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# THE RELATIONSHIP BETWEEN SLEEP DURATION AND HYPERTENSION INCIDENCE IN CIVIL SERVANTS AGED 30 TO 60 YEARS

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| | | **Abstract** |
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| **Received** | : 26-01-2023 | ***Introduction****: The adult prevalence of Hypertension increased significantly globally. Enhancement of this increase in a manner together with decline duration sleep. Some study has shown exists connection Between the duration of sleep with incident hypertension. To could understand exists relationship between-both of them needs to be conducted purposeful research-to know if the enhancement of high hypertension-is related to the duration of sleep.* ***Method****: The research uses studies of observational analytics with design cut following cross-include 169 civil servants in agriculture and communications Old Cianjur-between 30 to 60 years. Data were collected with a questionnaire about name age, breed gender, and duration sleep, and Sleep Duration and measurement pressure blood then based on criteria of The Seventh Report of The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC7). Data analysis using SPSS for windows with the level the meaning used as big not enough from 0.05.* ***Results****: Data analysis using Chi-Square shows that exists a connection meaning-Among duration of sleep with hypertension body (p=0.015) in the Civil Service Service agriculture and communications Cianjur. Getting that duration of sleep is not enough to own connection with incident hypertension compared to civil servants who have sleep enough.* ***Conclusion****: Research this show that duration sleep related hypertension in PNS so expected Public especially civil servants understand the importance own duration of good sleep.* |
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## INTRODUCTION

Hypertension is one-common disease-found in society and is associated disease-system cardiovascular (Del Pinto et al., 2021). Hypertension is something a numeric disease-that happened high and on increase what happened from year to year.

Based on data from WHO in 2001, around 7.6 million mortality and 92 million morbidities per year that occurs worldwide are caused by hypertension. According to survey health national survey nutrition in America shows about 30% of adults own hypertension (Organization, 2014). (Tatiana et al., 2012)

The number of incidents of hypertension is very high, according to results of the Home Health Survey Ladder, 2009 shows the average disease hypertension in Indonesia enough high, namely 83 per 1000 people. Moment Currently, hypertension in Indonesia is becoming the reason for death number 3, reaching 6.7% of the population of all ages

(Gaimard, 2022). Results of Basic Health Research (Rikesdas) Balitbangkes 2007 shows _ that the prevalence of hypertension in a manner nation reached 31.7%. (Kementerian Kesehatan Republik Indonesia, 2007) According to chairman Dr. research Francesco P. Cappuccio from Warwick Medical School, Coventry, necessary more many studies for confirm that duration of sleep affect the level of pressure blood. (World Health Organization, 2011)

Based on the description of the data obtained, Indonesia is one of the countries with a large number of sufferers of hypertension the taller from time to time, and the amount increases, as well the number of mortality consequence complications still high. Lots of variety type moderate studies-going on to identify factor risk disease hypertension is one of them about the duration of sleep (Miller et al., 2014).

Based on the data above, researchers want to know the connection duration of sleep with hypertension in civil servants aged 30-60 years. So researcher need for getting data about the prevalence of hypertension in adults in Indonesia, especially in civil servants Aged 30-60 years.

## METHOD RESEARCH

Method research used-is non-experimental research with an approach method *cross-sectional*. Study this will be implemented in the Department of Agriculture and Service Communications Cianjur. The study will be conducted for 4 months from November 2015 to February 2016.

Target population is civil servants _ who both experienced _ hypertension and no experience hypertension aged 30-60 years. sample _ study is whole civil servants _ who experienced _ hypertension or no experience hypertension aged 30-60 years who work in the Department of Agriculture and Communications Cianjur. The retrieval technique sample is with use method *purposive sampling* use formula population infinity. In the study here, the data collected form of primary data. Primary data on research consists from:
1. Frequency data distribution respondent form questionnaire.
2. duration data civil servant sleep form questionnaire *Sleep Duration*.
3. measurement data pressure blood is taken with the use digital sphygmomanometer.

Data analysis used in a study this in a manner bivariate using the Chi-Square Test with limit meaning used (p-value) for look exists meaningful difference _ Among variables free and dependent is p≤0.05. Data analysis on research was then counted using the counting computation program SPSS *for* Windows version 21.0.

Proposals that have been approved for conducted research, next will submit *Ethical Clearance* to Commission ethics Research Faculty Medical University Trisakti (Msoroka & Amundsen, 2018). The subject data study will guaranteed secrecy and the subject study already requested agreement especially formerly after explaining (*informed consent*) for follow as well as in the study in a manner voluntary.

## RESULT AND DISCUSSION
## CHARACTERISTICS SUBJECT

Study this is done in Service Agriculture and Service Communications Cianjur on the moon from November 2015 to February 2016 with the use questionnaire to know the duration of sleep subject. The results research found total fulfilling subject_criteria included

as many as 169 subjects. Analysis univariate will describe the characteristics of ==each the== variables obtained from a subject, that is age, type sex, pressure blood, and duration of sleep.

Table 1. Distribution Characteristics subject study

| Characteristics subject study | Frequency (n) | Percentage (%) |
|---|---|---|
| Age | | |
| 30-49 years | 120 | 71.0% |
| 50-60 years | 43 | 25.4% |
| >60 years | 6 | 3.6% |
| Type sex | | |
| Man | 115 | 68% |
| Woman | 54 | 32% |
| Blood Pressure | | |
| Normal | 113 | 66.9% |
| Hypertension | 56 | 33.1% |
| Duration sleep | | |
| Not Enough | 49 | 29% |
| Enough | 120 | 71% |

Table 1. explains the characteristics subject study based on each variable. Based on age, the range age between 30-49 years 120 subjects (71%), range aged 50-60 years, 43 subjects (25.4%), and the rest more 60 years 6 subjects (3.6%). For the subject manifold sex men 115 (68%) and the remaining 54 the subject (32%) is manifold sex women. Based on JNC7, the subject study pressure normal blood in as many as 113 subjects (66.9%) and who have hypertension 56 subjects (33.1), and for the duration of sleep, not enough 49 subjects (29%) and 120 subjects (71%) have duration enough.

**Connection Duration Sleep With Hypertension**

Bivariate analysis was used to analyze the relationship between the two variables, namely the independent variable (sleep duration) and the dependent variable (hypertension).

Table 2. Relationship between sleep duration and hypertension

| Variable | Hypertension | | | | Total | | P value |
|---|---|---|---|---|---|---|---|
| | Not hypertension | | Hypertension | | | | |
| | n | % | n | % | N | % | |
| **Sleep duration** | | | | | | | |
| Not enough | 26 | 53,1 | 23 | 46,9 | 49 | 28,9 | 0.015 |
| Enough | 87 | 72.5 | 33 | 27.5 | 120 | 71.0 | |
| Total | 113 | 66,9 | 56 | 33,1 | 169 | 100 | |

Table 2 shows that 49 subjects (28.9%) had insufficient sleep duration and 120 subjects (71%) had sufficient sleep duration. Of the 49 subjects who had insufficient sleep duration, 26 subjects (53.1%) had no hypertension category and 23 subjects (46.9%) had hypertension. Whereas of the 120 subjects who had adequate sleep duration, 33 subjects (27.5%) had hypertension and the rest (87 subjects, 72.9%) did not have hypertension. In the test of the significance of these two variables, an *expected count frequency* of more than 5 was found (where the minimum expected frequency was 16.24). In the *chi-square* analysis, the significance value of Pearson *chi-square* (p) is obtained between variable sleep duration

with hypertension 0.015. Because the p-value is less than 0.05, there is a significant relationship between sleep duration and hypertension (Jain et al., 2021).

**DISCUSSION**
**Characteristics of Subjects Based on Age, Gender, And Blood Pressure**

The number of subjects in this study was 169, and the characteristics of the subjects based on age were relatively unbalanced (Saricicek et al., 2012), namely range age between 30-49 years 120 subjects (71%), range aged 50-60 years, 43 subjects (25.4%), and the rest more of 60 years 6 subjects (3.6%). Besides that, researchers also get different subjects with type sex boy and girl in a manner meaning sex man 115 (68%) and the remaining 54 the subject (32%) is manifold sex girl. Based on JNC7, subjects study which their pressure normal blood as many as 113 subjects (66.9%) and who have hypertension in 56 subjects (33.1), and duration of sleep not enough in 49 subjects (29%) and 120 subjects (71%) have duration enough.

Grouping pressure blood in a study only shared into 2 categories ( No hypertension or normal and hypertension or pressure blood height ) of the 4 groups of pressure existing blood. _ The subject is located in the category no hypertension or normal is systolic 120-139/diastolic 80-89 mm Hg, and subjects who are in the category hypertension or pressure blood tall is 140-159/90-99 mm Hg diastolic. Grouping this conducted by researchers makes it easy to *code* data. Study this is also a goal for the look is subject that has duration sleep not enough and have pressure more blood _ from normal to use category this permanent could give expected result _ researcher.

**Relationship between sleep duration and hypertension in PNS**

In table 2. it can be concluded that people who do sleep not enough have less hypertension than people who get enough sleep and have hypertension. Based on the results of statistical tests on the relationship between sleep duration and hypertension, *a p-value* of 0.015 (p <0.05) can be concluded, so it can be concluded that there is a relationship between sleep duration and hypertension. The results of this study are in line with research conducted by Daniel J. Gottlieb et al which stated that insufficient sleep duration is associated with increased blood pressure at the age of 40-100 years. This is due to a shortage time sleep could make the system's nerves in some circumstances hyperactive which will influence the system's whole body, incl the heart and vessels that blood more rigid so that intravascular pressure _ will increase (Maldonado, 2013)

based on results of research by P Bansil et al entitled Association Between sleep disorders and hypertension based from the 2005-2008 NHANES conclusions stated that sleep is Thing urgent for contributing to the optimization of health and vital signs. The report exists that the prevalence of hypertension was 30.2% experienced disturbance sleep 7.5% and 33.0% experienced duration no sleep_enough and 52.1 % reported exists quality bad sleep (Ohayon & Stingl, 2012).

Based on the results of research Izawa et al, examined the rate of cortisol in the blood increase, and increasing cortisol will activate the sympathetic system which will role in the increase in pressure blood (Ohayon & Stingl, 2012).

Duration of no sleep _ enough will bother the internal system balance body us. Sleep in the body man centrally regulated _ consciousness in the medulla of the trunk brain, and involves hormones that are regulated by hormones very cortisol _ which plays a role in the rhythm of circadian human (Leliavski et al., 2015).

Cortisol hormone imbalance in the body man results in hormone imbalance that will be produced by the adrenal glands, cortisol will influence to work of catecholamines produced by the adrenal medulla. Catecholamines consist of epinephrine and norepinephrine and act on nerves _ sympathetic (Leliavski et al., 2015).

Pressure blood in humans is affected by vasoconstriction arterioles where almost all arteriolar smooth muscle is regulated work by the system nerve sympathetic. When sympathetic work Keep going continuously will cause possible vasoconstriction _ causing enhancement pressure blood. Besides its also cortisol will influence the mineralocorticoids that it consists of aldosterone and can influence the action of the alpha precursor renin, so that will Affects the aldosterone- stimulating renin-angiotensin system sympathetic and enhancing pressure blood (Lumbers & Pringle, 2014).

After doing research, the researcher realizes that study is no escape from lack. Weaknesses found by researchers _ among others about method collection results in a duration of sleep. This study measures sleep duration using the *Sleep duration questionnaire*, so the sleep duration obtained is subjective. The use of the questionnaire allows for subject bias due to the limited time allotted to fill out the questionnaire and the different perceptions of each subject regarding the question regarding sleep duration over the past month. This research was also conducted with a very limited time because researchers had to adjust the schedule of the respondents so that the study design was cross-*sectional* and did not allow researchers to take routine blood pressure measurements (Spector, 2019).

**CONCLUSION**

Based on the results of research that has been done, then could take the conclusion as follows, from 169 subjects study, it was found that 49 subjects (28.9%) had insufficient sleep duration and 120 subjects (71%) had adequate sleep duration, and 169 subjects studies, in get that 113 subjects (66.9%) and who have hypertension 56 subjects (33.1%), based on significance test with using *chi*-square, we get meaningful relationship_Among duration sleep with hypertension (p=0.015)

**BIBLIOGRAPHY**

Del Pinto, R., Grassi, G., Ferri, C., Pengo, M. F., Lombardi, C., Pucci, G., Salvetti, M., Parati, G., (SIIA), I. S. of H., & Pinto, (2021). Diagnostic and therapeutic approach to sleep disorders, high blood pressure and cardiovascular diseases: a consensus document by the Italian Society of Hypertension (SIIA). *High Blood Pressure & Cardiovascular Prevention*, *28*, 85–102.

Gaimard, M. (2022). Mortality and Health, the Factors Involved in Population Dynamics. *Demographic Dynamics and Development*, 121–145.

Jain, N., Pathania, M., & Bahurupi, Y. (2021). Assessment of sleep quality and quality of life in hypertensive subjects at a tertiary care hospital in Uttarakhand, India. *International Journal of Preventive Medicine*, *12*. https://doi.org/10.4103%2Fijpvm.IJPVM_465_20

Kementerian Kesehatan Republik Indonesia. (2007). *Report of Result National Basic Reasearch (RISKESDAS)*. Kementrian Kesehatan Republik Indonesia.

Leliavski, A., Dumbell, R., Ott, V., & Oster, H. (2015). Adrenal clocks and the role of adrenal hormones in the regulation of circadian physiology. *Journal of Biological Rhythms*, *30*(1), 20–34. DOI: 10.1177/0748730414553971

Lumbers, E. R., & Pringle, K. G. (2014). Roles of the circulating renin-angiotensin-aldosterone system in human pregnancy. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology*, *306*(2), R91–R101. https://doi.org/10.1152/ajpregu.00034.2013

Maldonado, J. R. (2013). Neuropathogenesis of delirium: review of current etiologic theories and common pathways. *The American Journal of Geriatric Psychiatry*, *21*(12), 1190–1222. https://doi.org/10.1016/j.jagp.2013.09.005

Miller, M., Wright, H., J, C., & Cappuccio, F. (2014). Cross-sectional study of sleep quantity and quality and amnestic and non-amnestic cognitive function in an ageing population: the English Longitudinal Study of Ageing (ELSA). *PLoS One*, *9*(6). https://doi.org/10.1371/journal.pone.0100991

Msoroka, M. S., & Amundsen, D. (2018). One size fits not quite all: Universal research ethics with diversity. *Research Ethics*, *14*(3), 1–17.

Ohayon, M. M., & Stingl, J. C. (2012). Prevalence and comorbidity of chronic pain in the German general population. *Journal of Psychiatric Research*, *46*(4), 444–450.

Organization, W. H. (2014). *A global brief on vector-borne diseases*. World Health Organization.

Saricicek, A., Esterlis, I., Maloney, K. H., Mineur, Y. S., Ruf, B. M., Muralidharan, A., Chen, J. I., Cosgrove, K. P., Kerestes, R., & Ghose, S. (2012). Persistent β2*-nicotinic acetylcholinergic receptor dysfunction in major depressive disorder. *American Journal of Psychiatry*, *169*(8), 851–859. https://doi.org/10.1176/appi.ajp.2012.11101546

Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. *Journal of Business and Psychology*, *34*(2), 125–137. https://doi.org/10.1007/s10869-018-09613-8

Tatiana, N., Sug, Y. S., Vicky, B., & Qiuping, G. (2012). Hypertension among adults in the United States. *NCHS Data Brief 2012*.

World Health Organization. (2011). *World health statistics south east asia region*.