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The analysis of nursing's work systems in relation to burnout syndrome (A case study: nurses in RSUDZA, BLUD RSIA, and RSUD Meuraxa, Banda Aceh, Indonesia)

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Abstract. A fluctuate working demands of nurses encourage the occurrence of burnout and musculoskeletal problems. This study aims to identify and to analyze the occurrence of burnout syndrome in nursing work systems in hospitals. Variables of this study consist of work factors related to work demands and work stimuli (motivation) which can minimize the burnout's level, and musculoskeletal problems. The variables of work factors related to work demands and work stimuli are assessed through Work Characteristic Survey, while the variable of musculoskeletal problems is assessed through Nordic Musculoskeletal Symptom survey. This study involved 100 nurses in three public hospitals in Banda Aceh, Indonesia, which were RSUDZA (Rumah Sakit Umum Daerah Zainoel Abidin or Regional Public Hospital of Zainoel Abidin), BLUD-RSIA (Balai Layanan Umum Daerah - Rumah Sakit Ibu dan Anak or Regional Public Health Services - Mother and Child Hospital), and RSUD Meuraxa (Rumah Sakit Umum Daerah Meuraxa or Regional Public Hospital of Meuraxa). Data obtained from the survey was analyzed by using Statistical Package for the Social Science (SPSS) and provided three results which were (1) eight dominant factors of work demands and twelve dominant factors of work stimuli in nursing work systems which need to be managed to minimize the occurrence of burnout syndrome and (2) musculoskeletal problems occurred within twelve months of working period, particularly in wrists/hand, lower back, elbows, ankles/feet, and knees. Moreover, the dominant factors are mapped by using fishbone diagram to provide cause and effect relationships between burnout and the work related factors.

Keywords: burnout syndrome, musculoskeletal problems, work demands, work stimuli, Work Characteristic Survey, Nordic Musculoskeletal Symptom survey, fishbone diagram.

1. Introduction

The development of Indonesian health industry and the rapid expansion of digital technology have encouraged paramedics to be able to improve the quality services it has to patients. One of the health professions that plays an important role in improving the quality is nurses. The need for nurses has increased significantly from time to time. The condition is influenced by the increasing of a variety of risk factors emerging and related to the work environment (Jaworek et al., 2010).

In performing their duties, nurses are not only encountered a number of work demand towards health services (i.e. caring for patients and giving medicine), but also administrative tasks, physical works (i.e. moving patients to and from bed, lifting patients to bed), and other additional tasks such as handling conflicts with patients (and or families), disagreements with management, colleagues and doctors, as well as direct contact with patients with poor health and high mortality (Jaworek et al., 2010). The work demand experienced by the nurse encourages the emergence of burnout due to physical fatigue (musculoskeletal) and psychology (stress). Burnout syndrome is a psychological syndrome that causes a person to be psychologically impaired and decrease in self-achievement. Maslach (1993) argued that burnout syndrome occurs due to prolonged stress triggered by an overwhelming sense of physical, mental, and emotional fatigue. While, Ribeiro et al. (2014) stated that burnout syndrome emphasized the long-term work stress that occurs as a result of interaction between constant emotional pressure associated with intense interpersonal involvement and personal characteristics. Moreover, Tavares et al. (2014) determined that burnout syndrome is resulting from acute work-related stress, which conveys provides negative effect to personal, professional and institutional spheres, family and social life.

Burnout syndrome experienced by nurses is the highest compared to other health care workers such as psychologists, psychotherapists, and doctors (Schaufeli & Enzmann, 1998). A study conducted by Aiken et al. (2002) revealed that the number of burnout syndrome occurred in hospital nurses exceed 40% among healthcare workers. The highest rating was found in nurses working in the Intensive Care Unit (ICU), emergency or terminal care (Taylor, 1999). Holdren (2015) mentioned that burnout syndrome experienced by hospital nurses was caused by the increasing workloads and further lead them to leave the profession as a nurse.

In general, it is very difficult to minimize the level of stress in the nursing profession due to a fluctuating work demands. According to Jaworek et al. (2010), excessive workload can cause negative effects among workers. However, the excessive can be minimized by pursuing positive work stimuli. As stated by Yin & Yang (2002) that introducing work stimuli or improving existing motivation would create a more productive work environment rather than applying a radical change. Also, Wallgren & Hanse (2007) argue that positive performance correlates with efforts to improve the quality of work-life balance.

Given the circumstances, this study aims to identify and analyze the nursing's work systems, which consist of work demands and work stimuli, as well as the musculoskeletal problems that occur as a result of work demand in order to minimize the occurrence and the level of burnout syndrome.

2. Research Methodology

The study used a quantitative research method and two surveys for data collection. A structured flowchart to achieve the study objective is presented in Figure 1. The study involved 100 nurses in total, where in 30 nurses took part in each hospital (except for RSUDZA, it involved 40 nurses due to the number of nurses and divisions it has). The number of sample was based on the sampling theory explained by Roscoe (1975), that a minimum 30 respondents and a maximum 500 respondents were appropriate for most of quantitative research. The Work Characteristic Survey used in this study was adapted from Jaworek et al. (2010). The survey consisted of fifty (50) questions for work demands and thirty two (32) questions for work stimuli. Data collected from this survey was analyzed using Statistical package for the Social Science (SPSS) software to obtain dominant factors, which then mapped to be a fishbone diagram to provide cause and effect relationships between burnout and the work related factors. In addition, Nordic Musculoskeletal Symptom survey used to identify early signal of musculoskeletal disorder. The survey consists of three questions, which were: (1) is there any musculoskeletal problems in the last 12 months of working period? (2) do the musculoskeletal problems affect nurses' daily activities? and (3) do the musculoskeletal problems encourage nurses to see a physician? Data from this survey was directly analyzed once recapitulated.

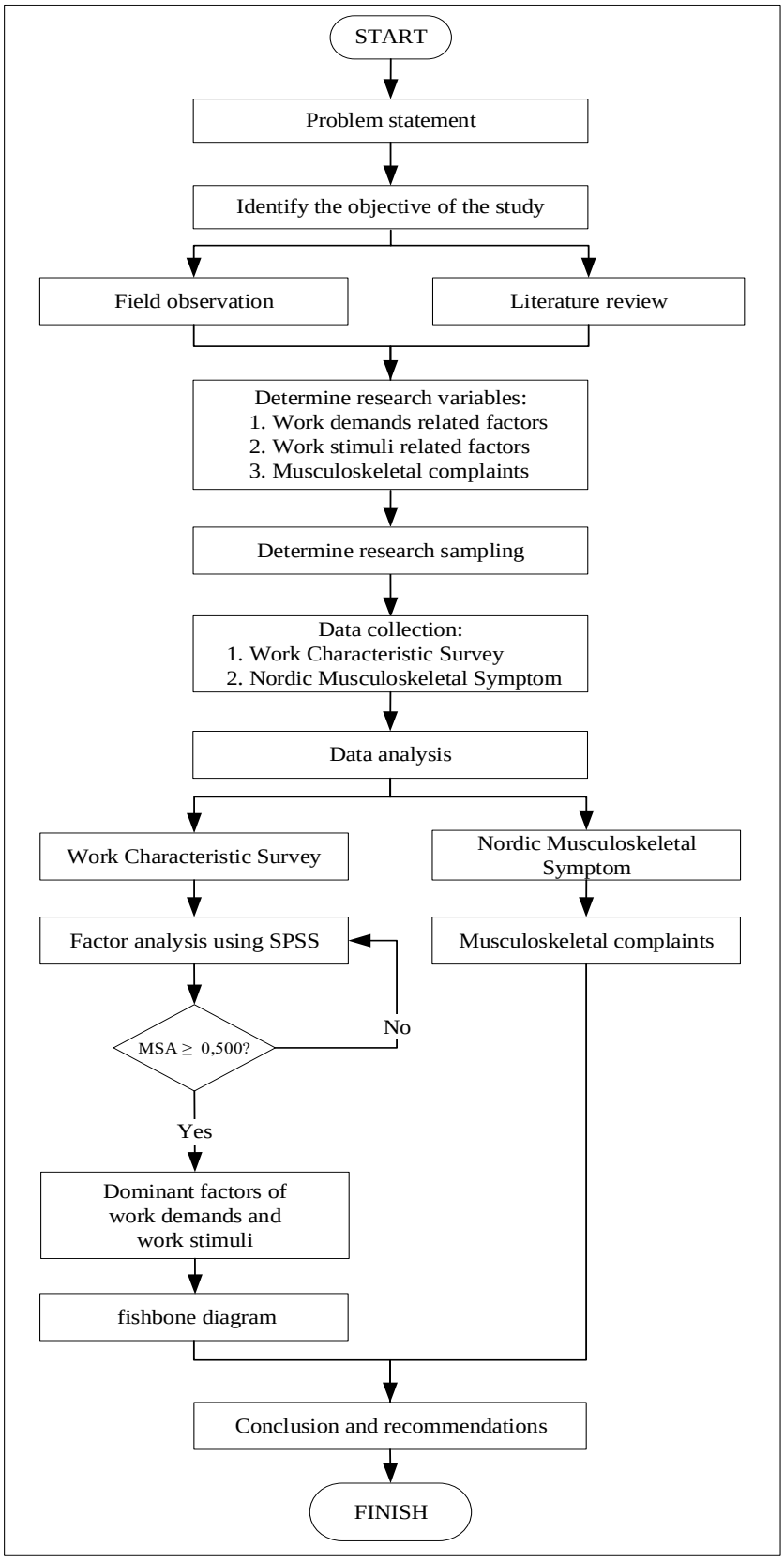


Figure 1. Flowchart of the research activities

3. Data Analysis

a. Factor Analysis

Based on the analysis of Work Characteristic Survey on work demands using SPSS, the study obtained MSA (Measure of Sampling Adequacy) value that examine the appropriateness of factor analysis. The appropriateness is stated with MSA value > 0,500. The MSA value for each variables of work demands are as shown in Table 1.

The MSA value which shown in Table 1 contained two variables (variable 11 and 23) with the value lower than 0,500. The variables were counted as invalid variables and needed to be taken out from the list. Then, the process of factor analysis should be repeated (second iteration) to obtain the new MSA value. From the second iteration, there were no more variables with MSA value lower than 0,500. And there were eight variables with the MSA value ≥ 0,800. These variables were called dominant factors and shown in Table 2. Furthermore, the MSA value for each variable of work stimuli are shown in Table 3.

Table 1. MSA for work factors related to work demands

No	Variable	MSA	No	Variable	MSA
1	Improper lighting	0,722	26	Responsibility for work of others	0,717
2	Improper ventilation	0,545	27	Responsibility for lives and safety of other	0,626
3	Awkward and confining space	0,728	28	Inadequate financial support to the unit or department	0,796
4	Ineffective workspace arrangement	0,678	29	Confusion and chaos in health service resulting from bad government management	0,829
5	Unpleasant colors, window and floor coverings	0,747	30	Low salary	0,638
6	Uncomfortable furniture	0,624	31	Lack or low bonuses	0,539
7	Ineffective architectural design	0,799	32	Current bad situation of official health services	0,864
8	Poorly designed elevator for transporting patients	0,678	33	Shortage of adequate equipment/tools	0,609
9	Awkward clothing	0,824	34	Frequent tools and equipment damages	0,634
10	Infectious blond-borne agents, such as exposure to syringe needles, etc.	0,632	35	Bad technical condition of hospital building	0,720
11	**Other infectious agents, other than blond pathways**	**0,422**	36	Professional updating	0,500
12	Agents resulting in allergic responses	0,651	37	Recalling job-related information	0,504
13	Coworker conflict	0,653	38	Reasoning in problem solving	0,704
14	Worker-management conflict	0,739	39	Decision making under time pressure	0,753
15	Conflict between units, home unit and others	0,799	40	Frequently focusing on tasks	0,600

No	Variable	MSA	No	Variable	MSA
16	Patients and nurse conflict	0,638	41	Monotonous work	0,621
17	Coworker abuse	0,731	42	Planning and scheduling	0,744
18	Patient abuse (i.e. verbal or physical aggression)	0,663	43	Visual activities, such as decoding parameters	0,674
19	Management abuse	0,801	44	Visual activities, such as identifying symptoms	0,644
20	Patients in critical states	0,544	45	Touching activities, such as identifying symptoms, performing or giving assistance at surgery, treatment	0,722
21	Contact with death in patients	0,545	46	Hearing activities, such as differentiation, sound pattern recognition, etc.	0,561
22	Working in an unpleasant atmosphere	0,716	47	Manual activities, such as at performing or giving assistance at surgery, treatment	0,720
23	**Night shift**	**0,410**	48	Transfer patients in/out of bed or trolley	0,651
24	Ambiguous duties	0,764	49	Lifting patients on bed	0,708
25	Uncertain duties	0,770	50	Turning patients in their beds	0,725

The MSA value which shown in Table 3 contained one variables (variable 10) with the value lower than 0,500. The variables were counted as invalid variables and need to be taken out from the list. Then, the process of factor analysis should be repeated (second iteration) to obtain the new MSA value. From the second iteration, there were no more variables with MSA value lower than 0,500. And there are twelve variables which have MSA value ≥ 0,800. These variables are called dominant factors and shown in Table 4.

b. Fishbone Diagram

Fishbone diagram illustrates cause and effect relationship of a problem in a system. This study uses fishbone diagram to map the work related factors (work demands and work stimuli) in the nursing's work system that might cause the occurrence of burnout syndrome. The work related factors are obtained from the dominant factors, as shown in Figure 2 (a) and (b).

Table 2. Dominant factors of work demands

No	Variable	MSA	No	Variable	MSA
1	Awkward clothing	0,849	5	Management abuse	0,824
2	Current bad situation of official health services	0,843	6	Confusion and chaos in health service resulting from bad government management	0,821
3	Conflict between units, home unit and others	0,842	7	Inadequate financial support to the unit or department	0,805
4	Ineffective architectural design	0,838	8	Ineffective workspace arrangement	0,801

Table 3. MSA for work factors related to work stimuli

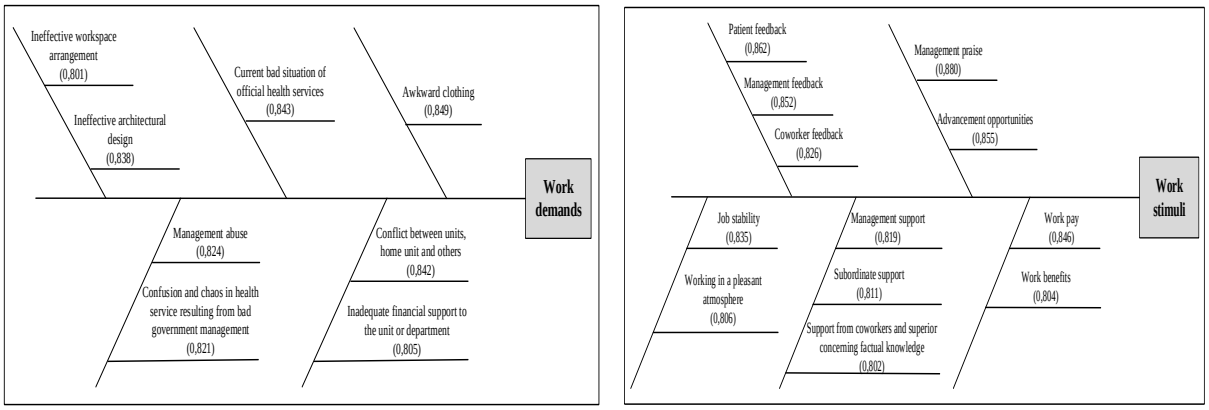
No	Variable	MSA	No	Variable	MSA
1	Skill variety	0,717	17	Coworker praise	0,798
2	Work activities providing direct and clear feedback about work performance	0,627	18	Patient praise	0,798
3	Determining personal work schedule	0,519	19	Management feedback	0,848
4	Determining personal work procedures	0,619	20	Coworker feedback	0,832
5	Coordinating own work with that of others	0,706	21	Patient feedback	0,826
6	Influencing quality of own work	0,623	22	Work significance on the lives of family	0,689
7	Assigning other people to tasks	0,708	23	Working in a pleasant atmosphere	0,812
8	Influencing organizational policies and procedures	0,743	24	Work pay	0,766
9	Influencing general organizational matters, such as participation in important decision-making	0,766	25	Work benefits	0,766
10	**Sense of responsibility for people health and lives**	**0,431**	26	Job stability	0,839
11	Management support	0,829	27	Bonuses	0,720
12	Coworker support	0,806	28	Getting salary on time	0,773
13	Subordinate support	0,805	29	Capability, skill and knowledge development	0,687
14	Family support	0,722	30	Capability, skill and knowledge utilization	0,737
15	Sense of nursing community	0,599	31	Advancement opportunities	0,767
16	Management praise	0,837	32	Support from coworkers and superior concerning factual knowledge	0,768

c. Musculoskeletal Problems

Based on data recapitulation of Nordic Musculoskeletal Symptom survey, 50% of nurses feel the musculoskeletal problems particularly on the wrist, lower back, elbows, heels, and knees (Figure 3.a). However, the musculoskeletal problems did not significantly affect their daily activities, in which only

Table 4. Dominant factors of work stimuli

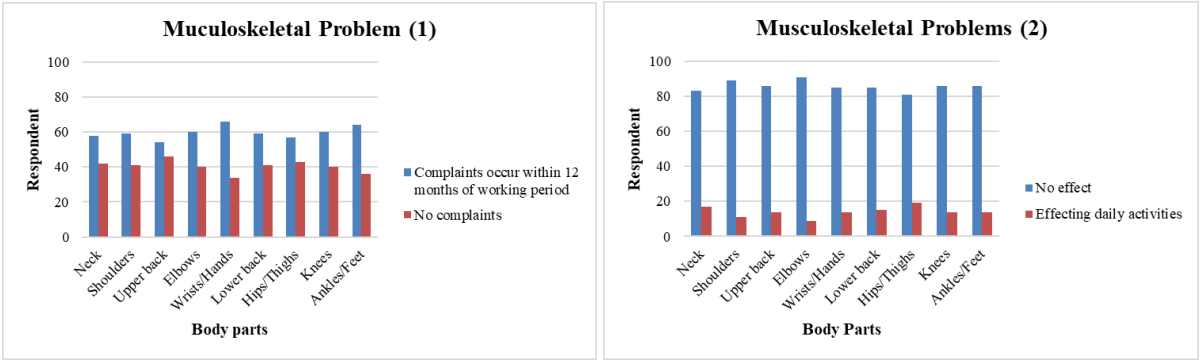
No	Variable	MSA	No	Variable	MSA
1	Management praise	0,880	7	Coworker feedback	0,826
2	Patient feedback	0,862	8	Management support	0,819
3	Advancement opportunities	0,855	9	Subordinate support	0,811
4	Management feedback	0,852	10	Working in a pleasant atmosphere	0,806
5	Work pay	0,846	11	Work benefits	0,804
6	Job stability	0,835	12	Support from coworkers and superior concerning factual knowledge	0,802



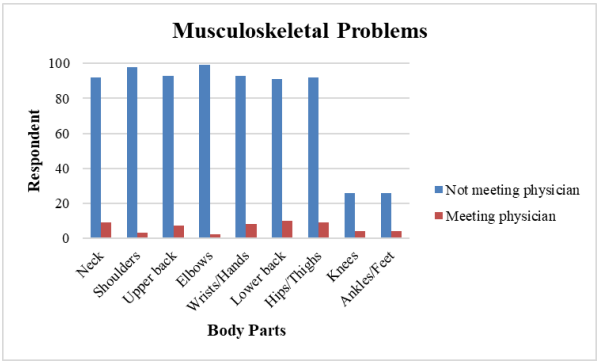
(a) (b)

Figure 2. Fishbone diagram (cause and effect relationship) (a) for work demands (b) for work stimuli

less than 20% of nurses were unable to perform their daily tasks due to musculoskeletal problems (Figure 3.b). Furthermore, only 10% of nurses consulted a physician due to musculoskeletal problems while, 90% nurses didn't (Figure 3.c). This condition showed an indication that nurses rarely consult a physician to deal with musculoskeletal problems for some reason such as stiffness after work is normal and can be overcome by themselves. However, nurses will certainly consulted a physician for consultation and further instructions in case of serious condition occurred.



(a) (b)



(c)

Figure 3. Musculoskeletal problems (a) within 12 months of working period (b) the effect to daily activities (c) decision to consult a physician.

4. Conclusion and Recommendations

In summary, dominant factors of work demands and work stimuli, which obtained from the Work Characteristic Survey analysis, should acquire appropriate and serious supervision from the hospital management as well as the Regional Health Department in Banda Aceh and Aceh Province, so that contribute to minimize the occurrence and the level of burnout in nursing's work systems. It is recommended that official parties (i.e. hospital management, The Regional Health Department), are involving nurses in setting up policies and practical attitude related to reduce the unnecessary events that can cause the work demands and increase the work stimuli in the work place. Moreover, Nordic Musculoskeletal Symptom survey analysis revealed that generally, musculoskeletal problems occur on the wrist, lower back, elbows, heels, and knees. However, the problems did not encourage nurses to see a physician for further consultation and nurses can still work normally. It is recommended that nurses fully understand and follow the work procedures that have been established by the official parties and report any inappropriate work procedures.

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