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Original Research

Autogenic Relaxation, Movement, and Affirmation (RIMA) Therapy: Efforts to Strengthen Self-Efficacy to Prevent Drug Withdrawal in Aggregate Patients with Pulmonary TB

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Abstract

Introduction: Nurses experienced high physical workloads, which may increase the risk of fatigue and musculoskeletal complaints. Nurse's workplaces, especially hospitals, have not gained serious concern and attention for this issue.
Methods: This study was an analytic observational study with a cross sectional design aimed to analyze the workloads, fatigue, and musculoskeletal complaints among associate nurses at Bangli General Hospital, Bali. A total of 46 respondents filled out the research questionnaire given.
Results: Based on the NASA-TLX calculations, the associate nurses' workloads are found to be in the moderate level with the largest indicators on the PD (Physical Demand) and Performance (OP) Scale. By using the Nordic Body Map Questionnaire, most of the respondents had a low risk regarding musculoskeletal complaints and the most of musculoskeletal complaints were felt in the right and left calves, waist and back. The results of the analysis on the 30 items of self-rating test questionnaire found that most nurses experienced fatigue in a low category (57.45%) and only a small percentage of nurses experienced high fatigue category (8.51%).
Conclusion: Workloads, fatigue, and musculoskeletal complaints need further investigations to get better understanding of the cause in order to get better solutions.

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INTRODUCTION

Nurses experienced high physical workloads, which may enhance the risk of fatigue and musculoskeletal complaints. High workloads lead to poor communication between nurses and patients, collaboration failure between nurses and doctors, nurses' turnover, and work dissatisfaction and decline work performance among nurses [1]–[3]. Research has revealed that high demands of workload had led to the excessive physical and mental work, resulting in nurses' fatigue [4]–[6]. In addition, the large number of complaints and demands from the patient's family also increase the nurses' workload [7], as well as impacted the nurses fatigue.

Work fatigue is defined as one of the source problems for health and tends to hinder the achievement, motivation and work productivity [8]. Nurses who were experienced fatigue showed a lapse of sympathy and responses to the clients, which has an impact on the work performance deterioration [9]. Another study signified that work fatigue causes a lack of attention regarding the patient needs, thus affecting the quality of care [10], [11]. Furthermore, long-term fatigue leads to serious physical and mental health problems [12], and may develop to musculoskeletal complaints due to work condition [13].

Nursing ranks top among all of health professions that have the potential for musculoskeletal complaints, with the highest prevalence rates of musculoskeletal disorders (MSDs) worldwide [14]. The MSDs happened due to high intensity of working among nurses because of interventions require physical movements which involved excessive manual intervention to the patients and sometimes nurses working in improper posture [15]. The previous study showed that while performing nursing intervention, nurses' main concern is the accuracy of intervention steps, meanwhile the beneficial and proper work postures has been ignored and resulting in the MSDs [16]. The cause of the large number of MSDs cases among nurses is generally due to frequent exertion of forced movements, repetitive movements, including lifting heavy patient weights [17], bending posture, incurve posture, twisting, standing for so long, maintaining static body position and working with awkward posture [18].

Musculoskeletal complaints among nurses occured because of awkward postures and manual handling while working [7]. The kind of works that possibly resulting in musculoskeletal complaints among nurses include wound treatment, wound stitching procedures and blood sampling 14). Previous study signified that the most physical complains suffered by the nurses were neck pain (69%), upper back pain (59%), and shoulder pain (58%)[20]. Un-ergonomic positions and static work posture over a long period of time are the predictor of low back pain [15] and later accelerate the musculoskeletal system complaints among nurses [16]. Moreover, for nurses working in the large space area, it has forced them to perform poor posture [12]. Nurse's workplaces, especially hospitals, have not gained serious concern and attention for this issue. This phenomenon encourages the researcher in conducting this study to

analyze the physical workload, fatigue, and musculoskeletal complaints among associate nurses in various types of care unit at Bangli General Hospital.

METHODS

This study was an analytic observational study with a cross-sectional study design that aimed to analyze workloads, fatigue, and musculoskeletal complaints among associate nurses at Bangli General Hospital.

The data were collected from August to November 2021 using NASA-TLX questionnaire. The NASA-TLX is a subjective assessment of respondents' workloads that differentiated into 6 dimensions including mental demand, physical demand, temporal demand, own performance, effort, and frustration level [21]. Hart and Staveland's NASA Task Load Index (TLX) method assesses work load on five 7-point scales. Increments of high, medium and low estimates for each point result in 21 gradations on the scales [22].

The fatigue was measured by using a questionnaire consist of 30 items of rating scale from JAIH (Japan Association Industrial Health) which is differentiated into three dimensions, namely the physical fatigue, mental fatigue, and motivational fatigue dimensions [23]. The questionnaire on the subjective fatigue consists of 3 dimensions: Fatigue I (drowsiness and dullness), Fatigue II (difficulty in concentration), and Fatigue III (projection of disintegration). Each dimension has 10 statements. The percentage of complaints was calculated by the following formula: [(The numbers of statements checked in each dimension) / 10] × 100. Also, overall percentage of complaints in the three dimensions was calculated by the following formula: [(The total numbers of statements checked in three dimensions) / 30] × 100 [24].

Musculoskeletal complaints were identified by the Nordic Body Map (NBM) in the form of a body map containing data on body parts complained by workers [25], [26].

This study population were all associate nurses who worked at Bangli General Hospital. Simple random sampling technique was employed in this study with a sample size consists of 46 respondents. The study ethic approval was granted by The Research Ethics Committee of Bangli General Hospital. This approval ensured the study is conducted in a responsible and ethically accountable way.

Ethical Considerations

The study ethic approval was granted by The Research Ethics Committee of Bangli General Hospital, following 7 WHO 2011 standards, namely: social values, scientific values, equal distribution of burdens and benefits, risks, persuasion, confidentiality and consent [27].

The aims and benefits of the research are informed to participants. Participants were allowed to withdraw. Their data would be protected and anonymized. Finally, the participants voluntarily read and signed the consent document [28].

RESULTS AND DISCUSSION

Most of the respondents were women (31.9%) and most of their ages ranged from

36 to 40 years (38.3%). There were 23.4% of respondents working in the ICU room and majority had been working in their job for 5-10 years (36.2%). Age and gender are part of the personal capacity that affects an individual's abilities. Suma'mur (2014) stated that an individual's work ability differs from one to another and was highly depends on the skill level, physical freshness, nutritional status, gender, age, and body size of the worker. The physical differences between female and male lies in the body size and the strength of the muscles [29]. Female muscle strength is lower compared to male muscle strength. Both men and women at the age around 20 years old are at the culmination of individual's muscle strength. Meanwhile the muscle strength start decreasing by 15-25% at the age of 50-60 years [30]. In this study, most respondents were in the age of 36 to 40 years age, thus the muscle strength is still on its culmination.

Workload

The NASA-TLX is a method used to analyse the mental workload faced by workers who must carry out various activities in their work. The NASA-TLX method measurements are divided into two stages, namely each scale comparison (Paired Comparison) and the work values awarding (Event Scoring). Overall, the mental workload among associate nurses who working at Bangli General Hospital in the moderate category (53,19% respondents), only a small number in the mild category, as can be seen in Figure 1. The mental workload caused by many tasks that must be performed by nurses. In addition to deliver nursing care plans, writing patient's reports is also a responsibility that later burdening the nurses in their shift.

The NASA-TLX calculations results obtained the mental workload values among all associate nurses were at a moderate level with the largest mental workload indicators was on the PD (Physical Demand) and Performance (OP) scales. Based from the Figure 2, the largest working element that affects the final calculation of NASA-TLX score is in PD (Physical Demand) with a weighted of 19.28 and P (Performance) in the second position by 13.84 in weighted. The activities carried out by the associate nurses at Bangli General Hospital related to PD includes helping activities to meet the basic needs and patients' care requirements such as wound care, injections, vital sign monitoring, and the others.

Musculoskeletal Complaints

The Nordic Body Map questionnaire was employed in this study to determine the most felt complaints by the associate nurses at Bangli General Hospital. The analysis results showed that the most complaints felt by associate nurses were pain in the right calf, left calf and waist. Figure 3 presents the ten largest of musculoskeletal complaints among associate nurses at Bangli General Hospital.

Nursing interventions are mostly done by manual handling. Manual handling defined as the activity that requires energy and carried out by the nurse to lift, lower, push, pull, move, handle and hold the patient [31]. The excessive muscle used and un-

natural working positions during intervention can cause pain in certain body parts [32], as well as the alleviation of productivity and work efficiency[33].

This study revealed that majority of associate nurses experiencing pain on the calf and waist. This is in line with most of the nursing intervention which mostly carried out by standing and bending positions. Standing work posture results in a blood accumulation and various body fluids on the feet [33]. Standing posture should be performed in the correct position with a normal attitude in order to straighten up the spine and the body weight is distributed evenly on both feet [34]. When compared to non-ergonomic work postures and movements, ergonomic work postures and movements used less energy consumptions, thus slowing down the occurrence of fatigue [13]. It is quoted that basically standing itself is more tiring than sitting, and the energy expended from standing over 10%-15% more than sitting. Therefore, working in a standing position for long periods of time often causes fatigue [31].

Another study stated that the most common complaints felt by the nurses were on the lower back, knees and shoulders. The lower back pain is commonly associated with frequent bending, heavy weights lifting or clumsy, and bending or neck twisting; complaints on the knees are associated with a long-time walking or standing; and complaints on the shoulders are associated with maintaining shoulder abduction for a long period of time and bending or neck twisting [18]. While working, nurses perform activities that are categorized as requiring a large amount of energy, such as lifting and moving patients and bed making. During nursing interventions, some work postures are inevitable for nurses such as bending, twisting and reaching out. Un-natural work postures such as raised hand movements as well as excessive bent backs are the biggest contributors to the onset of musculoskeletal complaints among nurses.

Fatigue

The analysis results based on the 30 items self-rating test questionnaire obtained that most of associate nurses experienced a low fatigue category (57.45%) and only a small percentage of associate nurses experienced high fatigue category (6.38%) (Figure 4).

Work fatigue is a source of problems for workers' health and safety. Fatigue can lead to performance deterioration and increase work errors which will contribute the opportunity to generate work accidents.

Work fatigue defined as a condition of an individual experiencing a performance alleviation due to work extension [31]. Fatigue occurs due to long and strong contractions of skeletal muscles, where metabolic processes are no longer able to continue the energy supply requirements and remove metabolic waste, especially lactic acid [35].

Work fatigue can be caused by various factors, generally related to the monotonous nature of the work, high intensity of work, mental and physical work resilience, workspace weather, lighting and noise and other inadequate work environments, as well as psychological factors, sense of

responsibility, tensions and conflicts [34]. Fatigue occurred as a result of the accumulation of lactic acid in the muscles, furthermore this substance also spreading in the bloodstream. The accumulation of lactic acid has led to the alleviation muscle's function and it is likely to peripheral as well as central nerve factors influenced the fatigue occurrence process. During the muscle contraction, glycogen is converted into lactic acid and this acid is inhibited the continuity of muscle work, therefore the fatigue occurs [8].

Our study found that majority of associate nurses in Bangli General Hospital have low category of fatigue. This condition might occur due to several factors, one of them is age factor. The subjects involved in this study were mostly in the range of productive age. Age affects individual's body resistance and work capacity that results in fatigue. One indicator of work capacity is an individual's muscle strength. The older age is correlated to the alleviation of the muscle strength. Muscle strength is influenced by age will affects the workers' physical ability to do their occupation. Men and women at the age of about 20 years is the culmination phase of an individual's muscle strength, and at the age of about 50-60 years muscle strength begins to decrease by about 15-25% [30].

The limitation of the study was small sample size. Additionally, the activity on each unit is quite different, specifically inpatient department, outpatient department, and emergency. Further study has to consider bigger sample size and analysis among unit is needed.

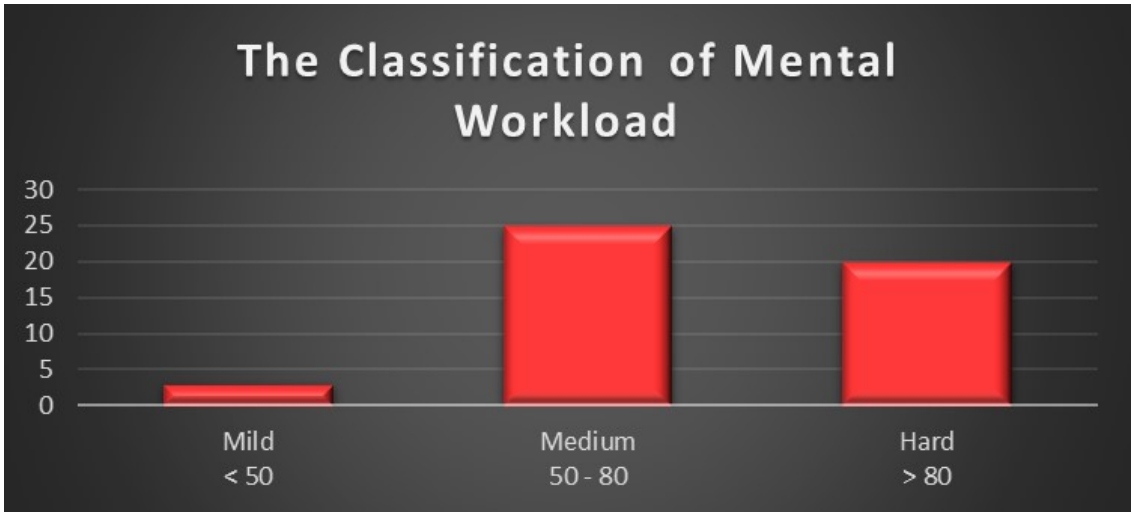

Fig. 1. The classification of Mental Workload among associate nurses at Bangli General Hospital

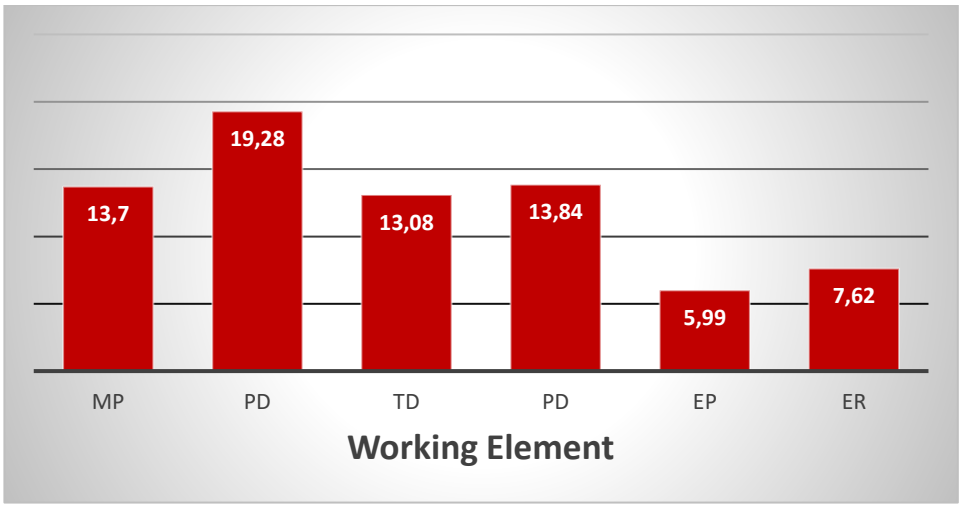

Fig. 2. Work Elements Among Associate Nurses at Bangli General Hospital

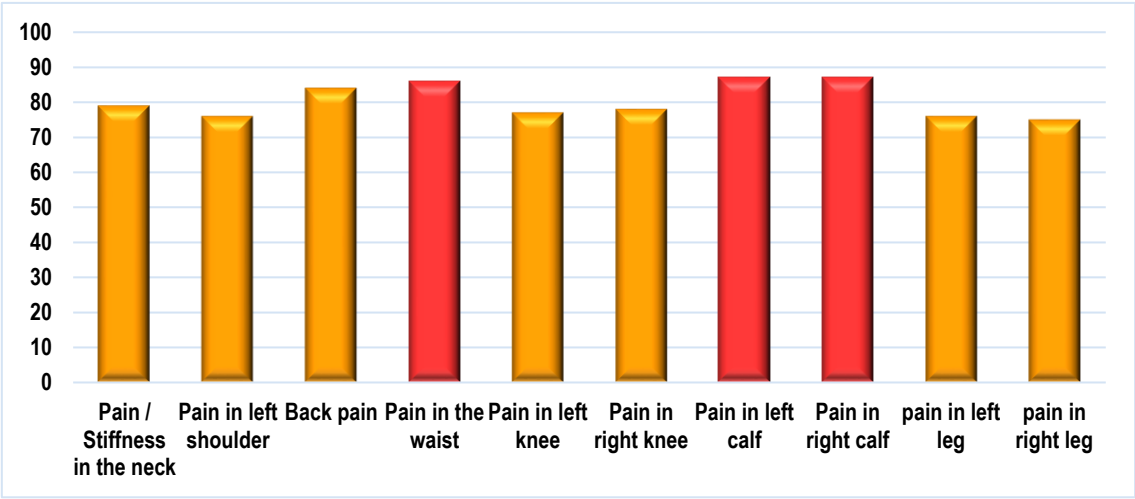

Fig. 3. The most of musculoskeletal complaints among associate nurses at Bangli General Hospital

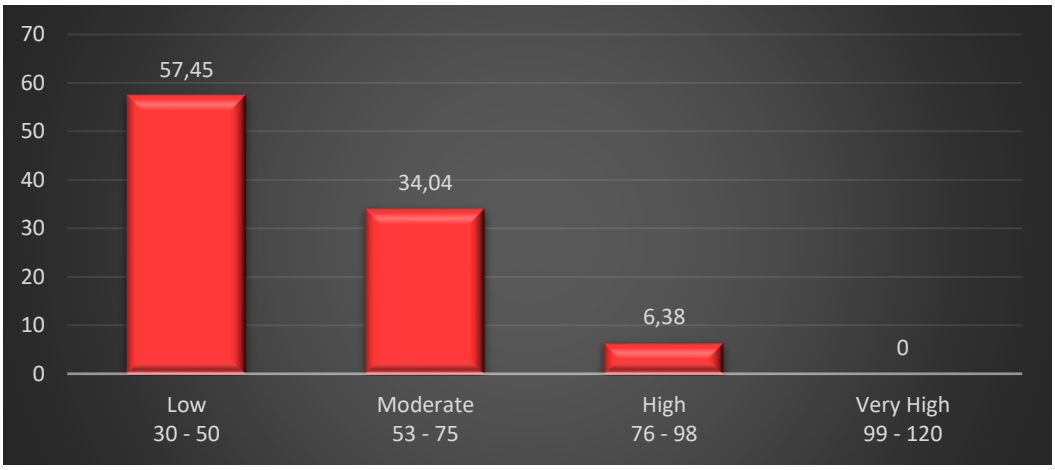

Fig. 4. Fatigue Categories Among Associate Nurses at Bangli General Hospital

CONCLUSION

Our research findings revealed that respondents' mental workload was at a moderate level with the largest scale on physical demand and performance. Workload is the individual body's ability to accept tasks. Each workload received by the worker must be in accordance with and balanced by the physical and psychological abilities of the worker who receives the workload. Workload has a positive correlation to fatigue and musculoskeletal complaints. Respondents' fatigue in this study was found in the low category and the most musculoskeletal complaints that felt by the respondents were in the calves, waist and back. Workload, fatigue and musculoskeletal complaints among nurses needs attention because its affect the nurse's performance in providing nursing care. The associate nurses' workload in this study was found in the moderate category, however the adequate physical factors contributed the most to the occurrence of those workload. Therefore, the exploration regarding ergonomic aspects in term of nursing interventions needs to be done as a concern to identify problems that may contribute to the nurses' workload. In addition, to prevent the occurrence of further problems, it is necessary to create a balance between the task demands, the work environment and the worker abilities.

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