

Work Related Musculoskeletal Risk Assessment Using REBA Assessment Tool in a Medical Doctor during COVID-19 Pandemic - A Case Study

Susan Annie George¹, Arun Thomas Abraham²

¹Research Scholar, College of Physiotherapy, Srinivas University, Mangalore, India and Associate Professor, Medical Trust Institute of Medical Sciences, Irumpanam, Kerala, India.

²Assistant Surgeon, Community Health Centre Poothotta, Kerala, India.

Corresponding Author: Susan Annie George

DOI: <https://doi.org/10.52403/ijrr.20220325>

ABSTRACT

Purpose: A case study was done to analyze the risk of work related musculoskeletal disorder due to poor ergonomics using REBA assessment tool in Medical Doctor.

Design/Methodology/Approach: The researchers use the descriptive research methodology to understand all the activities required in meeting the objectives of the study. The working position of the doctor is described factually and accurately based on the interviews, observation and evaluation. Overall musculoskeletal Pain was analyzed using the Numerical pain rating scale (NRS), and the level of musculoskeletal disorder risk for the job task being evaluated by Rapid Entire Body Assessment tool (REBA). Thus, this design may help to uncover new facts, about the risk of musculoskeletal disorder and importance of ergonomics in medical doctors especially during covid -19 pandemic. Data obtained from the study are recorded, described, and analyzed for comparison and further analysis. The main respondents of the study were a medical doctor who visited physiotherapy out - patient department due to musculoskeletal pain.

Finding/Result: This case study has proven that the medical doctors, especially during covid – 19 pandemic are exposed to high risks of musculoskeletal disorders due to their poor ergonomics. So, it is important to give proper guidance in good ergonomics and ergonomically correct workstation to avoid the risk of musculoskeletal disorders among medical doctors.

Originality/Value: An ergonomic dimension of this study.

Paper Type: Case Study Research

Key Words: Ergonomics, Covid -19, Work - Related Musculoskeletal Disorder, REBA, Medical Doctor.

INTRODUCTION

Coronavirus (SARS-Cov-2) was discovered in Wuhan, China and spread of the newly identified virus was very fast all around the world since December 2019^[1]. People who are infected by corona virus will experience respiratory illness and does not need any special attention and treatment. But some people will become seriously weak and they might need medical attention. Elderly people and those with any associated medical conditions like diabetes, cancer, cardiovascular diseases, chronic respiratory diseases etc. are more prone to develop serious illness.^[2] Covid-19 has a great impact on unpredictable threat to physical and mental health of medical doctors. Psychiatric morbidity is common among doctors who worked during the COVID outbreak. Age and the presence of numerous comorbidities are important predictors. Adequate safety precautions should be taken.^[3] Doctors are critical to a successful response to the COVID-19 outbreak. They play an important role in diagnosis, containment, and treatment, and

their willingness to treat despite increasing personal risks is necessary for an effective public health response ^[4]. Frontline staff have been dealing with a high volume of work, personal risk, and societal pressure to satisfy unprecedented healthcare needs. Despite this, the preservation of doctors' rights has received little emphasis in traditional public health ethics.^[5]

Ergonomics And Work- Related Musculoskeletal Disorder

Ergonomics is defined as the science of tailoring the workplace to the individual. Ergonomics is based on the idea of designing the work environment and job around the human body rather than forcing the worker to adapt to inadequate design and job function. Ergonomics is a branch of applied science concerned with optimizing the efficiency and safety of products and operations. It is concerned with people's "fit" with their jobs. It considers the worker's strengths and limits in order to guarantee that job, equipment, information, and the environment are appropriate for each individual ^[6].

Some of these health-care system failures, according to Moazzami et al., are the result of abrupt changes in the workload of health-care practitioners, whose well-being is, after all, the cornerstone of any well-functioning health-care system. Long work hours, sleep disturbances, and the possibility of developing infection and putting their family at risk of a life-threatening condition may have contributed to psychological distress among COVID-19-infected health care professionals. Burnout among doctors and a shortage of health-care workers have major ramifications for patients, and the medical system may be on the point of collapse^[7]. Due to the poor ergonomics, medical doctors especially during covid -19 pandemic were having musculoskeletal problems like back pain, neck pain, knee pain etc.

Rapid Entire Body Assessment (REBA)

The Rapid Entire Body Assessment (REBA) method was utilised to assess MSD dangers during formwork procedures. Hignett and McAtamney (2000) developed the REBA method, which scores each body region to assess the selected posture (e.g,the most awkward posture, the most common posture, and the posture with the most force exerted) and provides a single score based on the posture evaluated and factors related to load, coupling, and activity. The REBA method is frequently used to assess the following postures: (a) the most commonly used posture, (b) the posture maintained for the longest time during the working cycle, (c) the posture that requires the most physical effort, (d) the posture that causes the most discomfort, and (e) the posture that causes the most pain ^[8].

Objectives Of the Study

The main objective of the study is to analyze the risk of work related musculoskeletal disorder due to poor ergonomics with REBA assessment tool.

LITERATURE REVIEW

Few researchers conducted a study to find out the prevalence of pain in musculoskeletal disorders among doctors. The study done in one hundred physicians in modern medicine, one hundred in dental surgeons and one hundred in other various specialties by using work related questionnaire of self reporting. It includes the symptoms of musculoskeletal problems and severity of pain experienced in the past one year was evaluated. They concluded that musculoskeletal work related pain was most common among dental surgeons with sixty one percentages, then by surgeons with thirty seven percentages^[9].

Other researchers from Bangladesh conducted a cross sectional study among 232 readymade garment workers to find out the work related musculoskeletal disorders. The purpose of this study was to determine the prevalence of WMSDs in nine body regions among Bangladeshi ready-made

garment workers, as well as to investigate their exposure to risk factors for the development of WMSDs through ergonomics. Data was collected using a systematic questionnaire that included demographic questions, the Nordic Musculoskeletal Questionnaire-extended for WMSD assessment in nine body sites, and the quick exposure check approach for ergonomic assessment. The researchers looked into the link between WMSDs and ergonomic assessments of their risk factor exposure. The lower back and neck were shown to be the most affected areas for musculoskeletal disorders in the study. Ergonomic interventions are encouraged in terms of working space, workers' sitting/standing posture, seat and hand position during work, and the work-rest cycle.^[10]

Using the REBA technique, Indonesian researchers conducted a study on nurses. Nurses faces ergonomic risks when providing nursing care, especially as health services become more dynamic, such as during the current corona virus disease pandemic. The study's goal was to determine which tasks were likely to cause ergonomic risks during the implementation of nursing care in an intensive care unit (ICU) and an emergency room (ER) in a hospital in Indonesia. This study was carried out by observing the nurses' daily activities and employing comparable task group methodologies with the Rapid Entire Body Assessment tool. 17 nurses from the intensive care unit and ten nurses from the emergency room witnessed the activities. Bathing, transferring the patient, wound dressing; taking blood samples for AGDA exams, as well as inserting the intravenous needle and electrocardiograms were all seen in the intensive care room. In the mean time, two activities were witnessed in the ER which was patient transfer and IV needle insertion. Bathing the patient had the highest ergonomic risk in the intensive care unit, with a total score of 13. With a total score of 12, the highest risk score in the ER was moving the patient. Both activities were

rated as level 4, which indicates a high risk situation. As a result, examination and adjustments should be implemented as soon as possible. They came to the conclusion that the results are positive. Regular stretching, physical exercises, and implementing ergonomics principles while working are also examples of ergonomic measures that might be recommended to nurses^[11].

CASE DESCRIPTION

A 35 years old male, married, medical practitioner, who is having experience of 9 years in the field of medicine, complains off back pain, neck pain, fibromyalgia, Golfers elbow. He works in a single shift duty of 8 hours duration per day, sometimes even without taking a break. He works in the same clinical work station as there is no job rotation. He is non alcoholic and non smoker and with normal diet pattern. He is not involved in any kind of recreational and physical activities such as sports, exercises etc due to his tight job schedule. While taking his personal interviews and observing his daily work pattern, it was clear that he is working in the same position for long period, working in awkward and cramped positions, and performing the same task over and over. He is treating excessive number of patients in almost every day due insufficient number of doctors or may be due to the pandemic. Bending or twisted in an awkward way is the another major problem. It was clear after ergonomic analysis that his chair was not supporting his spine properly, treatment table was not apt to his height and computer was not ergonomically correct.

Due to COVID-19 pandemic, doctors are wearing PPE kit, double masks, along with face shield for long hours, and that makes them feel more exhausted, and it pushes them to work near their physical limits. He also feels more fatigue at the end of the shift and having back pain and neck pain for past eight months. He worked in Corona center also for two months which

made his pain worst. He complains of Golfers elbow in dominant hand side. Often having fibromyalgia in the right side of upper trapezius. He is fully aware of importance of ergonomics in work space but he fails to follow it due to his work load and stress.

Outcome measures: Overall musculoskeletal Pain was analyzed using the Numerical pain rating scale (NRS), and Rapid Entire Body Assessment tool (REBA), which is a single score that represents the level of MSD risk for the job task being evaluated.

ANALYSIS AND DISCUSSION

We have used a descriptive research methodology to assess and analyze all the activities which could help to meet the objectives of the study. The respondents of the study are the medical doctor who visited a physiotherapist for the musculoskeletal pain management. As the objective of the study was to analyze the work related musculoskeletal disorder in a doctor, a face to face interviews as well as the observational analysis of various tasks were employed Data collected from the study are noted, explained, and analyzed for comparison and further studies. Thorough assessment was taken and it was found that the position of doctor while checking and treating patients was poor and awkward for a long duration of time without following principles of ergonomics. Musculoskeletal pain was assessed using Numerical Pain Rating Scale (NPRS), and score was 7, which indicates moderate to severe pain. Rapid Entire Body Assessment (REBA) was used to analyze whole body postural musculoskeletal disorder and risk associated with job task and score was 8, which indicates high risk, investigate and implement change. After evaluation, it was clear that back pain was the most common problem followed by neck pain. Immediate correction of his workspace in correct ergonomics was advised along with physiotherapy pain management. Thus, this

study may help to open up few facts about the importance of ergonomics and risk of work related musculoskeletal disorder in medical doctors which needs immediate medical attention, especially during covid - 19 pandemic which is still having scarcity of literature. Working in the same position for long periods, working in awkward or cramped positions and handling an excessive number of patients or samples in one day were found to be the most commonly reported job risk factor that contributed to the development of WMSDs, in this study.

CONCLUSION

Medical doctors are the selfless warriors, fully dedicated to the society while cutting themselves off from their families and loved ones during this pandemic. Within the limitations of this case study, it is concluded that medical doctors are prone to work related musculoskeletal disorders while evaluating with Rapid Entire Body Assessment tool. Even though, they are aware about importance of ergonomics, they are not following it properly and that can be one of the main causes of WMSDs. Thus, the researchers emphasized giving proper guidance in ergonomic principles during work and ergonomically correct work space setting in hospitals to avoid the risk of musculoskeletal disorders.

Acknowledgement: None

Conflict of Interest: None

Source of Funding: None

REFERENCES

1. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, Si HR, Zhu Y, Li B, Huang CL, Chen HD. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *nature*. 2020 Mar;579(7798):270-3.
2. https://www.who.int/health-topics/coronavirus#tab=tab_1. retrieved on 29th January 2022

3. Chatterjee SS, Bhattacharyya R, Bhattacharyya S, Gupta S, Das S, Banerjee BB. Attitude, practice, behavior, and mental health impact of COVID-19 on doctors. *Indian Journal of Psychiatry*. 2020 May;62(3):257.
4. Anantham D, McHugh W, O'Neill S, Forrow L. Clinical review: Influenza pandemic—physicians and their obligations. *Critical Care*. 2008 Jun;12(3):1-5.
5. Yakubu A, Folayan MO, Sani-Gwarzo N, Nguku P, Peterson K, Brown B. The Ebola outbreak in Western Africa: ethical obligations for care. *Journal of Medical Ethics*. 2016 Apr 1;42(4):209-10.
6. Pandve HT. Role of ergonomics in health care. *J Ergonomics*. 2014;4(1):e121.
7. Moazzami B, Razavi-Khorasani N, Moghadam AD, Farokhi E, Rezaei N. COVID-19 and telemedicine: Immediate action required for maintaining healthcare providers well-being. *Journal of Clinical Virology*. 2020 May 1;126:104345.
8. Hignett S, McAtamney L. Rapid entire body assessment (REBA). *Applied ergonomics*. 2000 Apr 3;31(2):201-5.
9. Rambabu T, Suneetha K. Prevalence of work related musculoskeletal disorders among physicians, surgeons and dentists: a comparative study. *Annals of medical and health sciences research*. 2014;4(4):578-82.
10. Hossain MD, Aftab A, Al Imam MH, Mahmud I, Chowdhury IA, Kabir RI, Sarker M. Prevalence of work related musculoskeletal disorders (WMSDs) and ergonomic risk assessment among readymade garment workers of Bangladesh: A cross sectional study. *PloS one*. 2018 Jul 6;13(7):e0200122.
11. Sartika D, Nurrachmah E, Sukirman DI, Mansyur M, Supartono B. Ergonomic Risk-prone Activities toward Nurses in the Intensive Care and Emergency Room. *Open Access Maced J Med Sci*. 2021 Dec. 25;9(T5):48-53.

How to cite this article: Susan Annie George, Arun Thomas Abraham. Work related musculoskeletal risk assessment using REBA assessment tool in a medical doctor during COVID-19 pandemic - a case study. *International Journal of Research and Review*. 2022; 9(3): 217-221. DOI: <https://doi.org/10.52403/ijrr.20220325>
