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The Relationship Between Work Shifts and Changes in Vital Signs of Health Workers: A Quantitative Study in Amalia Medika Pelalawan Riau Hospital

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ABSTRACT

This study aims to determine the effect of work shifts on changes in vital signs of health workers at Amalia Medika Pelalawan Riau Hospital, including blood pressure, pulse frequency, body temperature, respiratory frequency, and oxygen saturation. The method used is verifiable quantitative research with a comparative design. The research population is all health workers who work with a shift system at Amalia Medika Pelalawan Riau Hospital as many as 26 people, who are used as samples with total sampling techniques. Data collection was carried out through observation, questionnaires, and documentation, then analyzed with the Chi-Square test to determine whether or not there was a correlation of work shifts on changes in vital signs. The results of the study showed that work shifts did not have a significant effect on changes in vital signs of health workers. The Chi-Square test on blood pressure produces an Asymp value. Sig 0.444, at a pulse frequency of 0.428, at a body temperature of 0.744, at a respiratory rate of 0.541, and at oxygen saturation of 0.838, are all greater than 0.05. These findings indicate that the difference in morning, noon, and night shifts did not cause significant changes in the vital signs of health workers at Amalia Medika Pelalawan Riau Hospital. This condition shows that the shift management implemented by hospitals relatively does not cause measurable physiological impairment in health workers, although other factors such as subjective fatigue or circadian rhythm disturbances still require attention.

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1. INTRODUCTION

Hospitals have a significant role in improving public health and function as a very vital health service institution in the health system (P. P. Sari et al., 2024). Regulations regarding the operation of hospitals are listed in Law No. 17 of 2023 as explained by Sari & Paskarini (2023). Hospitals are health service facilities that provide promotive, preventive, curative, rehabilitative, and/or palliative services through the provision of inpatient, outpatient, and emergency installations (Adhani, 2021). The implementation of these services refers to the standards listed in Government Regulation No. 28 of 2024 and Permenkes No. 3 of 2020 which regulates hospital governance in order to be able to provide comprehensive care effectively.

Human resource management in hospitals requires an organized system, including health workers and non-health workers so that the service process is able to meet community expectations (Deniswara et al., 2024). Widjaja et al. (2021) stated that the success of institutions is greatly influenced by HR factors, while Nico et al. (2024) emphasized that hospital HR planning aims to ensure the availability of manpower according to operational needs. Law No. 17 of 2023 through the explanation of Chaerunnisa & Yuniar (2023) defines health workers as individuals who actively work in the health sector, including the profession of specialist doctors, general practitioners, nurses, and midwives. The arrangement of hospital human resources follows the guidelines of PMK No. 24 of 2022 and PMK No. 9 of 2024 which affirm a 24-hour work structure based on shift work to maintain service effectiveness. Hangkoso et al. (2023) showed that shift work is closely related to sleep disturbances, fatigue, and decreased quality of life due to disruption of circadian rhythms, while Kurniawati et al. (2023) explain that workload pressure can increase nurse stress.

Pelalawan Regency in Riau Province is recorded to have 678 health workers by 2024, including the profession of doctors, nurses, midwives, pharmacists, nutritionists, physiotherapists, environmental health workers, and medical record officers. Amalia Medika Hospital is one of the health institutions that was established in 2005 and now employs 199 employees, including 165 active health workers. The shift work system at the Emergency Unit of Amalia Medika Hospital is divided into two shifts, namely the morning shift at 07.00–19.00 and the night shift at 19.00–07.00, as well as three work schedules that rotate every three days without overlapping schedules. Long work duration has the potential to cause physiological impacts such as changes in blood pressure, pulse frequency, body temperature, respiration, and oxygen saturation. Government Regulation No. 28 of 2024 requires the integration of HR and K3 management for the preparation of safe work schedules and fatigue prevention programs, while PMK No. 9 of 2024 regulates the role of the K3RS quality committee and the Patient Safety Team in supervising shift rotation and sleep hygiene education. Sabila et al. (2023) provide clinical evidence regarding 24-hour increased blood pressure, disruption of BP dipping patterns, and decreased HRV in night shift workers.

Mayangsari (2025) identified inconsistencies in TTV measurement and clinical escalation processes that can be minimized through appropriate service protocols and digitalization. Permenkes No. 3 of 2020 requires the suitability of hospital classification, service load, and proportional human resource formation so that there is no over-shift or under-staffing, especially in high-risk units such as emergency rooms and ICUs. Policy synchronization from Law No. 17 of 2023 and Government Regulation No. 28 of 2024 supports the supervision of health service facilities to organize work schedules while adding personnel formations when needed. Variations in shift health workers' lifestyle behaviors such as diet, sleep patterns, and caffeine consumption also have an impact on vital signs. Evidence-based interventions such as chrononutrition that emphasize lunch time for night shift workers have been shown to stabilize blood pressure and coagulation factors, while a 15–30-minute power-nap is likely to normalize blood pressure and HRV. Education related to sleep hygiene, caffeine restrictions, light exposure management, and fitness training are part of improving the quality of hospital human resources.

Routine health surveillance through ambulatory blood pressure measurement, HRV, and monitoring of compliance with vital sign measurements are the main needs in the shift work system

for early detection of physiological disorders. Shift management indicators include TTV measurement compliance, response to EWS alarms, TTV missed incidents, and the number of consecutive night shifts including recovery period after shifts. Research by Amirah et al. (2022) shows that there is a significant effect of work shifts on work stress, with the highest levels of stress in the morning shift due to a greater workload. Sari & Paskarini (2023) found a relationship between work shifts and fatigue complaints, but did not find a link between work duration and fatigue so that the shift pattern factor became the dominant variable. Both studies focus on the psychological or subjective aspects of health workers, while the research to be conducted is directed at the objective measurement of vital signs such as pulse frequency, body temperature, respiration, blood pressure, and oxygen saturation to analyze the relationship between work shifts and physiological changes in health workers at Amalia Medika Pelalawan Hospital.

2. METHODS

This study uses a verifiable quantitative approach directed to objectively test the correctness of the relationship between variables. The type of research chosen is comparative research, so the focus of the analysis is on the difference in vital signs of health workers who work on morning, noon, and night shifts. This approach allows researchers to measure physiological variations such as blood pressure, pulse rate, body temperature, and respiratory rate in a structured manner through standardized data collection, so that any changes can be compared based on shift-based working groups.

The data collection process was carried out using *a questionnaire* instrument given to health workers who met the inclusion criteria. The instrument is compiled to obtain information about shift schedules as well as the results of measuring relevant vital signs. The use of *questionnaires* supports the systematic data documentation process, allowing researchers to collect an adequate amount of quantitative data for analysis. The collected data is then grouped according to the needs of the analysis so that it is able to reflect the variation in respondent characteristics based on work shifts.

The data analysis stage begins with univariate analysis to describe the distribution of each variable through frequency and percentage calculations. The next stage is bivariate analysis using *the Chi Square* test to determine the relationship between work shifts as independent variables and changes in vital signs as dependent variables. Statistical decisions are made based on *the value of Asymptotic Significance* or the comparison between the *value of the Chi Square* calculation and the table at a significance level of 5%. The results of this analysis are the basis for determining whether or not there is a significant relationship between the type of shift and changes in physiological parameters of health workers.

3. FINDINGS AND DISCUSSION

Research Results

Univariate Analysis

Weight

Table 1.
Frequency Test Results Based on Weight

No	Body Weight (kg)	Frequency	Percentage (%)
1	40-54	11	42,3
2	55-69	10	38,5
3	>69	5	19,2
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, of the 26 respondents, the majority weighed 40-54 kg as many as 11 people (42.3%).

Height

Table 2.
Frequency Test Results Based on Height

No	Height (cm)	Frequency	Percentage (%)
1	<155	8	30,8
2	155-165	13	50,0
3	>165	5	19,2
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, of the 26 respondents, the majority have a height of 155–165 cm as many as 13 people (50.0%).

IMT

Table 3.
IMT Frequency Test Results

No	IMT	Frequency	Percentage (%)
1	Kurus	2	7,7
2	Normal	14	53,8
3	Gemuk	10	38,5
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, of the 26 respondents, the majority had a normal BMI of 14 people (53.8%).

Blood pressure
Blood Pressure Before *Work Shift*

Table 4.
Blood Pressure Frequency Test Results Before *Work Shift*

No	TD Before	Frequency	Percentage (%)
1	Low	0	0,0
2	Normal	26	100,0
3	High	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had blood pressure before the action in the normal category.

Blood Pressure After *Work Shift*

Table 5.
Blood Pressure Frequency Test Results After *Work* Shift

No	TD After	Frequency	Percentage (%)
1	Low	0	0,0
2	Normal	26	100,0
3	High	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had blood pressure after the procedure in the normal category.

Frequency Nadi

Pulse Frequency Before *Work Shift*

Table 6.
Frequency Test Results Based on Pulse Frequency Before *Work* Shift

No	Frequency of Pulse After	Frequency	Percentage (%)
1	Slow	0	0,0
2	Normal	26	100,0
3	Fast	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had a heart rate before action in the normal category.

Pulse Frequency After *Work Shift*

Table 7.
Frequency Test Results Based on Pulse Frequency After *Work* Shift

No	Frequency of Pulse After	Frequency	Percentage (%)
1	Slow	0	0,0
2	Normal	26	100,0
3	Fast	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had a heart rate after action in the normal category.

Body Temperature

Body Temperature Before *Work Shift*

Table 8.
Body Temperature Frequency Test Results Before *Work* Shift

No	Body Temperature Before	Frequency	Percentage (%)
1	Slow	0	0,0
2	Normal	26	100,0
3	Fast	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had a respiratory frequency before action in the normal category.

Body Temperature After *Work Shift*

Table 9.
Body Temperature Frequency Test Results After *Work* Shift

No	Body Temperature After	Frequency	Percentage (%)
1	Slow	0	0,0
2	Normal	26	100,0
3	Fast	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had a respiratory frequency after action in the normal category.

Respiratory Frequency
Breathing Frequency Before *Work* Shift

Table 10.
Frequency Test Results Based on Respiratory Frequency Before *Work* Shift

No	Respiratory Frequency Before	Frequency	Percentage (%)
1	Low	0	0,0
2	Normal	26	100,0
3	High	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had their temperature before action in the normal category.

Breathing Frequency After *Work Shift*

Table 11.
Frequency Test Results Based on Breathing Frequency After *Work* Shift

No	Respiratory Frequency After	Frequency	Percentage (%)
1	Low	0	0,0
2	Normal	26	100,0
3	High	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had their temperature after the action in the normal category.

Oxygen Saturation
Oxygen Saturation Before *Work Shift*

Table 12.
Oxygen Satursai Frequency Test Results Before *Work* Shift

No	Satursai Oxygen Before	Frequency	Percentage (%)
1	Low	0	0,0
2	Normal	26	100,0
3	High	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had O_2 saturation before the action was in the normal category.

Oxygen Saturation After *Work Shift*

Table 13.
Oxygen Saturation Frequency Test Results After *Work* Shift

No	Oxygen Saturation After	Frequency	Percentage (%)
1	Low	0	0,0
2	Normal	26	100,0
3	High	0	0,0
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, all respondents (26 people, 100.0%) had a saturation of O_2 after action in the normal category.

Age

Table 14.
Frequency Test Results Based on Age

No	Age	Frequency	Percentage (%)
1	21-30 years old	15	57,7
2	31-40 years old	8	30,8
3	41-50 years old	3	11,5
	Total	**26**	**100,0**

Source: Data Processing Results, 2025

Based on the table above, the majority of respondents aged 21-30 years old were 15 people (57.7%).

Bivariate Analysis

Crosstabulation *Shift* Work and Blood Pressure

Table 15.
Corsstabulation *Test Results* for Work Shift and Blood Pressure

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	109,417a	108	,444
Likelihood Ratio	67,461	108	,999
Linear-by-Linear Association	,350	1	,554
N of Valid Cases	26		
a. 130 cells (100,0%) have expected count less than 5. The minimum expected count is ,04.			

Source: Data Processing Results, 2025

Based on the table above, the results of the Chi-Square test showed an Asymp Sig value of 0.444 which was greater than 0.05, so it can be concluded that there is no relationship between *work shifts and changes in blood pressure in health workers at Amalia Medika Pelalawan Riau Hospital.*

Crosstabulation *of* Work Shift and Pulse Frequency

Table 16.

Corsstabulation *Test Results of* Work Shift and Pulse Frequency

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	49,133a	48	,428
Likelihood Ratio	39,999	48	,788
Linear-by-Linear Association	,577	1	,448
N of Valid Cases	26		
a. 63 cells (100,0%) have expected count less than 5. The minimum expected count is ,04.			

Source: Data Processing Results, 2025

Based on the table above, the Asymp Sig value in the Chi-Square test is 0.428 which is greater than 0.05, so it can be concluded that there is no relationship between *work shifts and changes in pulse frequency of health workers at Amalia Medika Pelalawan Riau Hospital.*

Crosstabulation *Shift* Work and Body Temperature

Table 17.

Corsstabulation *Test Results of Work Shift* and Body Temperature

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3,497a	6	,744
Likelihood Ratio	4,155	6	,656
Linear-by-Linear Association	1,081	1	,299
N of Valid Cases	26		
a. 10 cells (83,3%) have expected count less than 5. The minimum expected count is ,08.			

Source: Data Processing Results, 2025

Based on the table above, the Chi-Square test produced an Asymp Sig value of 0.744 which is greater than 0.05, thus showing that there is no relationship between *work shifts and changes in body temperature of health workers at Amalia Medika Pelalawan Riau Hospital.*

Crosstabulation *of* Working Shift and Frequency of Breathing

Table 18.

Corsstabulation *Test Results of Work Shift* and Respiratory Frequency

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1,230a	2	,541
Likelihood Ratio	1,610	2	,447

Linear-by-Linear Association	,910	1	,340
N of Valid Cases	26		
a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is ,46.			

Source: Data Processing Results, 2025

Based on the table above, the Asymp Sig value from the Chi-Square test is 0.541 which is greater than 0.05, so it can be interpreted that there is no relationship between *work shifts* and changes in respiratory frequency of health workers at Amalia Medika Pelalawan Riau Hospital.

Crosstabulation of Shift Work and Oxygen Saturation

Table 19.

Corsstabulation *Test Results of Working Shift* and Oxygen Saturation

Chi-Square Tests					
	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,042a	1	,838		
Continuity Correctionb	,000	1	1,000		
Likelihood Ratio	,080	1	,777		
Fisher's Exact Test				1,000	,962
Linear-by-Linear Association	,040	1	,841		
N of Valid Cases	26				
a. 130 cells (100,0%) have expected count less than 5. The minimum expected count is ,04.					

Source: Data Processing Results, 2025

Based on the table above, the results of the Chi-Square test showed an Asymp Sig value of 0.838 which was greater than 0.05, so it can be concluded that there was no relationship between *work shifts* and changes in oxygen saturation of health workers at Amalia Medika Pelalawan Riau Hospital.

Discussion

The Relationship of Work Shifts to Changes in Blood Pressure (TD) of Health Workers at Amalia Medika Pelalawan Riau Hospital

Blood pressure is one of the vital parameters that is often influenced by a person's workload, rest patterns, and psychological state. Health workers who undergo a work *shift* system have the potential to experience changes in sleep patterns and diets that can affect blood pressure stability. In some studies, *shift* work is often associated with an increased risk of hypertension due to an imbalance in the circadian rhythm that affects the cardiovascular system. These changes in the body's biological rhythm can cause fatigue, stress, and increased blood pressure in individuals who are unable to adapt well to alternating work schedules.

The results of the analysis in this study showed that all respondents had normal blood pressure both before and after work *shifts* with an Asymp Sig value of 0.444 (>0.05). This indicates that there is no relationship between work shifts and the blood pressure of health workers at Amalia Medika Pelalawan Riau Hospital. This condition can be explained because the respondents are health workers who are relatively still in excellent physical condition, have awareness of the importance of maintaining diet, sleep, and physical activity so that their blood pressure remains stable. These results also show that although *work shifts have the potential to disrupt the body's rhythm, in this study sample, health workers are still able to maintain blood pressure stability.*

These findings are in line with the theory of vital signs which explains that normal blood pressure ranges from 90/60 mmHg to 120/80 mmHg, and its stability is strongly influenced by body conditions (Jones et al., 2025). The regulation regarding working hours in Law Number 11 of 2020 concerning Job Creation also emphasizes the importance of limiting the duration of work so that workers continue to get enough rest time. The rule serves to maintain the physiological health of workers so that blood pressure remains within normal limits, as seen in the results of this study.

The Relationship of Work Shifts to Changes in the Frequency of Pulse of Health Workers at Amalia Medika Pelalawan Riau Hospital

Pulse frequency reflects the heart's activity in pumping blood and is greatly influenced by a person's physical and psychological condition. In health workers, workload, physical activity during duty, and the presence of work stress can affect the pulse rate. Shift work systems that demand adjustment of body rhythms can be a factor that triggers pulse changes because they are closely related to fatigue, stress, and sleep quality. In previous studies, *shift* workers showed a tendency to experience an increased pulse when facing heavy workloads, especially when working at night.

The results of this study showed that all respondents had normal pulse frequency both before and after work shifts, with an Asymp Sig value of 0.428 (>0.05). This means that there is no relationship between work shifts and the frequency of pulses of health workers at Amalia Medika Pelalawan Riau Hospital. This condition can occur because respondents are able to regulate work intensity and maintain physical condition, so that they do not cause fluctuations in heart rate frequency. Another factor that may affect is the relatively small and homogeneous number of respondents, so the variation in pulse frequency changes does not appear significant.

The theory of vital signs explains that the normal pulse frequency of adults ranges from 60–100 times per minute (Potter et al., 2019). Factors that affect pulse frequency include physical activity, emotional stress, and cardiovascular health. Work *shift indicators* such as rest time and shift rotation direction also affect worker fitness (Ekaningtyas, 2016). This study proves that the *shift system* at Amalia Medika Pelalawan Riau Hospital is still within safe limits so that health workers can maintain the stability of pulse frequency.

The Relationship of Work Shifts to Changes in Body Temperature of Health Workers at Amalia Medika Pelalawan Riau Hospital

Body temperature is an important indicator in assessing a person's metabolic balance and physiological condition. Changes in body temperature can be influenced by physical activity, work time, rest patterns, and work environment conditions. In health workers who work *shifts*, circadian rhythm disturbances due to changes in working hours can cause fluctuations in body temperature because the body's thermoregulatory processes are regulated by the biological clock. This condition is often observed in night workers who tend to experience changes in core body temperature compared to day workers.

The results showed that the body temperature of all respondents remained in the normal category both before and after the work shift, with an Asymp Sig value of 0.744 (>0.05). This indicates that there is no relationship between work *shifts* and body temperature of health workers at Amalia Medika Pelalawan Riau Hospital. These findings can be attributed to a controlled work environment, less extreme physical activity, and a healthy physical condition of respondents. A stable body temperature

also reflects that the respondent's thermoregulatory system is still working optimally even though they are working *shifts*.

According to Potter et al. (2019) in the book Fundamentals of Nursing (10th edition), the body's thermoregulatory system is a physiological mechanism that regulates the balance between heat production and heat loss to maintain body temperature within the normal range. Nurbaity et al. (2019) added that *work shifts* can cause sleep disturbances that affect metabolism, but setting the appropriate *shift* duration will help maintain the physiological stability of workers. This supports the results of the study that the body temperature of health workers remains stable even though they undergo *a shift* work system.

The Relationship of Work Shifts to Changes in Respiratory Frequency (RR) of Health Workers at Amalia Medika Pelalawan Riau Hospital

Respiratory frequency is one of the vital signs that is influenced by physical activity, psychological conditions, and the state of the body's metabolism. In health workers who work shifts, the potential for stress, fatigue, and work pressure can cause changes in breathing patterns. High workload or sleep disturbances due to changing working hours can cause an increase in breathing frequency as a form of compensation for the body in meeting oxygen needs.

The results showed that all respondents had normal breathing frequency both before and after work shifts, with an Asymp Sig value of 0.541 (>0.05). This means that there is no relationship between *work shifts* and the respiratory frequency of health workers at Amalia Medika Pelalawan Riau Hospital. This condition shows that even though the respondents undergo *a shift work system*, the body's adaptability remains good so that respiratory function is maintained within normal limits. Other factors that support this result are the healthy condition of the respondents, a sufficiently supportive work environment, and the absence of strenuous activity that causes significant changes in respiratory frequency.

The normal breathing frequency of adults is 12–20 times per minute (Potter et al., 2019). Nurbaity et al. (2019) emphasized that work *shifts* that do not match the body's rhythm can increase the risk of respiratory distress, but this is greatly influenced by the quality of rest and the regulation of *shift* duration. The results of this study show that the *shift system* at Amalia Medika Pelalawan Riau Hospital is still in accordance with the applicable work rules so that the breathing frequency of health workers remains normal.

The Relationship of Work Shift to Changes in Oxygen Saturation (SpO_2) of Health Workers at Amalia Medika Pelalawan Riau Hospital

Oxygen saturation describes the level of oxygen in the blood which is very important to support the body's metabolic function. In health workers, oxygen saturation can be affected by physical activity, fatigue, and respiratory conditions. The shift work system has the potential to cause sleep disturbances and increased stress that can indirectly lower oxygen levels in the blood. However, under normal conditions, the body has a compensatory mechanism to maintain a stable oxygen saturation.

Based on the results of the study, the Asymp Sig value obtained was 0.838 (>0.05) indicating that there was no relationship between work shifts and changes in oxygen saturation of health workers at Amalia Medika Pelalawan Riau Hospital. All respondents had normal oxygen saturation both before and after the work shift, which indicates that the body's respiratory and circulatory systems remained optimal. Factors supporting these results were the healthy physical condition of the respondents and a work environment that did not cause hypoxia. This shows that even though the respondents work in a *shift* system, their body's capacity is still able to maintain oxygen levels in the blood at normal limits.

The normal value of oxygen saturation is above 95% and reflects good respiratory function (Amri et al., 2025). Ekaningtyas (2016) stated that work *shift* indicators such as *shift duration* and rest time affect the physical condition of workers. The results of this study support this theory because even though

the respondents underwent a *shift* system, they were still able to maintain oxygen saturation at normal limits, showing that the work *shift* arrangement in the hospital was effective.

Work shifts are often associated with potential disturbances of circadian rhythm balance that affect blood pressure, pulse frequency, body temperature, respiratory frequency, and oxygen saturation of health workers. Previous studies have shown that workload and work stress factors can have a significant impact on blood pressure. Marhamah's research (2025) found a significant relationship between workload and work stress on blood pressure with a p value of 0.001 ($P < 0.05$), suggesting that the physiological condition of nurses can be affected by workload and psychological stress while working. Research by Astuti et al. (2024) also illustrates changes in blood pressure, especially on the night shift, where some nurses experience a shift from normal to normal to high to degree 1 hypertension after work. Another study by Purwoto & Suhita (2022) confirms that work shifts have a significant effect on sleep patterns and blood glucose levels, thus illustrating the body's response to unstable work patterns. The findings show that the shift system has the potential to disrupt the physiological balance of health workers, especially when accompanied by a high workload and poor sleep quality.

The results of the study at Amalia Medika Hospital showed different conditions, namely there were no significant changes in blood pressure, pulse frequency, body temperature, respiratory frequency, or oxygen saturation before and after work shifts. This stable state can reflect that health workers at the hospital have good adaptability to shift work patterns. This adaptation can be supported by factors such as a controlled workload, a healthy lifestyle, organized shift management, and a conducive workspace. The existence of these supporting factors can explain the difference in research results compared to previous studies that found significant changes in blood pressure and other physiological variables.

In terms of regulations, Law Number 17 of 2023 concerning Health and Government Regulation Number 28 of 2024 as the implementation regulations of the Law, emphasize the importance of implementing quality health services and the protection of health workers. This regulation encourages the fulfillment of occupational health and safety standards, including regulations regarding workload and humane working hours for health workers so that they do not experience health problems due to work patterns such as shifts. The results of the study show the stability of the physiological condition of health workers in accordance with the spirit of health protection and occupational safety in the regulation.

The Minister of Health Regulation Number 24 of 2022 which regulates medical records also implicitly supports the importance of health monitoring of health workers through complete and regular recording of health conditions. This is relevant in monitoring the vital parameters of health workers who work *shifts* so that potential health problems that arise due to work patterns can be known and prevented. Meanwhile, PMK No. 9 of 2024 also regulates health service standards that must meet the safety and comfort aspects of patients and health workers, so that a work environment conducive to the physical stability of health workers becomes a regulatory agenda.

Permenkes Number 3 of 2020 concerning Minimum Health Service Standards also emphasizes the need to meet service standards, including the fulfillment of health worker management aspects in order to provide optimal services. A controlled work environment and the physical condition of health workers that remain in prime condition are part of the implementation of the standard which contributes to the results of the study showing no significant changes in vital parameters due to *work shifts.*

The findings of the study stating that work shifts do not have a significant negative impact on blood pressure, pulse frequency, body temperature, respiratory frequency, and oxygen saturation of health workers at Amalia Medika Pelalawan Riau Hospital are in line with national regulations that support labor health protection, humane working hours management, and the fulfillment of health service standards and occupational safety of health workers. This condition shows good

implementation of health regulations related to the management of health workers and the protection of optimal physical conditions in dealing with *shift work* patterns.

Operational solutions can start with the application *of power-naps* or short naps that have been proven to be effective in increasing alertness and reducing fatigue during work shifts. Research shows that short naps about 20-30 minutes before or during *shifts* can improve cognitive function and quick responses, while reducing the risk of work mistakes due to sleepiness. Strategic *power-nap* time placement , for example when workload decreases, also helps maintain circadian rhythms so that the body of health workers can better adapt to *changing work* shift patterns (Han et al., 2021).

Chronoutrition is an important approach in maintaining the physiological stability of health workers during *shifts*. A diet that is adapted to the biological rhythm of the body helps optimize metabolism and maintain energy balance, thus avoiding metabolic disorders that can affect blood pressure and body temperature. Nutrients consumed regularly and on time according to the biological clock help reduce circadian disorders that arise due to work shifts. The application *of Chronoutrition* provides vital support in maintaining the long-term health of health workers working *shifts* (Elk et al., 2024).

Sleep hygiene or sleep habits is also a key factor in maintaining the sleep quality of health workers. Creating a conducive sleep environment, such as a dark, quiet, and cool sleeping room, goes a long way in reducing sleep disturbances after the night shift. Avoiding caffeine and alcohol consumption before bed and maintaining a regular sleep routine on weekdays and holidays can ensure that health workers get adequate and quality sleep. Good sleep hygiene also reduces the potential for chronic health problems that can arise from irregular sleep patterns (Shriane et al., 2020).

Managerial solutions are concerned with healthy *shift* rotation arrangements. *Shift* rotations designed to take into account sufficient rest time intervals, minimize *overly rapid shift* changes, and accommodate individual circadian rhythm preferences will help healthcare workers maintain optimal physical and mental condition. A healthy *shift* rotation system allows for better body adaptation, reduces stress, and minimizes the risk of health problems due to unstable work patterns (Rio et al., 2024).

The implementation of Electronic Medical Record (EMR) with *the Early Warning System* (EWS) is an innovative step in the management of health workers in hospitals. EMRs integrated with EWS can monitor vital signs and physical conditions of healthcare workers in real-time to detect early physiological changes due to *shift* work. This system assists hospital management in taking preventive actions, rescheduling, or rapid health interventions. Strengthening Hospital Occupational Health and Safety (K3RS) is also an important foundation to ensure a safe work environment, support workforce health, and implement health policies that are responsive to the workload of *work* shifts (Triwijayanti & Rahmania, 2022). The implementation of this operational and managerial solution in an integrated manner can improve the welfare and productivity of health workers who undergo the *work shift* system.

4. CONCLUSION

In conclusion, work shifts do not have a relationship with all parameters of vital signs of health workers at Amalia Medika Pelalawan Riau Hospital. Blood pressure, pulse frequency, body temperature, respiratory frequency, and oxygen saturation remained in the normal category both before and after the shift, and showed no significant differences between shift types. These findings confirm that the variation in working time did not have a significant impact on the physiological condition of the respondents in this study, so that all vital signs remained stable in each shift group.

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