Poor Sleep Quality of Hospitalized Geriatric Patients in General Hospital in Karawaci, Tangerang, Banten Province, Indonesia

Nata Pratama Hardjo Lugito[1], Theo Audi Yanto[1], Andree Kurniawan[1], Indra Wijaya[1], Margaret Merlyn Tjiang[1], Resa Setiadinata[1], Stevent Sumantri[1], Euphemia Seto[1]

[1]Department of Internal Medicine, Faculty of Medicine, Pelita Harapan University

Abstract

Background: In Indonesia, geriatric population in the year 2005 was 15.8 million (7.2 % population), and expected to reach 11.34% in the year 2020. There was growing evidence for poor sleep as an independent risk factor for poor physical and mental health. Geriatric population may be particularly vulnerable to effects of sleep disturbance due to significant age-related changes in both sleep and inflammatory regulation

Objective: To study the epidemiological (gender, age group) and health status (co-morbidities), sleep quality according to Pittsburgh Sleep Quality Index (PSQI) and its associations in geriatric population hospitalized in General Hospital in Karawaci, Tangerang, Banten Province, Indonesia.

Materials and Methods: A hospital based cross sectional study was conducted from January to June 2014. A total of 92 subjects aged 60 years and above were selected consecutively from hospitalized geriatric patients for this study. The data was analyzed by means and proportions.

Results: The male and female subjects were 51.1% and 48.9%. Mean age was 66.79 + 5.448 years. The age group of 60 – 75 years and above 75 years was 92.4% and 7.6% consecutively. Subjects with diabetes, hypertension, allergy, asthma, cardiac failure and chronic kidney disease were 30.4%, 62.0%, 18.5%, 21.7%, 21.7%, 20.7% consecutively and 63.0% with more than 2 co-morbidities. According to PSQI 72.8% subjects have poor sleep quality. Associations between poor sleep quality to epidemiological and health status were not significant except for diabetes (RR= 3.208 [95% CI: 1.045 – 9.848], p = 0.022) and chronic kidney disease (RR= 6.247 [95% CI: 0.902 – 43.279], p = 0.017)

Conclusions: Seventy two percents of subjects have poor sleep quality, and associations between poor sleep quality to epidemiological and health status were not significant except for diabetes.

Keywords: poor sleep quality, hospitalized, geriatric

Abstrak

Latar belakang: Populasi usia lanjut Indonesia pada 2005 adalah 15,8 juta (7,2 %), dan diperkirakan 11,34% pada 2020. Kualitas tidur yang buruk merupakan faktor independen kesehatan fisik dan mental. Populasi usia lanjut rentan terhadap efek gangguan tidur karena perubahan yang terkait usia pada tidur dan regulasi inflamasi.

Tujuan: Mempelajari hubungan status epidemiologis (kelamin, usia) dan kesehatan (komorbiditas), kualitas tidur menurut Pittsburgh Sleep Quality Index (PSQI) opada populasi usia lanjut di Rumah Sakit Umum di Karawaci, Tangerang, Banten, Indonesia.

Material dan Metode: Studi kros seksional di Rumah Sakit pada periode Januari - Juni 2014. Sembilan puluh dua subjek berusia 60 tahun ke atas didapatkan secara konsekutif. Data dianalisis dengan rerata dan proporsi.

Hasil: Subjek laki-laki dan perempuan adalah 51,1% dan 48,9%. Rerata usia 66,79 + 5,448 tahun. Kelompok usia 60 – 75 tahun dan di atas 75 tahun 92,4% dan 7,6%. Subjek dengan diabetes, hipertensi, alergi, asma, gagal jantung dan penyakit ginjal kronik 30,4%, 62,0%, 18,5%, 21,7%, 21,7%, 20,7% dan 63,0% dengan lebih dari 2 komorbiditas. Berdasarkan PSQI 72,8% subjek memiliki kualitas tidur buruk. Hubungan antara kualitas tidur buruk dengan status epidemiologis dan kesehatan tidak bermakna kecuali diabetes (RR= 3,208 [95% IK: 1,045 – 9,848], p = 0,022) dan penyakit ginjal kronis (RR= 6,247 [95% IK: 0,902 – 43,279], p = 0,017)

Kesimpulan: tujuh puluh dua persen subjek mengalami kualitas tidur yang buruk, tidak didapatkan hubungan bermakna antara kualitas tidur buruk dengan status epidemiologis dan kesehatan kecuali diabetes.

Kata kunci: kualitas tidur buruk, rawat inap, usia lanjut

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Introduction

In Indonesia, geriatric population in the year 2005 was 15.8 million (7.2 % population), and expected to reach 11.34% in the year 2020.[1]

poor health status,[2] disability,[3] poorer physical functioning,[4,5] falls and fractures.[6] Geriatric population may be particularly vulnerable to effects of sleep disturbance due to significant age-related changes in both sleep and inflammatory regulation.

Geriatric population with multiple co-morbidities that was also related to more poor sleep.[7] These co-morbidities were also related to dysregulation of inflammatory responses.

This study aimed to study the epidemiological (gender, age group) and health status (co-morbidities), sleep quality according to Pittsburgh Sleep Quality Index (PSQI) and its associations in geriatric population hospitalized in General Hospital in Karawaci, Tangerang, Banten Province, Indonesia.

Materials and Methods

Participants
The study was conducted in General Hospital in Karawaci, Tangerang, Banten Province, Indonesia from January to June 2014. Subjects were patients aged 60 years and above, selected consecutively from hospitalized geriatric patients.

Data collected were demographic data including age and gender, co-morbidities data (diabetes, hypertension, allergy, asthma, cardiac failure and chronic kidney disease), and sleep quality. Data on cancer were not collected. Co-morbidities was coded only for subjects who has a confirmed history of diagnosis and treatment for one of the above co-morbidities.

Sleep quality
Sleep quality were investigated using specific questions and items obtained from the Pittsburgh Sleep Quality Index (PSQI). The cutoff for PSQI-defined poor sleep quality was a score > 5.

Corresponding Author:
Nata P.H. Lugito ( )
Faculty of Medicine Universitas Pelita Harapan
Jl. Boulevard Jend.Sudirman, Lippo Karawaci, Tangerang, Indonesia. Tel: +62-21-54210130; Fax: +62-21-54210133; Email: nata.lugito@uph.edu

There was growing evidence for poor sleep as an independent risk factor for poor physical and mental health. In geriatric populations, sleep disturbances is associated with greater risk of adverse health-related outcomes, such as

This cutoff has a sensitivity of 89.6% and a specificity of 86.5% in distinguishing good sleepers from poor sleepers, and has been shown to have good reliability, internal consistency.

Statistical analysis
Statiscal analysis was done using the SPSS version 20.0. The minimum statistical significance level for all analyses was $p < 0.05$. Categorical datas were presented as frequency and percentage, while numerical datas were presented as mean $\pm$ standar deviation. Association between sleep quality and epidemiological – health status including age and gender, co-morbidities such as diabetes, hypertension, allergy, asthma, cardiac failure and chronic kidney disease were analyzed using Chi-square test and Fisher exact test to obtain 95% confidence interval of the risk ratio (RR) and *p* value.

Results

There were 92 geriatric patients included in this study for evaluation of sleep quality. The male and female subjects were 51.1% and 48.9%. Mean age was 66.79 $\pm$ 5.448 years. The age group of 60 – 75 years and above 75 years was 92.4% and 7.6% consecutively. Subjects with diabetes, hypertension, allergy, asthma, cardiac failure and chronic kidney disease were 30.4%, 62.0%, 18.5%, 21.7%, 21.7%, 20.7% consecutively and 63.0% with more than 2 co-morbidities. According to PSQI 72.8% subjects have poor sleep quality. Epidemiological and health status of geriatric patients were shown in table 1.

Associations between poor sleep quality to epidemiological and health status were not significant except for diabetes (RR= 3.208 [95% CI: 1.045 – 9.848], $p = 0.022$) and chronic kidney disease (RR= 6.247 [95% CI: 0.902 – 43.279], $p = 0.017$). Associations between sleep quality and epidemiological – health status were shown in table 2.

Table 1. Demography and epidemiology profile of geriatric patients

	n	%
Sex		
Male	47	51.1
Female	45	48.9
Age (mean ± SD)	66.79 ± 5.448 y.o.	
Age group		
60-75 y.o.	85	92.4
> 75 y.o.	7	7.6
Sleep disturbance (PSQI > 5)	67	72.8
Comorbidities		
Hypertension	57	62.0
Diabetes	28	30.4
Asthma	20	21.7
Cardiac failure	20	21.7
Chronic kidney disease	19	20.7
Alergy	17	18.5
≥ 2 comorbidities	58	63.0
Body mass index		
<18,5	20	21.7
18,5-22,9	49	53.3
>22,9	23	25.0

Table 2. Associations between sleep quality and epidemiological – health status of geriatric patients

	n	%	*p*
Sex			
Male	30	63.8	NA
Female	37	82.2	
Age group			
60-75 y.o.	63	74.1	NA
> 75 y.o.	4	57.1	
Comorbidities			
Hypertension	42	73.7	0.022
Diabetes	25	89.3	NA
Asthma	18	90.0	NA
Cardiac failure	16	80.0	NA
Chronic kidney disease	17	89.5	0.017
Alergy	13	76.5	NA
< 2 comorbidities	24	70.6	NA
≥ 2 comorbidities	43	74.1	
Body mass index			
< 18.5	16	80.0	
18.5 – 22.9	34	69.4	NA
> 23.0	17	73.9	

Discussion

Age-related increases in sleep disturbance, inflammatory dysregulation and increases in chronic, low level inflammation due to immunosenescence may render older adults particularly vulnerable to poor sleep and subsequent mental and physical health consequences.[7-9] Studies have shown that older adults with poor sleep-related inflammation is transposed onto immunosenescence and may contribute additively or synergistically to inflammatory-related mental and physical morbidity.[5]

Geriatric patients were associated with multiple health conditions, including chronic diseases and chronic pain the diseases caused. Multiple conditions in geriatric patients was related to more sleep disturbances.[6] Studies on the frequency of sleep disturbances in patients with chronic disease showed the complaint of difficulty falling asleep in 31% of patients with arthritis and 66% of patients with chronic pain; difficulty staying asleep in 81% of patients with arthritis, 85% of patients with chronic pain, and 33% of patients with diabetes; and difficulty falling and staying asleep in 45% of patient with gastroesophageal reflux disease, 50% of patients with congestive heart failure, and 44% of patients with cancer.[10-15] Sleep disturbances were associated with mortality, frailty and death. Studies have shown that sleep quality in geriatric patients has prognostic value in assessing risk of frailty and mortality.

Sleep disturbances might be a sign of many conditions in geriatric patients including poor health condition, intermediate stage of frailty and comorbidities which impair sleep and increase the possibility for frailty or death. Sleep disturbances were related to other condition including low endogenous level of testosterone[16], renal dysfunction[17] and increased level of chronic inflammation markers.[18] Any one or a combination of condition mentioned above might increase the risk of frailty or death in geriatric patients with sleep disturbance. Sleep disturbance might also be affected by the frailty that was frequently experienced by geriatric patients with chronic condition such as diabetes or cardiac failure.[19]

This study results showed that majority of geriatric patients admitted to hospital experienced sleep disturbance, as the PSQI score > 5. The explanation could be that the geriatric patients included in this study was being admitted, thus their health condition was in poor condition. The worsening condition that leads to hospitalization also increases the inflammatory markers and also the frailty, resulting sleep disturbance.

In spite of the conditions of these geriatric patients that lower sleep quality, diabetes was shown to have impacted more on sleep quality. Other epidemiological – health status of these geriatric patients did not seemed to have enough on sleep quality.

Conclusions

Seventy two percent of subjects have poor sleep quality. Associations between poor sleep quality to epidemiological and health status were not significant except for diabetes.

Acknowledgement

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