EFFECT WORKSTRES : PSYCHOLOGICAL DISTRESS ON KORTISOL AND IMMUNOGLOBULIN'S LEVELS OF NURSE IN IMMUNE SYSTEM IN HAJI HOSPITAL MEDAN

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ABSTRACT

Work stress comes from the environment system. Environmental aspects such as social conditions, stressors and resources received by individual differences in life (such as family and work). Sources of stress in the work environment can cause a negative response. Psychological distress associated with the emotional state of the individual and social distress related to an individual's ability to relate to others. Individuals who do not have the ability to accept stressor can be affects physical and mental health and quality of life. Stress response in the form of biologycal response and perception of response. If the body's response is stronger and able to banish stress, the body under normal circumstances and the body is able to maintain the balance of the phase of stress so it does not harm the body. If prolonged stress, the body will perform activation response time, thus causing damage to the body, resulting in the risk of illness and injury. The purpose of this study was to determine the effect of work stress: psychological distress on the immune system and the cortisol levels of immunoglobulinG (IgG). The study design was observational with cross sectional study. Its about 23 samples were taken at random nurses in the ICU, ER and hospital of nursery Haji in Medan .The results showed that there was no significant relationship between the characteristics of the respondents with work stress. Based on r value=0.532 and p = 0.009. There is significant influence from psychological distress on the level of cortisol. Furthermore, on the result of r value =-0.719 and the value of p=0.000, is significant influence from psychological distress on the level of IgG.

Keywords: distress, imune system, kortisol, Imunoglobulin G

Introduction

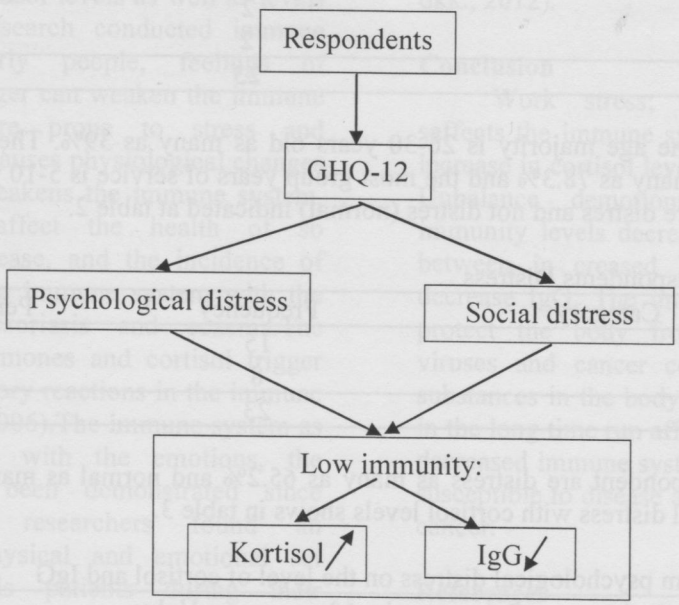
The hospital is a work environment that filled with sources of stress. Some data indicate that the stress levels of nurses is very high. Nurse work stress are found in the Intensive Care Unit, Emergency Unit and Nursery. Stress nurses working in Yogyakarta Private Hospital associated with the dual role conflict and social support. In fact, most nurses in Indonesia are women. Dual role performed by women is very risk with family-work conflict (Almasitoh, 2012). Stress nurses working in Dr. Pirngadi hospitals of Medan in 2010 amounted to 42.24% especially in night shift nurses (Putri, 2010).

Distress is a negative psychological response to a stressor, as indicated by the presence of negative psychological state (Simmon& Nelson, 2001; Quick, 2002). Research work stress and psychological distress finding symptom sof anxiety and depress if appears as aprominent characteristic in distress, this situation may occur in different degrees. Behavioural stress symptoms such as: 1) Physiological symptoms such as : abdominal pain, increased heart rate and shortness of breath, increased blood pressure, headaches and heart attack. 2) Psychological symptoms such as anxiety, tension, boredom, dissatisfaction in work, headache/migraine, muscle tension, insomnia or sleep. 3) Behavioral symptom ssuch as: delaying work, declining achievement and productivity, sabotage behaviours, increasing frequency of absence from work, eating disorder behaviour, losing appetite, drinking alcohol, being aggressive, stealing, declining quality of interpersonal relationships (family and friends) and a suicidal tendency(Robin, 2005).

Methods

The Subjects were nurses in Haji Hospital Intensive Care Unit (ICU), Emergency Unit and Nursery room at Medan. Samples were taken randomly as many as 23 nurses. Observational study was conducted using cross sectional study design. Work Stress measurement used questionnaires GHQ-12 (General Health Quesionaire-12) and imunitas measurement used conducted laboratory tests of blood cortisol levels and immunity examination IgG levels.

Frame work study



Picture 1. Frame work study; Subowo (2013), Pinel (2009)

Hypotesis

1. There is no influence from characteristics of respondents on distress
2. There is influence from psychological distress on the level of cortisol
3. There isinfluence from psychological distress on the levelof IgG
4. There is influence from social distress on the level of cortisol.
5. There is influence from social distress on the level ofIgG

Data Analysis

The data obtained would be analyzed using statistic non parametric, including analysis of data normality, univariat, bivariat and then applying spearman correlation.

Results

Survey 23 respondents consisted of 15 respondents distress and 8 respondents is not distress. Characteristic of the respondents in this study are described based on age group, education and years of service shows in the table 1.

Table 1. Data Characteristics of Respondents by Age group, Education and Years of Service in Haji Hospital Medan

Number	Category	Frequency	Percent (%)
1	Age		
	21 – 25	3	13
	26 – 30	9	39
	31 – 35	6	26
	36 – 40	3	13
	41 – 50	2	9
	Total	**23**	**100**
2	Education		
	Diploma	18	78.3
	Bachelor's degree	5	21.7
	Total	**23**	**100**
3	Years of Services		
	5 – 10	11	47.8

11 – 15	8	34.8
16 – 20	2	8.7
>20	2	8.7
Total	**23**	**100**

Table 1 indicates the age majority is 26-30 years old as many as 39%. The most groups of education is Diploma as many as 78.3% and the most group years of service is 5-10 years as many as 47.8%. The Respondent are distres and not distres (normal) indicated at table 2.

Table 2 Distribution of Respondents Distress

Number	Category	Frequency	Percent (%)
1	Distress	15	65.2
2	Normal	8	34.8
	Total	23	100

Table 2 indicates the respondent are distress as many as 65.2% and normal as many as 34.8%.The influence of psychological distress with cortisol levels shows in table 3.

Table 3 The influence from psychological distress on the level of cortisol and IgG

Number	Psychological distress	Spearman rho (r)	p Value	N
1	Kortisol	0.532	0.009	23
2	IgG	-0.719	0.000	23

Table 3 indicates that the results, levels of cortisol value r=0.532 and p =0.009 showed a strong relationship and patterned positive, meaning that the higher levels of psychological distress will increase cortisol levels. Statistical test results obtained there is significant relationship between psychological distress with cortisol levels (p =0.009). IgG levels r=-0719 and the value of p=0.000 showed a strong relationship patterned level is negative, meaning that the higher levels of psychological distress will reduce levels of IgG. Statistical test results obtained there is significant relationship between psychological distress with IgG levels (p =0.000).

Table 4. The Influence from social distress onthe immunity: the level of cortisol and IgG

Number	Social Distress	Spearman rho (r)	p Value	N
1	Kortisol	0.135	0.540	23
2	IgG	-0.340	0.113	23

The results levels of cortisol value r = 0135 shows no relationship/relationship is weak and the value of p = 0.540 showed no significant results. Statistical test results IgG r = -0.340 indicates the level and pattern of relationship is negative, it means increasing social distress will decrease slightly the level ofIgG. Statistical test result p = 0.113 showed no significant relationship between distress onthe levels of IgG.

Discussion

Respondent characteristics such as age, education and years of service variabels are with no influence on work stress; nurse distress. The results are consistent with the concept of distress a holistic models of stress.The physical or psychological stimuli which the individual responds are commonly referred as either stressors or demands. Stressors at work take the form of role demands, interpersonal demands, physical demands, workplace policies and job conditions (Quick et al., 1984). The relationship between the worker and the work environment are not harmonized may lead to distress. Some research out lines that the labour relations and working environment are the right model for a negative response (Nelson et al., 2001).

Influence stress on immune system

According to data analysis with Spearman correlation (r) showed significant

relationship between psychological distress with increased cortisol levels as well as levels of IgG. This Research conducted immune system in elderly people, feelings of depression and anger can weaken the immune system. They are prone to stress and depresion. Stress causes physiological changes inthe body that weakens the immune system, and ultimately affect the health of so susceptible to disease, and the incidence of abnormalities ofthe immune system with the appearance of psoriasis and eczema.The glucocorticoid hormones and cortisol trigger the anti-inflammatory reactions in the immune system (Fatmah, 2006).The immune system as close relationship with the emotions, the relationship has been demonstrated since 1919, Japanese researchers found an association of physical and emotional set backs tuberculosis patients during their immune system in an emotional rage episode. In 1926 American researchers found the number of lymphocytes decreased in individuals who experience shock (Subowo, 2013).

Conditions of distress is a negative response due to a stressor, stressor also activates the sympathetic nerve, there by increasing the amount of epinephrine and norepinephrine is released from the adrenal medulla. Segerstrom & Miller (2004) found that the effects of stress affects the immune function. Excessive distress can cause changesto health, such as disorders: psychological cardiovascular and muscle. Health problems occur because the body accept a state of stress and responds to stressful conditions through the brain.

Instead the condition of tranquillity will enhance the immune system. Tranquility, positive thinking is a positive emotional response to increase optimistic attitude, so avoid the stress. Optimistic attitude cause a state of balance (Homeostasis). Homeostasis occurs because of the feedback mechanisms that limit excessive reactions and maintain normal conditions. Endurance immunologic response pattern of the prayer tahajud can decrease the cortisol hormone(Soleh, 2006). There are changes in the concentration of IgG and IgA levels before and after memorizing the holy AlQur'an in Qori (Laukha, 2010). The level of IgG significantly higher in the group of respondents who experience digestive disorders and disorders atopic dermatitis (Said dkk., 2012).

Conclusion

Work stress; psychological distress saffects the immune system, evidenced by an increase in cortisol levels and decrease in IgG. Unbalance demotions cause the body's immunity levels decrease. Inverse correlation between in creased levels of cortisol and decrease IgG. The immune system works to protect the body from infection, bacteria, viruses and cancer cells and other foreign substances in the body. Psychological distress in the long time run affect the immune system, decreased immune system and weak, the body susceptible to disease and increases the risk of cancer.

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