

**Effect of COVID-19 Pandemic on the Health of Healthcare Workers Due to Lack of General Physical Exercise**Peerzada Abdullah Bin Tariq<sup>1</sup>, Huba Riyaz<sup>2</sup>, Tufail Muzaffar<sup>3</sup>, Prof Aijaz Nabi Koul<sup>4</sup><sup>1</sup>Medical Officer, Department of Pain & Palliative Care, SKIMS, SOURA<sup>2</sup>Resident Doctor, Department of Physical Medicine and Rehabilitation (PMR), SKIMS SOURA<sup>3</sup>Assistant Professor, Department of Physical Medicine and Rehabilitation (PMR), SKIMS, SOURA<sup>4</sup>Professor Infectious Disease & Incharge Head of Department of Physical Medicine and Rehabilitation (PMR), SKIMS, SOURA

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Conflict of interest: Nil

**Abstract:****Background:** The imbalance between individual resources and work demands during the COVID-19 pandemic has led to musculoskeletal disorders and reduced work ability among healthcare workers, exacerbated by reduced physical activity due to quarantine and lockdown measures.**Methods:** A cross-sectional study was conducted in March 2022 at Sher-i-Kashmir Institute of Medical Sciences, Srinagar, Jammu and Kashmir, India.

Participants were healthcare workers (aged 18-60 years, BMI 22-26) from various departments at Sher-i-Kashmir Institute of Medical Sciences, a tertiary care institute in Srinagar, Jammu and Kashmir, India. Participants were screened via a questionnaire assessing the impact of the COVID-19 pandemic on their general health and work ability. Exclusion criteria included pregnancy, ischemic heart disease, stroke, or painful musculoskeletal conditions preventing exercise. Data on body weight (BW), body mass index (BMI), global assessment score (GAS), and work ability index (WAI) were compared pre- and post-COVID. Statistical analysis was performed using SPSS software.

**Results:** Of 150 screened participants, 120 showed interest, 100 replied, and 93 were analyzed after excluding 7. The average age was 35.47 years, with the majority (62%) male and 52.6% married. Participants included 53% medical doctors, 12.9% administrative staff, and 34.1% nursing/paramedic staff. Only 35.4% engaged in regular physical exercise, with 59.1% reporting none. Post-COVID, there was a significant increase in BW and BMI, and a decrease in GAS and WAI, indicating deteriorated general health and work capacity. Comorbidities worsened in many participants.**Conclusions:** Isolation, lockdown, and stressful work schedules during the pandemic significantly affected healthcare workers health, leading to reduced physical activity, musculoskeletal issues, and impaired work ability. Interventions promoting physical exercise are essential.**Keywords:** Musculoskeletal disorders, occupational health, healthcare workers, strength training, back pain, COVID-19, physical activity.**DOI:** 10.25258/ijcpr.18.2.167This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

The COVID-19 pandemic, originating in December 2019 in China, rapidly spread globally despite governmental strategies. Epidemiological experts attribute containment success to rapid quarantine measures imposed on populations. However, while quarantine effectively curbs infection spread, it induces lifestyle changes, including reduced physical activity, which can counteract the negative effects of immobilization [1,2].

Physical activity (PA) and exercise are vital for managing chronic diseases such as diabetes, hypertension, cardiovascular disease (CVD), and

respiratory conditions like COPD and asthma [3-5]. They also promote active aging by reducing frailty, sarcopenia, and dementia [6]. The pandemic disproportionately affected vulnerable groups, including the elderly and those with comorbidities [7].

Among healthcare workers, impairments in work ability are linked to musculoskeletal pain, chronic diseases, sickness absence, early retirement, and increased mortality [8]. Exposure to forceful postures and lack of recovery heightens the risk of musculoskeletal disorders (MSDs) [9,10].

Immobility leads to disuse atrophy, loss of strength and endurance in skeletal muscles, bone demineralization, joint stiffness, cardiovascular inefficiency, respiratory issues, and gastrointestinal problems [11-14].

This study investigates the impact of reduced physical exercise during the COVID-19 crisis on the health and work ability of healthcare workers, focusing on musculoskeletal and systemic effects.

**Methods**

**Study Design:** A cross-sectional study was conducted from March 2022 at Sher-i-Kashmir Institute of Medical Sciences, Srinagar, Jammu and Kashmir, India.

**Participants:** 150 healthcare workers aged 18-60 years with BMI 22-26 were recruited from various departments. A screening questionnaire and brief anthropometric examination were administered via email and WhatsApp. Exclusion criteria: pregnancy, ischemic heart disease, stroke, or painful musculoskeletal conditions preventing exercise. The participant flow is as follows: 150 screened, 120 interested, 100 replied, 93 analyzed (7 excluded).

**Data Collection:** A questionnaire assessed the effects of COVID-19 on general health, work ability, calorie awareness, working hours, exercise habits, and health goals. Variables included: body weight (BW), body mass index (BMI), global

assessment score (GAS), and work ability index (WAI), measured pre- and post-COVID.

**Statistical Analysis:** All analyses were performed using SPSS software for Windows. Paired comparisons of pre- and post-COVID variables (BW, BMI, GAS, WAI) were conducted. Descriptive statistics included means, percentages, and marginal means for WAI. Significance was set at  $p < 0.05$ .

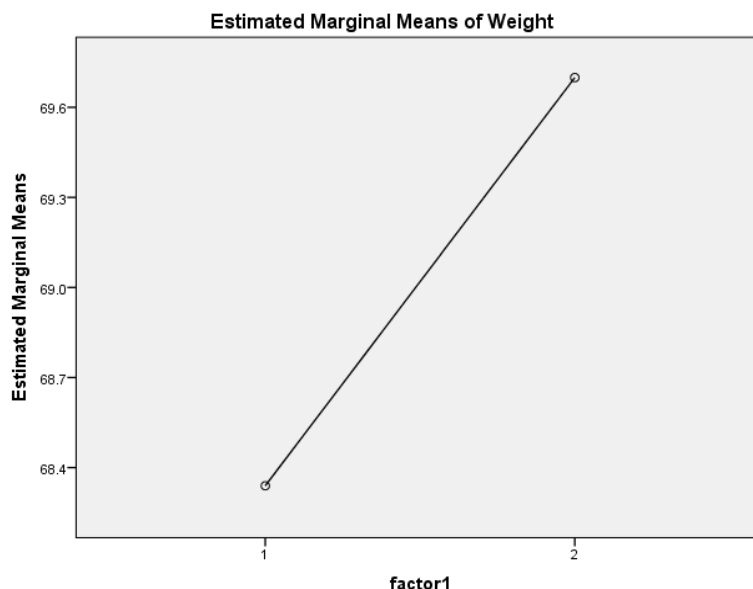
**Result**

**Participant Demographics:** The 93 analyzed participants had an average age of 35.47 years, with the majority in the 25-35 age group. Males comprised 62%, and 52.6% were married. Professional distribution: 53% medical doctors, 12.9% administrative staff, 34.1% nursing and paramedic staff.

**Lifestyle and Exercise Habits:** 67.7% knew their calorie requirements, but only 54.8% were aware of intake. Average working hours: 7.39 (majority 6-8 hours). Regular physical exercise: 35.4% (82.8% aerobic); 59.1% none. 83.8% enjoyed physical activity; 9.6% did not.

Health goals: 35.4% body fat reduction, 34.4% fitness, 27.2% feeling better, 10% flexibility, 11% strength. Exercise frequency: 21% daily, 19% weekly, 51% rarely.

Pre- and Post-COVID Comparisons

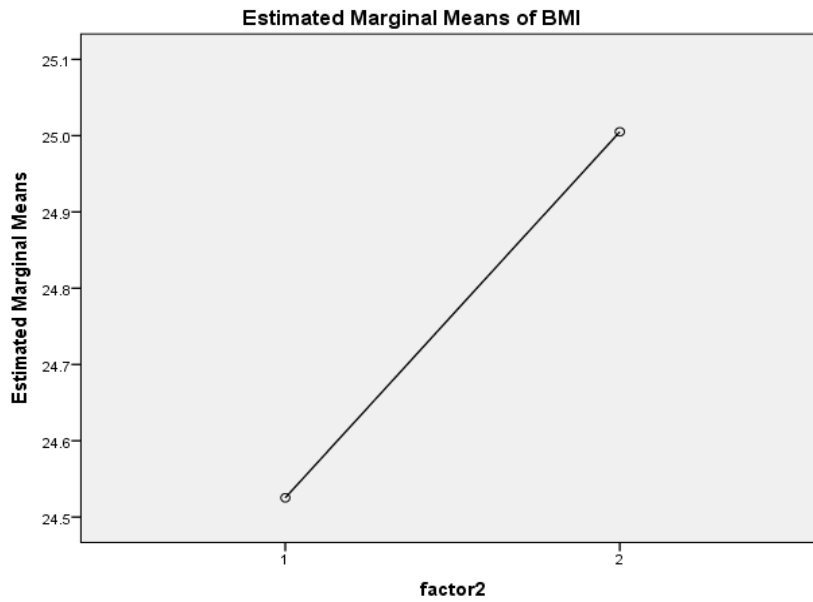


**Figure 1: Estimated Marginal Means of Weight**

This line plot illustrates the significant increase in body weight post-COVID.

- **Pre-COVID:**  $\approx 68.4$  kg
- **Post-COVID:**  $\approx 69.6$  kg
- **Change:** Clear upward trend ( $+ \approx 1.2$  kg on average)

Estimated marginal means of body weight (kg) before and after the COVID-19 pandemic among healthcare workers (n=93). The increase reflects weight gain associated with reduced physical activity during lockdown and quarantine periods.

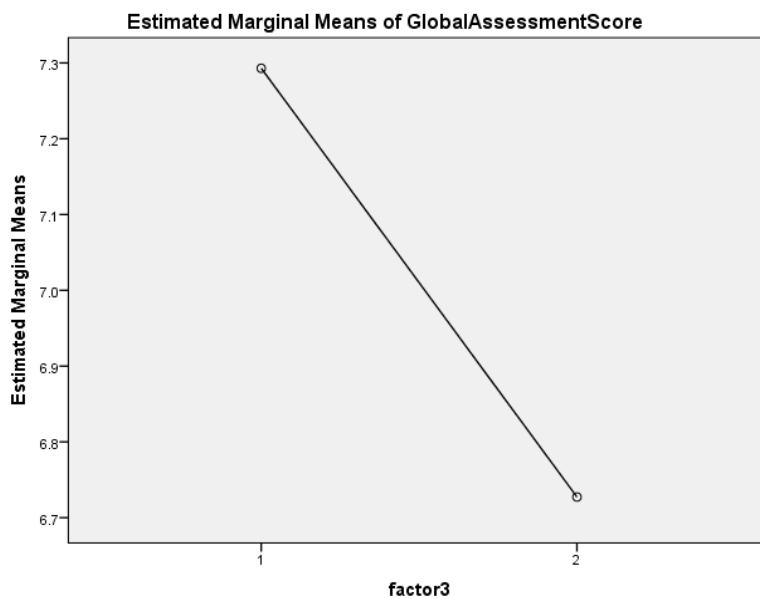


**Figure 2: Estimated Marginal Means of BMI**

This plot shows the parallel rise in Body Mass Index.

- **Pre-COVID:**  $\approx 24.5$  kg/m<sup>2</sup>
- **Post-COVID:**  $\approx 25.0$  kg/m<sup>2</sup>
- **Change:** Increase of  $\approx 0.5$  units

Estimated marginal means of BMI (kg/m<sup>2</sup>) pre- and post-COVID-19. The observed increase indicates a shift toward higher body mass, likely due to decreased exercise and altered lifestyle during the pandemic.

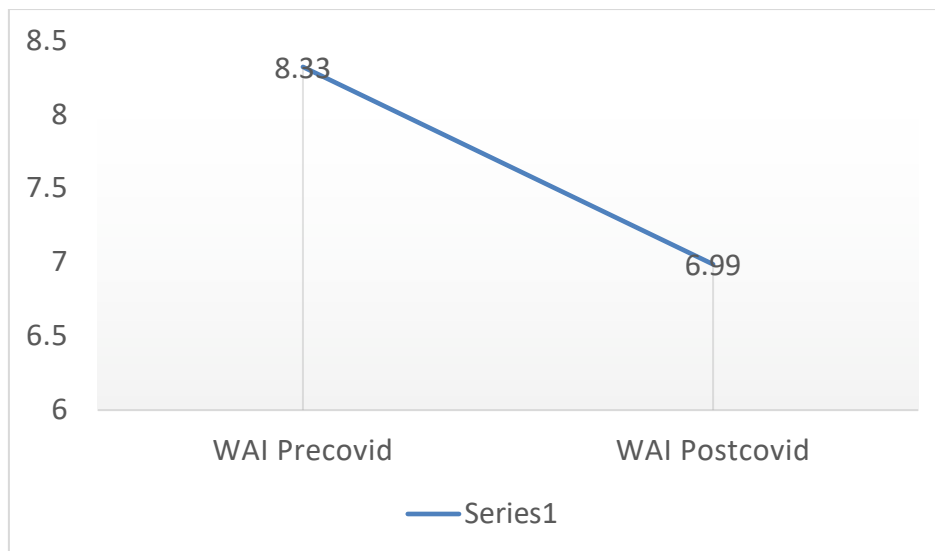


**Figure 3: Estimated Marginal Means of Global Assessment Score (GAS)**

This graph demonstrates the decline in overall self-reported health status.

- **Pre-COVID:**  $\approx 7.3$
- **Post-COVID:**  $\approx 6.7$
- **Change:** Decrease of  $\approx 0.6$  points

Estimated marginal means of the Global Assessment Score pre- and post-COVID. The downward trend highlights a perceived worsening of general health among healthcare professionals during the pandemic period.



**Figure 4: Work Ability Index (WAI) Pre- vs Post-COVID**

This plot clearly shows the substantial drop in work ability.

- **Pre-COVID:** 8.33
- **Post-COVID:** 6.99
- **Change:** Decrease of 1.34 points

Work Ability Index (WAI) scores before and after the COVID-19 pandemic. The marked decline from 8.33 to 6.99 indicates impaired occupational functioning, consistent with reduced physical exercise, increased workload stress, and musculoskeletal effects.

The present cross-sectional study, conducted in March 2022 among 93 healthcare workers at a tertiary care institute in Srinagar, Jammu and Kashmir, demonstrates clear adverse effects of the COVID-19 pandemic on physical health and occupational functioning. Post-pandemic comparisons revealed a significant rise in body weight ( $\approx +1.2$  kg) and BMI ( $\approx +0.5$  kg/m<sup>2</sup>), alongside substantial declines in the Global Assessment Score ( $\approx -0.6$  points) and Work Ability Index (from 8.33 to 6.99, a -1.34 point drop). These changes align with widespread reports of reduced physical activity during quarantine, lockdown, and heightened work demands, leading to musculoskeletal deconditioning, weight gain, and impaired perceived health and work capacity.

The observed weight gain and BMI increase likely stem from a combination of sedentary behavior, disrupted routines, and stress-related eating patterns during prolonged isolation and irregular shifts. Only 35.4% of participants maintained regular exercise (predominantly aerobic), while 59.1% reported none and 51% engaged rarely. This mirrors global trends: multiple studies documented 30–50% reductions in physical activity among healthcare workers during lockdowns, often linked to closure of gyms, fear of infection, and extended hospital hours. For instance,

research from Turkey reported decreased physical activity, increased musculoskeletal pain, and heightened anxiety/mood disturbances in healthcare professionals during the pandemic. Similarly, surveys in Singapore and other regions showed significant drops in moderate-to-vigorous activity, with healthcare workers particularly affected due to limited self-care time amid demanding workloads.

Immobility and physical inactivity exacerbate musculoskeletal disorders (MSDs), a known occupational hazard for healthcare workers involving patient handling, awkward postures, and prolonged standing. Disuse atrophy (5–10% muscle mass loss per week), rapid strength reductions (25–40% within 10–14 days), joint stiffness, and bone demineralization—mechanisms outlined in classic immobilization literature—likely contributed to the perceived health decline (lower GAS) and work ability impairment (reduced WAI). The substantial WAI drop (from 8.33 to 6.99) indicates a shift toward moderate impairment, where workers may experience difficulties coping with job demands, increased fatigue, and higher sickness absence risk. This is consistent with evidence linking sedentary behavior during COVID-19 to poorer mental health, burnout, and reduced productivity in healthcare settings. Studies have shown that low physical activity correlates with elevated depressive/anxiety symptoms and job burnout, further compounding work ability loss.

The pandemic's unique stressors—prolonged quarantine, PPE-related discomfort, emotional burden from patient care, and disrupted social support—amplified these effects. In our cohort, comorbidities worsened in many participants, potentially reflecting metabolic consequences of inactivity (e.g., insulin resistance, dyslipidemia) and chronic stress. Regional factors in Jammu & Kashmir, including harsh winters limiting outdoor activity and resource constraints in healthcare

delivery, may have intensified sedentary patterns compared to urban or less-affected areas.

These findings resonate with broader literature on pandemic-induced lifestyle changes. Declines in aerobic fitness, explosive power, and overall physical function persisted in some populations even months post-lockdown, with healthcare workers showing elevated MSD-related absenteeism post-2020. Interventions promoting workplace exercise have shown promise in preventing work ability deterioration, including supervised strengthening programs that improve musculoskeletal resilience and mental well-being.

Limitations of this study include its cross-sectional design, reliance on self-reported pre/post data (prone to recall bias), and lack of objective measures (e.g., accelerometry for activity, clinical MSD assessments). The sample, drawn from one tertiary institute, may limit generalizability, though it reflects frontline experiences in a high-burden region. Future longitudinal research should incorporate objective fitness testing, biomarkers, and interventions to track recovery and test exercise-based rehabilitation.

In conclusion, the COVID-19 pandemic profoundly impaired healthcare workers' physical health and work ability through enforced inactivity and occupational strain. These effects underscore the need for proactive strategies: mandatory workplace physical activity programs, ergonomic training, mental health support, and policy-level measures to ensure recovery time. In settings like ours, integrating low-cost home-based or virtual exercise initiatives could mitigate long-term risks, sustain workforce resilience, and safeguard healthcare delivery during future crises.

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