



A survey on effect of covid-19 pandemic in non specific low back pain among IT professionals who are working from home: A cross sectional study

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Abstract

Purpose: To find out the effect of Covid -19 pandemic in non specific Low back pain among IT professionals who are working from home.

Study design: Survey based Study

Method: After screening on the basis of inclusion and exclusion criteria 276 participants were included in the study and the purpose and nature of the study explained to them. The study commenced following the approval of the ethical committee. A MODI questionnaire was generated using Google form which included specific and structured questions and the questionnaire related to their ergonomical difficulty before and during covid-19 pandemic while working on computer. Participants answered the questions and based on their response the results were postulated.

Results: The effect of covid-19 pandemic in non-specific LBP among IT professionals who are working from home shows that the mean value is 58.69% and who are working from office the mean value shows that 50.36% there was statistical significant association with non-specific LBP.

Conclusion: In the present study it was found that participants those worked from home had more non-specific low back pain than the participants who worked at worksite.

Keywords: low back pain, work from home, IT professionals

Introduction

In the search for disease, low back pain has been called an illness ^[1]. Low back pain is defined as "pain and discomfort, with or without leg pain, located below the costal margin and above the inferior gluteal folds" and can be categorised into three types: acute, subacute and chronic ^[2]. Occasionally this low back issues are associated with pandemic which originated on 11 March 2020 the World Health Organization (WHO) declared the outbreak of the novel coronavirus (COVID-19) a global pandemic ^[3]. World is going through a very distressing process of novel coronavirus (SARS-CoV-2) spreading. The disease is highly contagious. It originates in late December 2019 in Wuhan, Hubei Province, People's Republic of China (PRC) ^[4].

The prevalence of Work-related Musculoskeletal Disorders (WMSD's) is increasing among Computer users throughout the world ^[5]. Two postures learned during different occupations are sitting and standing. Desktop work, computer professionals, bankers, receptionists, chartered accountants are all professions that require sitting ^[6]. In order to discover the emergence and associated risk factors of LBP among office employees, a variety of epidemiological studies have been carried out ^[7, 8]. Although 60 to 80 per cent of adults experience low back pain at some stage in their lives. Literature reveals that 30 per cent of adolescents undergo at least one episode of LBP worldwide ^[9].

The World Health Organization (WHO) and the Centres for Disease Control and Prevention (CDC) have been working on safety guidelines focused on reducing people's exposure to this virus. In addition, in China and some other nations,

social quarantine, social distancing and separation of infected populations have been successfully conducted ^[10]. Today, a sedentary lifestyle has become omnipresent, as an growing number of people spend long periods in a sitting environment as well as leisure time. At the same time, the prevalence of LBP among office staff in general has increased while LBP and sedentary office work may be expected to be highly linked ^[11]. The development of work-related musculoskeletal disorders among employees who use computers extensively in their workplace is correlated with several risk factors. It is possible to classify all risk factors into two main categories.

One is occupational and the other is private/non-occupational. Repetition, stress, awkward / static postures, length of exposure and vibration are the occupational factors that are known as major risk factors. As IT professionals are exposed to such various risk factors, they are likely to experience work-related musculoskeletal discomfort ^[5]. It has been well founded that NP and LBP are not only risk factors for serious problems with the spine and functional impairment, but are also related to reduced quality of life and employee productivity ^[12].

Ergonomics is the science of making the workstation effectively fit, comfortable, protected, secure and efficient for the staff so that they enjoy making the organisation to which they belong more productive ^[13]. In general, ergonomics is designed to match the task with the person and not the person to the task ^[14]. Chronic addiction to electronics, mobile devices now a day raise the likelihood of many musculoskeletal disorders that cannot be ignored. The findings of many researchers that prolonged work on these

gadgets lead to unstable postures with a high risk of developing injury [15]. In sitting position the body weight is transferred primarily by the Ischial tuberosities of the pelvis and its surrounding tissues into the supporting areas (schoberth 1962). Many researchers suggest that prolonged sitting is the root cause of increased intradiscal pressure and the use of lumbar support helps to avoid lordosis in the lumbar [16, 17, 18, 19].

Further it has been documented as sedentary activity, is work done in sitting or reclining positions that is costly to low energy. Sedentary activity can harm well-being and quality of life. It also affects disease risk, regardless of the level of individual physical activity. It is known that sedentary habits, including television watching, total sitting time, genetic screen time, sedentary working time and overall sedentary time, are all correlated with lower physical activity among adults. At present, sedentary behaviour is of particular concern as it escalates throughout the COVID 19 epidemic at home [10].

Low back pain is common problem among IT professionals. This could be due to prolonged sitting or inaccurate posture. There is lot of literature available which reveals the prevalence of LBP pain in the working population.

But due to pandemic, it is mandatory for them to work from home. But there is a lack of evidence which postulates the prevalence of low back pain among IT professionals working from home in covid-19 pandemic there is need to investigate, hence this survey is attempted.

Participants and methods

The study was observational, noninterventional survey based study conducted in Aurangabad from 2020-2021. Data was collected from 1st October 2020 to 6th December 2020. All the individuals who fulfilled the inclusion criteria have been included in the study and the purpose and nature of the study explained to them. The sample size was 276 which are IT professionals who are working from home more than 6 hours. females were excluded.

Inclusion criteria

1. Individuals with 25-35 years of age
2. Individuals who are working from home more than 6-8 hours

3. Only male participants who are working from home

Exclusion criteria

Individuals with Suspected pathological conditions associated with neurological symptoms

1. Previous history of – Renal disease, Spinal surgery, Fracture of spine, Trauma to spine
2. Participants not willing to participate
3. Female participants
4. Individuals using any drugs

Procedure

The study commenced following the approval of the ethical committee. A MODI questionnaire was generated using Google form which included specific and structured questions and the questionnaire related to their ergonomical difficulty before and during covid-19 pandemic while working on computer. Participants answered the questions and based on their response the results were postulated.

Outcome measures

1. Modified Oswestry Disability Index to assess functional performance

It is a self-completed questionnaire consisting of 10 items covering various functional aspects. It includes pain level, ability to care for oneself, lifting, ability to walk, ability to sit, ability to stand, quality of sleep, social life, ability to travel and work or home construction. Every question is graded on a scale of 0-5 with zero being the first statement indicating the least amount of impairment and 5 being the last statement indicating the most significant disability. Multiplying the overall score by 2 and presenting it as a percentage. Zero is equated to no impairment and 100 is the highest potential disability [20].

2. Questionnaire related to ergonomical difficulty before and during covid-19 pandemic while working on computer.

which included specific and structured questions related to their ergonomical difficulty before and during covid-19 pandemic while working on computer.

Results

Table 1: Do you maintain correct posture while working from home on computer/laptop?

Maintaining correct posture working from home	No. of participant	Percentage
Yes	109	39.5
No	167	60.5
Total	276	100.0

It is observed that out of 276 participants 109(39.5%) were maintaining correct posture and 167(60.5%) were not

maintaining correct posture while working from office on workstation.

Table 2: Modified Oswestry Low Back Pain Disability Questionnaire classification

Modified Oswestry Low Back Pain Disability Questionnaire classification	No. of participant	Percentage
Minimal disability (0% to 20%)	165	59.8
Moderate disability (21% to 40%)	35	12.7
Severe disability (41% to 60%)	45	16.3
Crippled (61% to 80%)	18	6.5
Exaggerated symptoms (81% to 100%)	13	4.7
Total	276	100.0
Mean ± SD		26.81±2.41

Depending upon the majority of the cases out of 276 participants, 165 (59.8%) were having minimal disability, 35 (12.7) were having moderate disability, 45 (16.3%) were having severe disability, 18 (6.5%) were having crippled

and 13 (4.7%) having exaggerated symptoms. The mean value of the Modified Oswestry Low Back Pain Disability Questionnaire classification was 26.81 and standard deviation was 2.41.

Table 3: Used Ergonomic Chair

	Used ergonomic chair		Total	Chi-Square value	P-value
	Yes	No			
Office	194(70.28%)	82(29.71%)	276	32.5	P<0.0001 S
Home	128(46.37%)	148(53.62%)	276		

It is observed that out of 276 participants, 194 (70.28%) were using ergonomic chair while working from office and 128 (46.37%) were using ergonomic chair while working

from home and there was statistically significant association between place of work and use of ergonomic chair (P<0.0001).

Table 4: Maintain Correct Posture

	Maintained correct posture		Total	Chi-Square value	P-value
	Yes	No			
Office	141(51.08%)	135(48.91%)	276	7.89	P=0.006 S
Home	109(39.49%)	167(60.50%)	276		

It is seen that out of 276 participants, 141 (51.08%) were maintaining correct posture while working from office and 109 (39.49%) were maintaining correct posture while

working from home and there was statistical significant association between place of work and maintaining correct posture (P=0.006).

Table 5: Pain While Lifting/Bending Forward

	Pain while lifting/bending forward		Total	Chi-Square value	P-value
	Yes	No			
Office	139(50.36%)	137(49.63%)	276	3.87	P=0.04 S
Home	162(58.69%)	114(41.30%)	276		

It is further interpreted from the table that out of 276 participants, 139 (50.36%) were having Pain while lifting/bending forward while working from office and 162 (58.69%) were having Pain while lifting/bending forward while working from home and there was statistical significant association between place of work and Pain while lifting/bending forward (P=0.04).

Participants answered the questions and based on their response the results were postulated.

Discussion

These data with the following protocol of influence of pandemic on low back pain on IT professionals has a remarkable impact on social living of professionals.

This study was done to evaluate the effect of Covid 19 pandemic in non specific low back pain among IT professionals who are working from home. The study revealed that depending on the work from office and work from home ergonomic condition. The participants who worked from home present with pain and other postural discomfort were more as compare to participants who worked from office. The outcome measures used in the study were MODI questionnaire and questionnaire related to ergonomic position, difficulty before and during covid 19 pandemic while working on computer. After screening on the basis of inclusion and exclusion criteria 276 participants were included in the study and the purpose and nature of the study explained to them.

The prevalence of work related musculoskeletal disorders is increasing among computer users throughout the world. Hameed P S (2013) in their study concluded that the low back pain is the major work related musculoskeletal disorder among the IT professionals studied [8].

Borhany T *et al* in 201 studied the Musculoskeletal problems in frequent computer and internet users. this was a Cross Sectional Study performed in the community and they chose Office workers and students aged 18 to 50 years using Computers and Internet for not less than 3 hours per day. After a verbal consent, they were given a questionnaire in English. People having prior diagnosed musculoskeletal problems were excluded. Total number of participants were 150, out of which 80% were males, and 67 (44.7%) suffered from musculoskeletal problems, affecting at least one of the four anatomical sites (low back, neck, shoulder, wrist/hand). Common symptoms were Headache, which was seen in 46% and neck pain in 41.3% of subjects. concluded that Musculoskeletal symptoms are quite common, headache and back pain being most common symptoms. These symptoms are associated with prolonged use of computer and internet and often left unreported and unrelated [37].

The study commenced following the approval of the ethical committee. Before commencement of the study online consent was taken from all the participants. A MODI questionnaire was generated using Google form which included specific and structured questions and the questionnaire related to their ergonomical difficulty before and during covid-19 pandemic while working on computer.

The modified oswestry disability index was used to determine the participants functional disability in present study. in 2021 Fritz JM *et al* compared the modified oswestry low back pain pain disability questionnaire and the Quebec back pain disability scale in patients with LBP. The two scales were given initially and after 4 weeks of treatment with physiotherapy and the results showed that the MODI was superior in terms of measurement properties. Compared to the Quebec back pain disability index, the test-

retest reliability is higher ^[33]. In 2000, Fairbank JC *et al* have stated that MODI is a valuable outcome measure for low back pain ^[32]. The findings of the present study showed 59.8% were having minimal disability, 12.7 were having moderate disability, 16.3% were having severe disability, 6.5% were having crippled and 4.7% having exaggerated symptoms. The mean value of the Modified Oswestry Low Back Pain Disability Questionnaire classification was 26.81. Saleem M *et al* in 2015 conducted a cross sectional study on work related musculoskeletal disorders among software professionals. study has concluded that MSD is widely reported among software professionals working in the IT field in India ^[38]. Oha K *et al* in 2014 also concluded that a high prevalence of MSP in the neck, low back, wrist/arm and shoulder was observed among Estonian computer users ^[39]. In present study it is reported that IT professionals who are working from on workstation having pain in lifting/bending forward.

Malinska M *et al* in 2010 studied the Influence of Occupational and Non Occupational Factors on the Prevalence of Musculoskeletal Complaints in Users of Portable Computers. The study covered 300 workers. Musculoskeletal complaints were assessed with the Nordic musculoskeletal questionnaire complemented with a visual analogue scale. Working conditions was assessed with a questionnaire developed as part of the study. They concluded that the most prevalent faults in the organization of workstations were lack of a computer desk with an adjustable keyboard tray/drawer, no adjustment of chair armrests and no possibility to use an additional keyboard. The most frequent complaints among computer operators were headaches, low-back pain and neck pain. The use of an additional keyboard reduced the intensity of shoulder pain ^[40]. In present study 70.28% were using ergonomic chair while working from office and 46.37% were using ergonomic chair while working from home, 51.08% were maintaining correct posture while working from office and 39.49% were maintaining correct posture while working from home, 50.36% were having pain while lifting/bending forward while working from office and 58.69% were having Pain while lifting/bending forward while working from home.

Conclusion

In the present study it was found that participants those worked from home had more nonspecific low back pain than the participants who worked at worksite. Also usage of ergonomically chair, correct posture while working from home, the pain and dysfunction in bending and lifting forward along with MODI score shows significant improvement in minimal, moderate and severe dysfunction if correct posture is maintained and ergonomic chair is used in home setup.

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