Implementation of Stretching Exercise in The Workplace for Hospital Workers

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Abstract. Musculoskeletal disorders are one of the main factors causing reduced productivity of workers, especially medical personnel. Frequent cases of MSDs are mainly neck pain and back pain. Hospital employees, have a high risk of experiencing health problems, especially in the muscles and joints as a result of their static work positions and postures that last for a long time. So a prevention effort is needed so that hospital employees can avoid muscle and joint problems that can affect their productivity. This can be prevented by the application of B-Fit exercises between the work activities of medical personnel. Based on the Ministry of Health's recommendation, the B-Fit exercise is done in 4 movements with a duration of no more than 3 minutes. This makes it easier for medical personnel to apply B-Fit exercises without disturbing their work activities. This service has the main objective, which is to improve the physical and mental health of workers through a series of simple movements that can be done in the workplace. The main targets of B-fit exercise are Brimedika General Hospital's personnel who spend most of their time sitting while facing patients. This activity was attended by 28 participants consisting of doctors, nurses, administrative staff, cleaning service in the hospital. The results showed that the implementation of B-fit exercises was felt to increase flexibility, muscle strength, and reduce the risk of injury due to poor posture. In addition, B-fit exercises can also improve mood, reduce stress, and increase work productivity. B-fit exercise is an effective and efficient intervention to improve the health and well-being of medical personnel in the Hospital. It is recommended to make a sustainable program in the form of implementing the B-Fit exercise routine according to the Ministry of Health's recommendations which is 2 times B-Fit in a day.

Keywords: Musculoskeletal Diseases, Stretching Exercise, Workplace, Hospital Workers

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1. Introduction

Over the past five years, the prevalence of neurodegenerative diseases (NDs) has increased due to a variety of interrelated factors, with demographic changes and the intricate character of these diseases being the primary drivers. The ageing global population is increasing the prevalence of disorders such as Alzheimer's, Parkinson's, and Huntington's, presenting considerable public health challenges (Ratna et al., 2018). The pathogenesis of neurodegenerative diseases (NDs) is not fully understood; however, it is suggested that a complex interplay of genetic, epigenetic, and environmental factors contributes to their development. No effective therapeutics have been developed to slow, halt, or prevent any neurodegenerative diseases to date. (Sami and Salama, 2023). A diet high in advanced glycation end products (AGEs) has been linked to an increased risk of many degenerative diseases. AGEs or also called glycotoxins are formed through nonenzymatic reactions between sugars and proteins, both endogenously and during the cooking and processing of food, and are ingested through the diet (Ratna et al., 2018). Dietary AGEs contribute to cognitive decline by accumulating in tissues, leading to mitochondrial dysfunction and increased oxidative stress. This results in impaired energy metabolism and cognitive performance, as demonstrated in animal models (Akhter et al., 2020). High intake of AGEs is linked to an increased risk of dementia, independent of genetic predisposition, emphasizing the importance of dietary management in dementia prevention (Zhang et al., 2023). Some studies show that high AGE diet exhibited increased levels of reactive oxygen species, decreased mitochondrial respiratory chain activity, and impaired learning and memory, suggesting that high glycation diets may accelerate the progression of neurodegenerative conditions through these mechanisms (Akhter et al., 2020) (Zhang et al., 2023).

Workers are valuable assets for companies, but often their needs and interests do not receive adequate attention. One factor that can reduce worker productivity is Musculoskeletal Disorders (MSDs) complaints. Data from the WHO/ILO Joint Estimates of the Work-Related Burden of Disease and Injury during the period 2000-2016 showed 12.27 million cases of DALYs (Disability Adjusted Life Years) due to back and neck pain, an increase of 20.1% from 10.21 million cases in 2000. Research by Cieza et al. (2021) revealed that among 134 of the 204 countries analyzed, back pain is one of the main health conditions that contribute to the increasing need for rehabilitation services. As the population ages, the number of people with disabilities due to back pain also continues to increase. MSDs cause muscle complaints that can be divided into two categories, namely reversible and persistent complaints. Concurrent musculoskeletal disorders can develop into other diseases, such as back and knee pain that hinder physical activity and increase health risks such as obesity, diabetes and heart disease. Work-related musculoskeletal pain is often caused by poor physical conditions, repetitive movements, and adverse environmental and psychological situations.

BRImedika General Hospital, located at Jalan Mayjend Panjaitan Number 176, Penanggungan, Klojen, Malang, has been equipped with various modern facilities to meet the health needs of the community. Starting from specialist polyclinic consultation rooms, an emergency department that operates 24 hours, to intensive and non-intensive care rooms, this hospital is ready to provide comprehensive health services. In addition, supporting facilities such as laboratory, radiology, and physiotherapy further enrich the services offered. With the support of 120 professional nurses, RSU BRImedika is committed to continuously improving the quality of its services.

According to Health Law No. 36 of 2009, health is a state of physical, mental, spiritual, and social well-being that enables everyone to live a socially and economically productive life (Chirico & Magnavita, 2019). As a profession with a high workload, nurses are expected to provide the best service. However, workloads that exceed capacity can have a negative impact on nurse productivity. Musculoskeletal complaints in nurses are often associated with non-ergonomic work positions, with common complaints such as neck, back, carpal tunnel syndrome, thoracic outlet syndrome, tennis elbow, and low back pain (Su'udi & Rofi'i, 2020). Excessive muscle contraction, heavy workload, and long duration can increase the risk of MSDs complaints (Holland et al., 2019). The increase in MSDs complaints in nurses is often caused by excessive workload, which has an impact on discomfort, stress, and decreased quality of service to patients. Risk factors that contribute to MSDs complaints include biomechanical, individual, and psychosocial factors. Biomechanical factors include workload, body position, duration, frequency, and vibration exposure. Individual factors include gender, age, length of service, body mass index, exercise habits, and smoking (Teyhen et al., 2016). As a result, nurses' work capacity often does not meet the expected standards, resulting in suboptimal service quality.

To prevent MSDs disorders in nurses, preventive measures that are easily accessible and do not require special preparation are needed. From initial observations, the majority of nurses at RSU BRImedika are young, so the application of stretching exercises can be a preventive measure against occupational diseases in the future. Stretching exercises are effective in reducing MSDs complaints and can be done by anyone, anywhere, and anytime without special preparation or costumes. Stretching exercises will be guided by competent personnel to ensure that the material presented is in accordance with the needs of the participants. It is expected that the implementation of stretching exercises in the workplace will not only improve nurses' morale and productivity, but also the quality and quantity of performance and concentration during work, thereby reducing the risk of occupational accidents and occupational diseases in the future. This preventive effort, recommended by the Ministry of Health as a workplace fitness program, aims to relieve muscle tension, reduce fatigue, and support worker fitness while in the workplace.

2. Method

Community service activities in the form of applying stretching exercises carried out at BRImedika General Hospital, located at Jalan Mayjend Panjaitan Number 176, Penanggungan, Klojen, Malang, have been equipped with various modern facilities to meet the health needs of the community. Starting from specialist polyclinic consultation rooms, emergency units that operate 24 hours, to intensive and

non-intensive care rooms, this hospital is ready to provide comprehensive health services. In addition, supporting facilities such as laboratories, radiology, and physiotherapy further enrich the services offered. This service activity of applying stretching exercises was carried out using the qualitative Participatory Learning and Action (PLA) method in the form of observation, counseling, training and hands-on practice (Silmi, 2017). This Participatory Learning and Action (PLA) method is carried out with a focus on empowerment activities by involving participants in learning through counseling, training and practice (hand on) or real activities that are relevant to community empowerment material (Dinata et al., 2024).

At the observation stage, the team identified the level of knowledge of workers at BRImedika General Hospital. The team also identified the conditions of worker productivity and mobility. Furthermore, the team prepared an implementation schedule with BRImedika General Hospital to ensure that participants could participate in the activities without disrupting work.

At the counseling stage, the team provided material related to the background of the problem such as back and neck pain that often occurs in workers with high productivity, especially workers who are required to sit for long periods of time, the benefits of its application and the steps of stretching exercises through the method initiated by the Indonesian Ministry of Health, namely the "4 B-Fit Gymnastics Movements in the Work Area" program. The last one is hands-on practice, so at this stage the participants together carry out the B-Fit stretching exercise led by the team. After all the activities have been carried out, the team will help create a program for RSU BRImedika, namely the gymnastics program 2 times a day, and the team will monitor the program for sustainability.

3. Result

Before carrying out counseling in the field, the team conducted observations which showed that most workers at BRImedika Hospital experienced MSDs complaints such as back pain, and neck pain and most workers did not know stretching exercises using the B-Fit exercise method. The service activity in the form of applying stretching exercises in the work area was carried out on September 28, 2024 and was attended by 28 participants consisting of doctors, nurses, administrative staff, cleaning service of RSU BRImedika. The activity began with a counseling session that focused on delivering material on the background of Musculoskeletal Disorders (MSDs) problems that are often experienced by workers, especially those related to non-ergonomic work positions. This counseling also discusses the negative impact of MSDs on health and work productivity, as well as the benefits of applying stretching exercises as an effort to prevent MSDs, this counseling is delivered using Power Point media. The material presented included the stretching exercise method by adopting the "4 Moves of B-Fit Gymnastics in the Work Area," which is specifically designed to be done in the workplace easily and without the need for special equipment.

After the counseling, the activity continued with a training session that began with the screening of a stretching exercise tutorial video that had been prepared by the implementation team. The video provided clear visual guidance on proper movements and techniques to reduce the risk of injury when stretching. After the video screening,

all participants were invited to practice stretching exercises directly, guided by the implementation team who played an active role as an instructor, then the team provided guidance and provided corrections to ensure the movements were carried out correctly and effectively.

The results of this service activity were obtained through observations of forum interaction, where participants showed enthusiasm and active involvement in discussions and practice of stretching exercises. Some data obtained from observations showed that 80% of participants complained of pain in certain body areas, such as the back and neck, which are common symptoms of MSDs. In addition, the results of forum interactions revealed that at RSU BRImedika there was no structured application of stretching exercises, characterized by the absence of a schedule for implementing stretching exercises as part of the daily routine at work.

Further observations showed the active involvement of both the organizers and participants during the activity, with participants giving a positive response to the stretching exercise training. This is reflected in their involvement in discussions as well as full participation in the exercise practice sessions, as shown in Figure 1. This activity is expected to be the first step to foster the habit of stretching exercises among all workers at RSU BRImedika, which in turn can improve their physical health and work productivity.

Through this activity, it is hoped that there will be an increased awareness of the importance of maintaining physical fitness through simple activities such as stretching exercises, which can be done on the sidelines of busy work. By implementing stretching exercises regularly, it is hoped that workers can reduce complaints related to MSDs and improve the quality and quantity of performance at work, thus supporting a healthier and more productive work environment..

Fig 1. Hospital Workers following the Workplace Excercise

4. Conclusion

Based on this activity, further programs are needed for workers so that these stretching exercises are carried out at all times, obstacles that can occur are workers, for example doctors and nurses, do not have more time because they certainly have to face patients, therefore awareness of the importance of stretching exercises is needed to reduce the number of complaints of Musculoskeletal disorders (MSDs) which have an impact on reducing worker productivity. The recommended program is in accordance with the Ministry of Health program, namely the implementation of B-Fit exercises into routine activities for 2 times a day. Furthermore, monitoring and

assistance is needed in the implementation of this B-Fit exercise program so that it can run smoothly

5. Recommendation

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6. Conflict of Interest

The authors declared no conflict of interest.

7. Acknowledgment

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8. Reference

[1] Chirico, F., & Magnavita, N. (2019). The Spiritual Dimension of Health for More Spirituality at Workplace. Indian Journal of Occupational and Environmental Medicine, 23, 99. https://doi.org/10.4103/ijoem.ijoem_209_18

[2] Dinata, R. L., Wahyuni, E. S., & Hariyadi, R. (2024). Pemberdayaan Ibu-Ibu Pkk Dengan Menerapkan Metode Participatory Learning And Action (Pla) Melalui Proses Produksi Dan Pemasaran Syariah Dalam Mengolah Minyak Jelantah Menjadi Sabun Cuci Piring Cair Untuk Meningkatkan Pendapatan Rumah Tangga. 06(02), 1–7.

[3] Holland, P., Tham, T. L., Sheehan, C., & Cooper, B. (2019). The impact of perceived workload on nurse satisfaction with work-life balance and intention to leave the occupation. Applied Nursing Research : ANR. https://doi.org/10.1016/J.APNR.2019.06.001

[4] Silmi, A. F. (2017). Participatory Learning and Action (Pla). Jurnal Pemberdayaan Masyarakat, 1(1), 97–177.

[5] Solidaki, E., Chatzi, L., Bitsios, P., Markatzi, I., Plana, E., Castro, F., Palmer, K., Coggon, D., & Kogevinas, M. (2009). Work-related and psychological determinants of multisite musculoskeletal pain. Scandinavian Journal of Work, Environment & Health, 36 1, 54–61. https://doi.org/10.5271/SJWEH.2884

[6] Su'udi, & Rofi'i, A. Y. A. B. (2020). The Association Between Working Position and Musculoskeletal Disorders Complaints Using Nordic Body Map Questionnaire among Emergency Nurses. 24–28. https://doi.org/10.2991/ahsr.k.201125.004
[7] Teyhen, D., Rhon, D., Butler, R., Shaffer, S., Goffar, S. L., McMILLIan, D., Boyles, R. E., Kiesel, K., & Plisky, P. (2016). Association of Physical Inactivity, Weight, Smoking, and Prior Injury on Physical Performance in a Military Setting. Journal of Athletic Training, 51 11, 866–875. https://doi.org/10.4085/1062-6050-51.6.02
[8] WHO, WHO/ILO joint estimates of the work-related burden of disease and injury, 2000-2016: global monitoring report. 2021. [Online]. Available: https://www.who.int/news/item/16-09-2021-who-ilo-almost-2-million-people-di e- from-work-related-causes-each-year
[9] Cieza, K. Causey, K. Kamenov, S. W. Hanson, S. Chatterji, and T. Vos, "Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019," Lancet (London, England), vol. 396, no. 10267, pp. 2006–2017, Dec. 2021, doi: 10.1016/S0140-6736(20)32340-0.
[10] Helmina, N. Diani, and I. Hafifah, "Age, Sex, Length of Service and Exercise Habits With Complaint of Musculoskeletal Disorders (MSDs) on Nurses," Caring Nurs. Jounal, vol. 3, no. 1, p. 24, 2019.
[11] Kemenkes, "Pentingnya Peregangan Tubuh di Sela-sela Waktu Kerja," 2018. https://promkes.kemkes.go.id/pentingnya-peregangan-tubuh-di-sela-sela-waktu-kerja (accessed Feb. 07, 2023).
[12] WHO, "Musculoskeletal health," 2022. https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-conditions (accessed Feb. 08, 2023).
[13] H. Z. Rangkuti, J. Harahap, and A. Simajorang, "Faktor-Faktor yang Memengaruhi Stres Kerja Pada Perawat di Ruang Rawat Inap," Jurnal Keperawatan Priority, vol. 5, no. 2, 2022.
[14] ADDIN Mendeley Bibliography CSL_BIBLIOGRAPHY Chirico, F., & Magnavita, N. (2019). The Spiritual Dimension of Health for More Spirituality at Workplace. Indian Journal of Occupational and Environmental Medicine, 23, 99. https://doi.org/10.4103/ijoem.ijoem_209_18
[15] Dinata, R. L., Wahyuni, E. S., & Hariyadi, R. (2024). Pemberdayaan Ibu-Ibu Pkk Dengan Menerapkan Metode Participatory Learning And Action (Pla) Melalui Proses Produksi Dan Pemasaran Syariah Dalam Mengolah Minyak Jelantah Menjadi Sabun Cuci Piring Cair Untuk Meningkatkan Pendapatan Rumah Tangga. 06(02), 1–7.
[16] Holland, P., Tham, T. L., Sheehan, C., & Cooper, B. (2019). The impact of perceived workload on nurse satisfaction with work-life balance and intention to leave the occupation. Applied Nursing Research : ANR. https://doi.org/10.1016/J.APNR.2019.06.001
[17] Silmi, A. F. (2017). Participatory Learning and Action (Pla). Jurnal Pemberdayaan Masyarakat, 1(1), 97–177.
[18] Solidaki, E., Chatzi, L., Bitsios, P., Markatzi, I., Plana, E., Castro, F., Palmer, K., Coggon, D., & Kogevinas, M. (2009). Work-related and psychological determinants of multisite musculoskeletal pain. Scandinavian Journal of Work,

Environment & Health, 36 1, 54–61. https://doi.org/10.5271/SJWEH.2884
[19] Su'udi, & Rofi'i, A. Y. A. B. (2020). The Association Between Working Position and Musculoskeletal Disorders Complaints Using Nordic Body Map Questionnaire among Emergency Nurses. 24–28. https://doi.org/10.2991/ahsr.k.201125.004
[20] Teyhen, D., Rhon, D., Butler, R., Shaffer, S., Goffar, S. L., McMILLIan, D., Boyles, R. E., Kiesel, K., & Plisky, P. (2016). Association of Physical Inactivity, Weight, Smoking, and Prior Injury on Physical Performance in a Military Setting. Journal of Athletic Training, 51 11, 866–875. https://doi.org/10.4085/1062-6050-51.6.02

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