DOI: https://doi.org/10.53350/pjmhs22161180

ORIGINAL ARTICLE

Musculoskeletal Symptoms and its Associated Factors among Post Covid-19 hospitalized patients

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ABSTRACT

Background: COVID-19 also called SARS-COVID-19 infects the respiratory system and affects multiple organ systems directly or indirectly, counting the musculoskeletal system. Individuals who are infected with COVID-19 indicate numerous musculoskeletal symptoms including myalgia, fatigue, osteoporosis, and osteonecrosis was communal in patients with moderate to severe intensity of disease.
Aim: To discover the prevalence of MSK symptoms in COVID-19 recovered patients who were hospitalized and the association between these MSK symptoms and associated factors.
Method: A descriptive type of cross-sectional study directed with 452 patients. Non-probability convenient sampling technique was used to select patients. Data was collected from patients who were diagnosed with COVID-19 test and received medical treatment, then had negative test results, presented with musculoskeletal symptoms within age range of 20-60 years.
Results: Among 452 patients, with 294 (65%) of male and 158 (35%) were females and the mean age of the patients were 25 years. The data revealed 167 (36.95%) complained of pain in neck and 269 (59.51%) complained of shoulder pain, with 175 (38.71%) patients who had upper back ache after COVID-19, 188 (41.59%) had low back pain, 156 (35%) had pain in buttocks, thighs and hip, 166 (37%) had pain in thighs and feet.
Conclusion: Our study concluded that COVID-19 was a significant cause of musculoskeletal impairments in COVID-19 recovered patients. The results of study exposed a significant association between different factors which would be cooperative in future for further researches.
Keywords (Mesh): COVID-19, Musculoskeletal symptoms, Associated factors.

INTRODUCTION

The world has been fighting the covid-19 which instigated as pneumonia of unknown cause in Wuhan, china at December-2019[1]. The virus spread all around the globe and who declared it as the 6th global health emergency based on its rapidly increasing case rate in china and other countries in January-2020[2]. Till February-2020 this disease had the highest morbidity and mortality rate[3]. It is a virus that compromises the human respiratory system. Initially, COVID- 19 was diagnosed as pneumonia, but there was no clear understanding of its etiology until more research concluded that the virus derives from bat origin[4].

On 7th January, it was confirmed that COVID-19 had greater than 95% homology with the bat coronavirus[5]. The quick worldwide spread of Coronavirus had caused tsunami of cases. In the Europe, there were a total of around 3,755,000 active cases of COVID-19 and deaths were 214,092[6]. COVID-19 was supposed to intensifying in Pakistan. On 26-Feb-2020, First case of coronavirus was diagnosed in Karachi, Pakistan. With anticipated masses of Pakistan's as 200+ millions. In 45 days, on 10th April 2020, Pakistan's estimation reached 4 thousand and 601 confirmed cases of COVID-19. In this, recovered patients were 727, with 66 died[7]. It had been found that this novel virus is the cause of many symptoms, from High to moderate grade of fever with cough and fatigue symptoms[8]. The transmissible rate of this virus is more than influenza. But COVID-19 patients had symptoms similar to other others common diseases[9]. In extreme cases, symptoms of headache, sputum production, Diarrhea, hemoptysis, Lymphopenia and dyspnea were reported[10]. Precisely, The Musculoskeletal symptoms could range from myalgia's leads to condition such as Sarcopenia & cachexia. These disorders mentioned above could have blunt effects on Musculoskeletal system, ultimately this causes disabilities and in some conditions death[11]. This virus primarily affects the respiratory system; it also had distinct effects on multiple organ systems indirectly or directly, counting the musculoskeletal system[12]. Those, who were diseased with COVID-19 presents with musculoskeletal symptoms including Myalgia's, Muscle dysfunction, Osteoporosis, and Osteonecrosis[13].

Received on 24-08-2021
Accepted on 12-01-2022

The clinical demonstration of COVID-19 ranges from asymptomatic, mild symptomatic to Mortality cases[14]. Extreme cases of virus could lead to serious problems which include pneumonia, sepsis, blood clotting, multiple organ failure, myocarditis, kidney injury, acute myocardial infarction, other viral and bacterial contaminations which aren't relatable to coronavirus[15]. From the past scientific researches, it was revealed that inactivity aggravates the MSK symptoms[16]. The primary care of COVID-19 was self-isolation so patients with previous MSK symptoms would have risk of worsening of these symptoms[17]. The main objectives of this study were to identify musculoskeletal symptoms and associated factors post COVID-19 patients and to identify the region whether it was upper extremity, spine or lower extremity involved. Hypothesis for this research was proposed as there was association between musculoskeletal symptoms and post COVID-19. The rationale of the study is musculoskeletal symptoms and associated factors among post COVID-19 patients in Pakistan as no prior studies and researches have been conducted on this topic. The study emphasizes all regions including upper extremity, spine and lower extremity as the nearly closed studies conducted in other regions emphasized upper limb and spine[18].

The current research aimed to find the socio-demographic information, status of MSK symptoms and level of daily physical activity among post COVID-19 patients.

METHODOLOGY

A descriptive type of cross-sectional study was conducted after approval of IRB with 452 patients who were hospitalized in Lahore, Pakistan. Non-probability convenient sampling technique was used. Participants were included, when they had the positive test history of COVID-19, received medical treatment with having negative results, within 6 months and participant complained of the MSK symptoms. The Age range was included between 20-60 years. Participants were excluded who had the positive test COVID-19 at the time of study participating period. Data was collected through Nordic[19] modified musculoskeletal questionnaire compromised of socio-demographic information and musculoskeletal symptoms related questions.

Statistical analysis: The sample size was collected using Cochran's sample size formula[20]. Here the values of Z^2 =Confidence interval l= 95%= 1.96, e =Desired level of the precision = 0.05, p = Estimated proportion = 0.5, q = 1-p =1- 0.5 = 0.5 and Sample size=452 post-covid-19 patients. Socio-demographic and MSK related symptoms were analyzed using descriptive statistics, a table of frequency and percentage was used. SPSS version 22 were used to analyze the data.

RESULTS

Out of 452 patients 294 (65.0%) were males and 158(35.0%) were females. The mean age of patient was 25 years with maximum number of participants in age range 20-30 years. 233(51.5%) were in service, 28(6.2%) were businessmen, 88(19.5%) females were housewife, 67 (14.8%) were students and 36(8.0%) were retired person by occupation. The educational data revealed that 182(40.3%) attained secondary level, 182(40.3%) attained graduation level, 88(19.5%) attained post-graduation level. Among 452 participants, 398 (88.1%) were living in urban area, 54(11.9%) were living in rural area. The general health status of patients showed that 114 (25.2%) were enjoying good health, 272 (60.2%) enjoyed fair health while 66(14.6%) complained of poor general health. Whereas, 103(22.8%) participants had mild, 129 (28.5%) had moderate and 220(48.7%) had severe disease in terms of severity of covid-19. Meanwhile, 308 (68.1%) did not perform any exercise and 144(31.9%) performed regular exercise before covid-19. Whereas after covid-19, 262(58%) did not perform daily exercise and 190 (42.0%) performed daily exercise. The pain status showed that before covid-19, 298 (65.9%) had no pain in neck while 154 (34.1%) had neck pain. 201(44.5%) had no pain in shoulders while 87 (19.2%) had right shoulder pain, 55(12.2%) had left shoulder pain, 109(24.1%) had both shoulders pain. 316(69.9%) had no pain in elbows while 43(9.5%) had right elbow pain, 33(7.3%) had left elbow pain, 60(13.3%) had both elbows pain. 279(61.7%) had no pain in wrists/hands while 61(13.5%) had right wrist/hand pain, 42(9.3%) had left wrist/hand pain, 70(15.5%) had both wrists/hands pain. 299 (66.2%) had no upper back pain while 153(33.1%) had upper back pain. 269 (59.5%) had no lower back pain while 183(40.5%) had lower back pain. 311(68.8%) had no hip/buttock/thigh pain while 141(31.2%) had hip/buttock/thigh pain. 305(67.5%) had no knee/ ankle/ foot pain while 141(31.2%) had knee/ ankle/ foot pain.

Whereas, the pain status after recovery from Covid-19 showed 285(63.1%) had no pain in neck while 167(36.9%) had neck pain. 183(40.5%) had no pain in shoulders while 91(20.1%) had right shoulder pain, 60(13.3%) had left shoulder pain, 118(26.1%) had both shoulders pain. 305(67.5%) had no pain in elbows while 49(10.8%) had right elbow pain, 34(7.5%) had left elbow pain, 64(14.2%) had both elbows pain. 270(59.7%) had no pain in wrists/hands while 65(14.4%) had right wrist/hand pain, 44(9.7%) had left wrist/hand pain, 73(16.2%) had both wrists/hands pain. 277(61.3%) had no upper back pain while 175 (38.7%) had upper back pain. 264(58.4%) had no lower back pain while 188(41.6%) had lower back pain. 296(65.5%) had no hip/buttock/thigh pain while 188 (41.6%) had hip/buttock/thigh pain. 286 (63.3%) had no knee/ ankle/ foot pain while 166(36.7%) had knee/ ankle/ foot pain after recovery from covid-19 (Table 1).

DISCUSSION

We directed a research on 452 patients aged from 20 to 60 years who had COVID-19, with 294(65%) of male and 158(35%) were females and the mean age of the patients were 25 years with the age range 20-30 years. 398 people lived in urban area who had COVID-19 and 54 in rural area and their education status showed that182 (40.3) completed their secondary and graduation level and 88 (19.5) of them were post-graduated. A study by Numan, S. M. (2021), with 90 patients, 63 (70%) of male and 27 (30%) were females and the average age of the patients were 45.43 years with the age ranging between 35-66 years. 10(11%) were belonging from rural and 80(88%) were from urban area. The education status showed that 50(55%) completed secondary studies, 33(36%) completed graduation studies and only 7(7%) completed postgraduation studies[21]. Another retrospective study by Huang and colleagues was conducted in Wuhan, china with 99 participants and the mean age group 49.40 of participants with 51(51.51%) males and 48(49.49%) females[22]. Whereas our research which we conducted differed from above researches as it was performed on a large sample and different mean age group and included participants from both urban and rural areas.

Less than half patients 144(31.9%) were those who performed exercise before COVID-19 and who performed daily exercise after covid-19 were 190(42%). The results of this study revealed a similarity to Numan, S. M. (2021) as patients who performed exercise daily, and later recovering from COVID-19 was 30 (33%) and 57(63%) respectively as the number of patients performing daily exercise after recovery from COVID-19 increased in both studies. Another study conducted by Ambrose and colleagues found the importance of dose-based exercise for managing outpatient and care giver guidance at home after covid-19 including chest, limbs and trunk exercises for specific duration2[3]. This study differed from Ambrose and colleagues as this was focused on the number of patients performing daily exercises but similarity in both researches was the effect and role of exercise among covid-19 patients.

Among 452 patients with 167(36.95%) complained of pain in neck and 269 (59.51%) in shoulder, the number of patients who had upper back ache after COVID-19 was 175(38.71%), however 188 (41.59%) had low back pain. The study by Numan, S. M. (2021) revealed 25(27.77%) patients reported headaches and neck pain, 12 (13%) upper extremity pain, 31 (34%) upper back pain, and 22(24%) reported lower back pain. While Our research was differentiating from Numan, S. M. (2021) as it emphasized on upper limb and spine while our study also focused on lower extremity.

Our results revealed that out of 452 patients 143(31.63%) had elbow pain, 182(40.26%) had wrist/hand pain, 156 (35%) had pain in buttocks, thighs and hips, 166(37%) had pain in thighs and 166(37%) had pain in ankle or foot. A similar study conducted in Spain with 1198 participants revealed 837(70%) participants had neck pain, 162(14%) had shoulder pain, 57(5%) had elbow pain, 20 (1.7%) had hip joint pain and 22 (1.9%) had knee pain. Both studies were similar as both covered similar joints[24]. This study highlighted that male and young age group suffered from this infection and beside this working employee were highly infected with COVID-19 as compared to business man, students and retired persons. The study by Leiros-Rodriguez differed from our study as it focused one group of participants that are university students.

So our study revealed that there is a high prevalence of musculoskeletal symptoms among post-covid-19 patients. But a study conducted by Sagat and colleagues on 463 participants did not found any association among home quarantine and musculoskeletal symptoms[25]. The similarity in both researches was both had large sample size.

CONCLUSION

The study concluded that there is a high prevalence of musculoskeletal symptoms among post-covid-19 recovered patients with neck, right shoulder and lower back affected the most. Despite certain limitations the results of this study will help researchers for more generalize and vast research in future.

Conflict of interest: Nil

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