Jurnal Analis Medika Biosains (JAMBS)
Vol.12, No.1, March 2025, pp. 39-44 http://jambs.poltekkes-mataram.ac.id/index.php/home
E-ISSN: 2656-2456 DOI: https://doi.org/10.32807/jambs.v12i1.396

Description Of Hemoglobin Levels And Blood Pressure In Security After Night Picket Lines

I Wayan Getas[1], Selfi Tri Oktapia[2], Fihirudin[3], Pancawati Ariami[4]
[1-4] Jurusan Teknologi Laboratorium Medis, Poltekkes Kemenkes Mataram, Indonesia
*Email : selvitri445@gmail.com

Article Info

Article history :

Received : July 24th 2024
Revised : March 13th 2025
Accepted : March 25th 2025

Keyword :

Security
Hemoglobin
Blood Pressure

ABSTRACT

Night shift security can negatively affect the body's condition because activities carried out at night will reduce the amount of rest the body needs. Reduced rest will have an impact on decreased hemoglobin levels and increased blood pressure or decreased blood pressure. Rest at night is very important because the detoxification process of cell regeneration and the formation of red blood cells usually occurs at night. To find out the picture of hemoglobin levels and blood pressure on security after night picket. This study is observational with cross sectional method using purposive sampling technique with a total of 44 respondents. Analysis of results can be obtained descriptively by looking at Hb levels and blood pressure. The results of blood pressure checks on security after night pickets with an average of 145/85 and the highest blood pressure is 201/110 mmHg there are 25 people (57%), the lowest blood pressure check results 114/70 mmHg There are 19 people (43%). For the results of the examination of hemoglobin levels in security after night picket hemoglobin levels with an average of 14.1 and the highest hemoglobin is 17.4 g/dL and normal blood pressure there are 32 people (73%), the lowest hemoglobin level examination results 11.4 g/dL there are 12 people (27%). Night picketing can increase blood pressure and reduce hemoglobin levels in security.

INTRODUCTION

Hemoglobin (Hb) is a tetrameric red blood cell protein composed of globin and heme proteins. When the hemoglobin level in the blood drops to normal levels, the body cannot function optimally. A drop in hemoglobin levels in the body can be caused by poor sleeping patterns which can affect hemoglobin levels. People with low hemoglobin levels suffer from anemia due to low oxygen levels in the body and may also experience symptoms of anemia (Abdullah, 2022).

Anemia is a global health problem, where the incidence is about 43% in developing countries, and 9% in developed countries. According to WHO, the global prevalence of anemia ranges from 40 to 88%, while the prevalence of anemia in Indonesia increased to 48.9% in 2018. The age group with the highest proportion of people with anemia is 84.6% at the age of 15 to 24 years (Lubiset al., 2018).

Anemia can be a common blood disorder. Anemia is a disease in which clumps of red blood cells and hemoglobin cannot perform their function in supplying oxygen to body tissues. Anemia can be defined as a decrease in hemoglobin levels, red blood cell count, or hematocrit below normal values. (Abeiasa, 2020).

How to cite: Getas, I., Oktapia, S., Fihiruddin, F., & Ariami, P. (2025). Description Of Hemoglobin Levels And Blood Pressure In Security After Night Picket Lines. *Jurnal Analis Medika Biosains (JAMBS), 12*(1). doi:https://doi.org/10.32807/jambs.v12i1.396

Hemoglobin levels and blood pressure can be influenced by many factors. Hemoglobin levels in a person's blood can be influenced by factors such as age, gender, poor sleep patterns, irregular sleep patterns, physical activity, and diet. The above factors not only affect Hb levels but also affect blood pressure (Kustiani & Arza, 2020).

Physical activity done at night will reduce the amount of rest the body needs. Reduced rest can cause hemoglobin levels to decrease and blood pressure to increase. Night sleep is very important, because the process of cell renewal and red blood cell formation usually occurs at night (Mayasari, 2021).

Suboptimal rest can lead to the development of hypertension and hypotension through increased sympathetic activity, increased physical and psychological stress and increased salt retention. lack can lead to the development of hypertension and hypotension by increasing sympathetic activity, increasing physical and psychological stressors, and increasing salt retention (Lubis et al., 2018).

Security guards who work night shifts often experience sleep disturbances. Because the human life cycle generally includes night rest, security guards who work at night have a more negative impact than those who work morning or day shifts. Night shifts force the body to perform activities at night, which results in a decrease in hemoglobin levels in the body and the rise and fall of blood pressure (Lubis et al., 2018).

Security who work night shifts tend to lack sleep, so researchers are interested in conducting research related to how the picture of hemoglobin levels and blood pressure in security after night pickets.

MATERIALS/METHOD

This study is an analytical observational study with a cross sectional method that measures hemoglobin levels and blood pressure simultaneously at security after night picket based on work activities. This research was conducted at Epicentrum Mall from November 2023 to January 2024. The sampling technique used a targeted sample or purposive sampling. The population of this study was all security after night picket. The sample of this study was 44 security people who met the inclusion and exclusion criteria. The type of data used is primary data. This study starts from filling out informed consent for security who meet the criteria and agree to be sampled, preparing tools and materials, checking hemoglobin levels using an easy touch brand hemoglobinometer and checking blood pressure using a sphygmomanometer, then collecting data and processing it in the form of a table of results, then analyzing the results descriptively, and finally drawing conclusions.

RESULTS AND DISCUSSION

The results of the study on the description of hemoglobin levels and blood pressure in security after night pickets at Epicentrum Mall that have met the inclusion and exclusion criteria, can be seen in the following results table:

Table 1. Results of Blood Pressure and Hemoglobin Level Examination

Nu	Name	Age	Blood Pressure (mmHg)	Hemoglobin Levels (g/dL)
1.	Y1	20	114/70	11,8
2.	Y2	20	119/70	16,1
3.	Y3	23	120/80	11,4
4.	Y4	21	120/70	13,8
5.	Y5	24	122/70	14,0
6.	Y6	22	123/60	12,6

7.	Y7	25	126/80	14,0
8.	Y8	23	126/70	17,0
9.	Y9	26	127/80	15,4
10.	Y10	30	129/70	14,5
11.	Y11	28	129/70	14,9
12.	Y12	31	130/80	12,3
13.	Y13	35	130/90	16,0
14.	Y14	32	132/70	15,3
15.	Y15	30	134/80	14,4
16.	Y16	28	134/90	15,6
17.	Y17	26	138/70	13,3
18.	Y18	30	138/90	12,0
19.	Y19	40	140/80	16,4
20.	Y20	43	140/90	13,6
21.	Y21	39	140/90	15,0
22.	Y22	38	141/90	15,4
23.	Y23	29	144/90	13,9
24.	Y24	28	145/80	15,1
25.	Y25	33	145/90	12,5
26.	Y26	45	145/90	15,6
27.	Y27	32	146/70	14,0
28.	Y28	28	146/80	11,5
29.	Y29	40	150/90	15,0
30.	Y30	39	154/110	14,4
31	Y31	42	155/70	13,2
32.	Y32	35	160/90	11,7
33.	Y33	37	160/90	15,9
34.	Y34	36	161/70	11,7
35.	Y35	38	162/80	17,4
36.	Y36	41	164/100	16,4
37.	Y37	40	164/110	12,1
38.	Y38	39	165/90	11,4
39.	Y39	36	165/90	14,5
40.	Y40	40	170/90	12,1
41.	Y41	45	180/90	16,3
42.	Y42	49	182/80	14,4
43.	Y43	53	200/100	14,0
44.	Y4	55	201/110	16,4
Highest		**55**	**201/110**	**17.4**
Lowest		**20**	**114/70**	**11,1**
Average		**34**	**145/85**	**14,1**

Based on (Table 1) that, blood pressure on security after night picket the highest tension is 201/110 mmHg, the lowest blood pressure examination results 114/70 mmHg, and the average result of the respondent's tension examination is 145/85. For the results of the examination of hemoglobin levels in security after the night picket the highest hemoglobin level was 17.4 g/dL, the lowest hemoglobin value was 11.4 g/dL, and the average hemoglobin value of respondents was 14.1 g/dL.

Furthermore, the results obtained from the frequency distribution of blood pressure checks.

Table 2. Frequency distribution of blood pressure

Category	Blood Pressure		Total	Percentage (%)
	Systolic (mmHg)	Diastolic (mmHg)		
Normal	<120	<80	2	5%
Pre hypertension	120-139	80-89	16	36%
Grade 1 hypertension	140-159	90-99	13	30%
Grade 2 hypertension	≥160	≥100	9	20%
Grade 3 hypertension	>180	>110	4	9%
Total			**44**	**100%**

Based on (Table 2), the results of blood pressure on night security pickets with normal blood pressure were 2 people (5%), Pre hypertension 16 people (36), 1st degree hypertension 13 people (30%), 2nd degree hypertension 9 people (20%), and 3rd degree hypertension 4 people (9%).

Table 3. Frequency distribution of hemoglobin levels

Hemoglobin	Total	Percentage (%)
Normal	32	75%
Low	12	25%

Based on (Table 3) obtained the results of normal and abnormal hemoglobin levels in security officers after night picket, the normal results amounted to 32 people (73%) and the abnormal results amounted to 12 people (25%).

Based on the results of research conducted using 44 samples on security after night picket, the average hemoglobin level measurement results were 14.1 g/dl. The percentage of normal hemoglobin levels was 73% or 32 people, the percentage of abnormal hemoglobin levels was 27% or 12 people and not normal, and the percentage of blood pressure > 140 mmHg was 59% or 26 people, the percentage of blood pressure < 140 mmHg was 41% or 18 people.

When examining hemoglobin levels, the results were normal as many as 32 people with a percentage of 73%, abnormal as many as 12 patients with a percentage of 27% or abnormal because they were below normal values. This is due to fatigue, improper food intake, poor and irregular sleep, this can also affect the occurrence of anemia. Sleep disturbance is one of the factors that can affect hemoglobin levels in the blood. Sleep disorders reduce sleep quality and cause oxidative stress. Oxidative stress lasting more than 12 hours promotes red blood cell lysis. This red blood cell lysis can reduce hemoglobin levels in the blood (Febriyanti, 2022).

This study is in line with research (Patronela, 2019) on the relationship between sleep quality and hemoglobin levels in FK Undana students. The results of this study prove that sleep disturbance is one of the factors that can affect the concentration of hemoglobin in the blood.

Newborns need approximately 18 hours of sleep, decreasing to 13 hours at age 13, 9 hours at age 12, 8 hours at age 20 and 7 hours at age 40. Six hours for 60-year-olds and 6 hours for 80-year-olds. The quality of a person's sleep is determined by how their sleep needs are met, not by the amount or duration of sleep.

Hemoglobin (Hb) is a hemoprotein that transports oxygen and carbon dioxide as well as proteins. Hb is found in red blood cells or erythrocyte cells. Hemoglobin's function is to transport oxygen from the lungs to the rest of the body and become a color-giving protein in red blood cells (Petronela R. Mawo, 2019).

The results of the blood pressure test showed that blood pressure was at the prehypertension stage, with high levels of grade 1, 2 and 3. The percentage of blood pressure in pre-hypertension was 36% or 16 people, and there were 31 people or 30% grade 1 hypertension, 9 people or 20% grade 2 hypertension, and 4 people or 9% grade 3 hypertension. The cause of high blood pressure can be caused by age.

Age is related to the incidence of hypertension due to natural changes in the body that cause the cardiovascular system and hormones to experience blockages, resulting in increased blood pressure which results in hypertension (Aisyah et al., 2023).

Poor sleep quality is also a cause of high blood pressure and a risk factor for high blood pressure in adults. Poor sleep quality can cause metabolic and hormonal disorders that can lead to cardiovascular disease. Poor sleep quality can alter the stress hormone cortisol and the sympathetic nervous system, which can cause an increase in blood pressure. (Rusdiana, 2022).

Similar research was also conducted by (Melizza et al., 2020) and found that there is a relationship between poor sleep quality and increased blood pressure caused by people who lack sleep for a long time. Sympathetic nerve activity makes it easy to feel stress which leads to increased blood pressure.

Low hemoglobin levels are less able to transport oxygen, so it can cause the body to compensate by increasing blood volume or heart rate, which can affect blood pressure. (Atsma, et al., 2020)

CONCLUSIONS

Based on the results of the research that has been done, it can be concluded that Hemoglobin levels in security after night pickets average 14.1 g / dl with the lowest value of 11.4 g / dL, and the highest value is 17.4 g / dl on security who have undergone night pickets. Blood pressure in security after night duty averaged 145/85 mmHg with the lowest value being 114/70 mmHg, and the highest value being 201/110 mmHg. And Hemoglobin levels were found to be normal 73% and abnormal 27%, while blood pressure was found to be normal 59% and abnormal 41%. Hemoglobin levels in security after night duty mostly decreased and blood pressure in security after night duty was found to be partially increased.

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