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PREVALENCE OF LOW BACK PAIN AMONG WORK FROM HOME IT PROFESSIONALS DURING COVID-19 PANDEMIC IN ANAND CITY – A CROSS-SECTIONAL STUDY

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Abstract: **Background**: Low back pain (LBP) is commonly accompanied by radiating pain in one or both legs and experienced by people of all ages. Many professionals are using laptop and computers in non-desk setting situations at the table, and on the bed and floor tend to stay in a static posture for long periods which can lead to poor spinal alignment and bad ergonomics. LBP is the leading cause of Years Lived with Disability (YLD) being one of the major public health problems globally that requires attention and may also to take physiotherapy intervention. **Aim**: To evaluate prevalence of LBP in work from home IT professionals. **Materials and Methods**: A cross-sectional study was conducted among 892 work from home IT professionals of Anand city, aged between 20-45 years fulfilling the inclusion criteria. Subjects were selected by a convenient random sampling method and general assessment was taken. Oswestry Disability Index (ODI) was used as the outcome measure. Data were analysed using SPSS software for descriptive and analytical statistics. **Results and Discussion:** Total 892 subjects (582 males, 310 females) selected based on inclusion criteria. The mean age was found to be 26.25 $\pm$ 5.21 and the mean ODI score of all the subjects was 7.16 $\pm$ 8.61 belonging to the minimal disability. Result shown that 91.31% subjects had minimal disability, 7.61% had moderate and 1.09% had severe disability, while 0% were crippled and bed bound. Out of total subjects, 69.05% reported LBP and 30.95% had no LBP. **Conclusions**: There was significant amount of prevalence of LBP among IT professionals while doing work from home. This study showed that the majority of IT professionals doing work from home experienced minimal disability due to low back pain according to the ODI scale.

Keywords: Low back Pain, Work from Home, IT workers, Covid-19 Pandemic, Oswetry Disability Index

I. INTRODUCTION:

Due to difficulty in running the economy without any businesses during Covid-19 pandemic; the work from home concept has come for the majority of the business including online teaching and Information Technology (IT) industries. After more than 8 months of the crisis, a majority part of the population had adapted to the new measures of working from home.(4) Among all the professions which are at higher risk to get Musculoskeletal Diseases, Video Display Terminal (VDT) workers are more prone than others. VDT workers are more prone to develop the musculoskeletal symptoms, with a higher prevalence of 50%.(5) Musculoskeletal disorders are called work-related, only when the work atmosphere and performances of work are drastically contributing to their development.(6)

Low back pain (LBP) has been found to be one of the most common causes of work-related musculoskeletal disorders and also being the few reasons for bringing significant problems in both the personal and professional lives of the people which includes sleeping disorders, disability, and reduced performance etc.(7) Muscles of the lower spine regions produce and control the movement of the trunk and stabilize the trunk for the motion of the lower extremities. The erector spinae includes the iliocostalis and longissimus muscle groups, the extensors of the trunk. The lumbar region is capable of movement in flexion, extension, lateral flexion, and rotation.(8) LBP wrongly framed as a disease is actually a symptom, which is a result of many variables of known or unknown pathologies or diseases. It is defined according to the area of pain, commonly occurring in between the margins of lower ribs and the buttock creases. LBP is frequently associated with pain along or behind one or both legs and in few cases, the low back pain has resulting neurological symptoms in the lower limbs.(9) The prevalence of LBP has also increased among desk job workers in general globally.(10) There are reports showing seated periods of work greater than 7 hrs per day are much more prone to the risk of LBP. LBP is quite frequent of a symptom and is faced by people at any point in their life. In the year 2015, the global point prevalence of activity-limiting low back pain was 7.3%,

which implies that 540 million people were affected with LBP at a point in time. LBP is the leading cause of disability globally and is a huge economic burden.[9] Chair sitting in the standard comfortable position for humans almost up to 55% of the working hours that is 7.7 hours.[11] Sitting contributes to the decrease in the lordotic curve and an increase in intra-disk pressure. Using lumbar support in a chair can help in preventing the flattening of the Lumbar Lordosis (LL) while sitting.[11] However, bigger reductions in LL were noted during chair sitting with forward support, on a stool, and in a cross-legged sitting. Adoption of a flexed spine posture caused by computer and desk work has become an integral part of most working environments. Many studies reported individuals using laptops and computers in ergonomically incorrect work stations like tables, on the bed, couch, sofa, and on the floor.[12]

Subjects operating laptop found the highest amount of discomfort (95%) on the low-height table, and as much as 80% and 70% for the bed and sofa respectively.[12] Operating of laptops on a low-heighted table is not uncommon in users of Asian countries. Cross-legged sitting while working on a low-heighted table is a resemblance to chair sitting while the feet are up on a stool, poor posture results due to no back support in such a position.[12] The assessment of disability precipitated by LBP has become quite a crucial problem at present. In last few years, several questionnaires have been found to be important for the same purpose.[13] The Oswestry Disability Index (ODI) is one of the more widely accepted and routinely practiced outcome measures for patients with LBP.[14] ODI is a subjective scale which takes only 5 minutes to fill up and a minute to interpret. Interpretations are related with the intensity of disability varying from minimal to bedbound. The simplicity of questions, calculation, and interpretation makes the ODI quite a convenient tool in clinical setting.[14] The questionnaire has 10 sections, and each section has a 6 point system awarding scores from 0 to 5 according to the disruption of activity in question. A score closer to 0 represents lesser extent of disruption of the activity, and increasing disruption as the score increases.[15]

Increased usage of the electronic devices with poor ergonomics at home can cause low back pain easily. LBP can lead to early retirement. Economically, LBP is a huge burden on health care system and on socio-economic status. Considering all this points, this study aimed to find out the prevalence of LBP due to work from home in the city of Anand in Gujarat State.

II. MATERIAL AND METHODS:

A cross – sectional study was conducted among the population involved in work from home in and around Anand city (Gujarat). The data was collected through convenience random sampling. 92 I.T. Professionals were included in the study fulfilling the inclusion and exclusion criteria. Individuals in the age group of 21 – 45 years, both males and females, working in the I.T. sector, and having at least past 3 months of work from home were included in the study. Those individuals not willing to participate or having any history of past spinal injuries and/or surgeries, or any past history which may explain current occurrence of back pain were not included in the study. The institutional ethical clearance has been obtained for this study. The subjects who were willing to participate in the study were selected from various I.T. sectors of Anand city. The written consent was taken from all the selected subjects and was explained about confidentiality of personal data, and withdrawal at any time during and after the study. General assessment was done with required demographic data. The subjects were explained about the study and the ODI and its various sections and how to put mark in all sections. Total ODI score was calculated and recorded. The prevalence of the Low back pain was assessed by using the collected data.

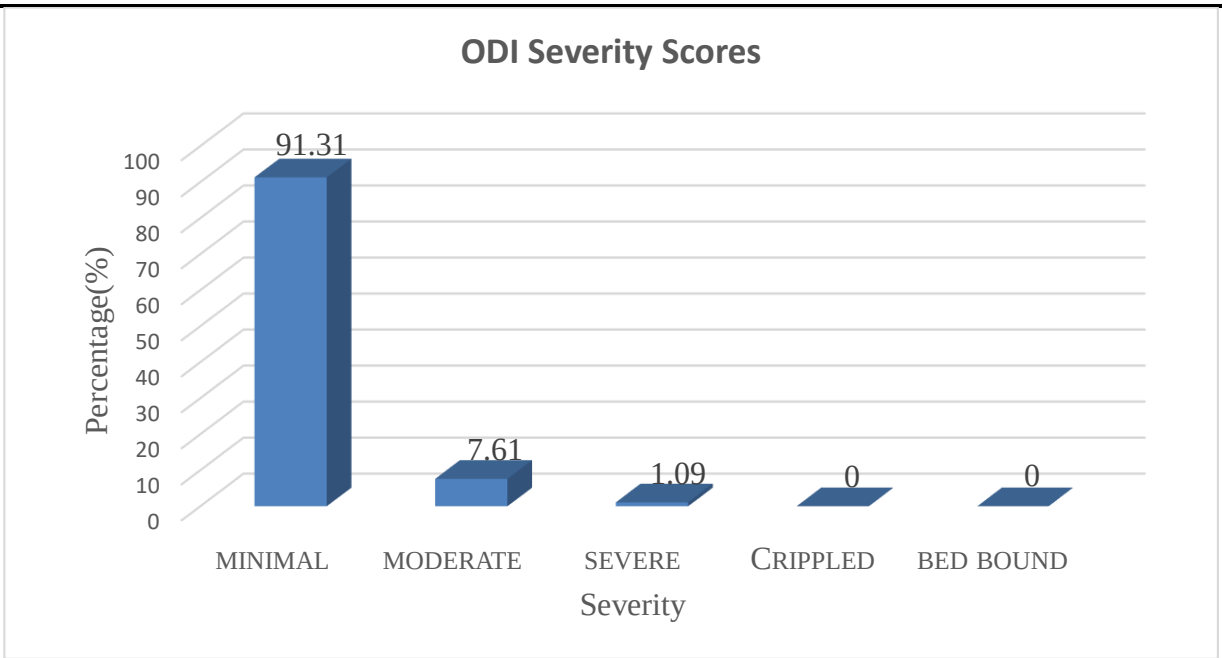
III. RESULT:

A total of 892 subjects had participated in the study on voluntary basis including which there were 310 females and 582 male participants. All statistical analysis was performed using the SPSS version 19 for windows.

Table-1: Mean, SD and SE of participants

	Mean	Standard Deviation (SD)	Standard Error (SE)
Age (Years)	26.25	5.21	0.542
ODI score	7.156	8.61	0.90

The descriptive data shows that the minimum age of the subjects in the study is 20 years while the maximum age is 42 years. The minimum ODI score is 0.00 while the maximum is 42.00.



Graph-1 Percentage distribution of severity of ODI scores among the population.

Among the total 892 subjects, 815 subjects (91.31%) fall into the minimal severity category, while 68 subjects (7.61%) fall into the moderate severity category and 9 subjects (1.09%) fall into severe category. No subjects were found to be affected as much as the severity of the remaining 2 categories of Crippled and Bed Bound.

IV. DISCUSSION:

The COVID-19 outbreak has a significant impact on the working techniques of IT workers. Current research investigated the prevalence of low back pain due to work from home. Using laptops/computers with poor postures is seen to have major risk factor for low back pain. Shahul Hameed et al. concluded in their study that Low Back Pain is the major Work-Related Musculoskeletal Disorder among IT Professionals.[5] In this study, more than 50% of them reported Low Back Pain and our study supports the same as we have found the significant prevalence of low back pain. In 2010, a study of global burden of disease suggested that LBP is one of the top injuries and diseases responsible for the bigger numbers of disability-adjusted life years (DALYs), which are years of healthy life lost due to injury or death.[16] In this present study the ODI is used as an outcome measure to find out the prevalence and it also shows the percentage of disability due to LBP. Form the present study, it is found that 91.31% of the individuals have low back pain and they fall into the minimally disabled category in the ODI. In addition, 7.61% of individuals were seen in the moderate disability category and 1.09% of people were present in the severe category.

LBP affecting subjects' ADLs and their severity was recorded with the help of ODI. It has been previously applied to a great variety of occupational subjects to evaluate LBP problems, including computer users.[17] The reliability of the Oswestry Disability questionnaire as a screening tool has been proven by many previous studies.[19] The mean prevalence rate of low back pain in a study by Francis Fatoye et al. was evaluated as 1.4 to 20.0% and the annual prevalence ranged from 22.0 to 65.0%.[20] The findings of this study are similar to the outcome of this analysis.

The presence of low back pain among the subjects was much more frequently reported than the findings of 50% prevalence in previous studies.[10] In this study, 69.05% I.T. professionals reported that they had experienced low back pain since the beginning of work from home. The finding of this study supports the previous articles showing the association of low back pain and computer workers' poor posture.[8]

Issues regarding physical health during remote working (working from home) was discussed in an article addressing the problem that increases in a prolonged sitting position and working in lordotic postures precipitated due to the use of non-ergonomic setting in work from home population seems to establish the incidence of musculoskeletal problems, especially LBP and neck pain.[36] In the present study, the majority of the population that is 91.31% scored in the minimal severity of the ODI scale, showing that they had a minimal disability in ADL's.

Most of the time of the day is spent in sitting on the floor in many Asian countries. Cross-legged sitting on floor is a typical cultural practice adopted for any of the year, mostly in Asia. The investigation also highlighted that a large reduction in the lumbar lordosis may be a promoting risk factor in the incidence of

LBP.[20] In the current study we have also seen that many of the IT workers have adopted to use the various available sitting equipment at home that includes chair, table etc and there is the presence of the Low back pain among them supporting the previous literature. The IT workers have to work for more than 4-5 hours, it has been seen that the risk of LBP tend to increase when I.T. workers maintain seated posture for more than 7 hours per day.[21] The present study supports the previous literature which showed that due to less activation of lumbar musculature in sitting position, the force is transmitted by passive structures present there, which are ligaments and intervertebral discs. Due to the viscoelasticity of these structures and improper activation of lumbar region muscles, the lumbar spine is at risk to develop deconditioning and LBP.[21]

V. CONCLUSION:

This cross-sectional study was conducted among 892 subjects aged between 20-45 years with mean age 26.25 ±5.21 after inclusion criteria were met. The result was found as 91.31% of the subjects in Minimal disability category, 7.61% in Moderate disability category, and 1.09% in severe disability category of ODI while there are 0% of population which had fallen in Crippled and Bed Bound category. 7.15 ±8.61 was the mean score of all the subjects showing minimal affections of ADL'S due to low back pain. 69.05% I.T. professionals reported that they had experienced low back pain since the beginning of work from home.

In conclusion, this study shows that majority of the I.T. professionals were minimally affected due to low back pain while doing work from home. Hence, sitting ergonomics and workplace set up is very important for work from home individuals to prevent Low back pain.

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Disclaimers: None
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