stem from the extreme low location of visual display units causing musculoskeletal stress due to sustained neck flexion, as studied by Turville K et al. (1998).
- Hand and wrist related MSDs were accounted for by repetitiveness, high physical workloads, increasing number of working hours and fatigue/strain accumulation. In a study conducted by Armstrong TJ. in 1984, it was noted that when operating a keyboard, repetitive key entry may cause irritation to the synovial sheaths surrounding the extensor tendons or the tendons themselves.
- Multiple joint/body area involvement was observed in 4-5% of the population due to various factors such as computing tasks, anatomical and biomechanical alignment of body motions, impact of work station design and other workplace physical risk factors (Vijay, 2013).
- The impact of Work from Home on daily routine of IT employees was studied by Suresh G. in 2020, and more than 75% of the population felt that there was no standard working hours with no specified time gap between work and rest, leading to fatigue.

CONCLUSION

This study attempted to examine the physical and ergonomic aspects of WFH. A strong association was found between posture, work habits, duration of work and workspace configuration with musculoskeletal discomfort. We can thus conclude that, WFH practices and poor ergonomics have a detrimental effect on the musculoskeletal health of IT/Computer professionals.

LIMITATIONS & SUGGESTIONS

1. The sample size taken was small and could not sum up the various locales of Maharashtra.
2. Correlation between different body areas with work space configuration and ergonomics can be taken in the future.

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