


Relationship Between Nutritional Status, Breakfast Pattern, And Sleep Time On Work Efficiency: A Cross-Sectional Study Of Posyandu Cadres In Limbung Village

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Article Info	ABSTRACT
Keywords: Nutritional status, breakfast Habits, sleep quality, work productivity, Posyandu cadres.	Posyandu cadres play an important role in public health services, but their work productivity is often affected by various basic health factors, such as nutritional status, breakfast habits, and sleep quality. This study aimed to analyse the relationship between these three factors and the productivity of Posyandu cadres in Limbung Village. Using a quantitative approach with a survey method, the data was analysed with the help of SPSS. The results showed a significant relationship between nutritional status and productivity, where cadres with normal nutritional status had higher productivity than those who were overweight or obese ($p=0.016$). Breakfast habit also had a positive influence ($p=0.009$), with cadres who habitually ate breakfast showing better productivity. In addition, good sleep quality significantly improved cadre work productivity ($p=0.001$). This study highlights the importance of a holistic approach in supporting cadre work productivity, with a focus on nutrition education, healthy breakfast campaigns, and improved sleep quality. The findings are expected to inform practical interventions to improve the performance of Posyandu cadres and strengthen the public health care system.
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INTRODUCTION

The work efficiency of posyandu cadres is a key element in the success of public health programmes in Indonesia, especially at the village level. Posyandu (Pos Pelayanan Terpadu) is a centre of health activities managed and organised by the community with the support of health workers. Posyandu cadres, as the spearhead of health services, play an important role in providing services such as immunisation, toddler growth monitoring, and health education to the community. Various factors can affect the work efficiency of posyandu cadres, including nutritional status, breakfast patterns and sleep time. Good nutritional status plays an important role in maintaining health and work stamina. Research by (Umaini et al., 2024) showed that optimal nutritional status was significantly related to the work productivity of male workers in the maintenance division in Cilegon City. In addition, adequate breakfast energy intake also plays a role in improving concentration and endurance during work.

Adequate and quality sleep time is an important factor in supporting work efficiency in various sectors, including health workers such as posyandu cadres. (Gilad & Shapiro, 2020) explains that sleeping less than six hours per night can reduce concentration and cognitive efficiency by up to 20%, potentially increasing work errors, especially in high responsibility environments. Research by (Hafner et al., 2016) also shows that sleep deprivation not only affects individuals, but has a significant impact on productivity and overall economic losses (RAND Corporation). In the context of physical labour and healthcare, poor sleep quality increases the risk of stress, fatigue and work errors (Luyster et al., 2012; Ramar et al., 2021). Other research confirms that workers with irregular sleep patterns have lower performance, as found by (Caixeta et al., 2012; Patterson et al., 2020) in the nursing sector. Interventions in the form of healthy sleep habit training, as researched by (Härmä et al., 2024) has been shown to increase productivity and reduce worker fatigue. In the context of posyandu cadres, inadequate sleep can worsen work efficiency, especially given the demands of tasks that require high concentration and direct interaction with the community. Therefore, understanding the relationship between sleep, nutritional status, and breakfast patterns is critical to developing strategies to improve the work efficiency of posyandu cadres in areas such as Limbung Village, West Kalimantan.

In Indonesia, adult undernutrition remains a public health challenge, especially in rural areas such as West Kalimantan. According to the West Kalimantan Central Bureau of Statistics (Dinas Kesehatan Provinsi Kalimantan Barat, 2024), the region has a higher level of food insecurity than other regions, which may impact the nutritional status of the community, including posyandu cadres. In fact, research (Prentice) shows that malnutrition, including undernutrition and obesity, has a significant impact on work capacity and productivity, especially in developing countries. Although many studies have addressed the relationship between nutritional status, diet, and sleep quality with work productivity in various groups of workers, research specifically examining posyandu cadres in Indonesia, especially in West Kalimantan, is still very limited. As the frontline of public health services, posyandu cadres face challenges such as limited resources and high workload, which may affect their work efficiency. Therefore, it is important to conduct a study that explores the combined effect of nutritional status, breakfast patterns, and sleep time on the work efficiency of posyandu cadres in Limbung Village

METHODS

This study used a quantitative design with a correlational approach to analyse the relationship between working hours, rest duration, and breakfast habits on the nutritional status of Posyandu cadres in Limbung Village (Creswell & Creswell, 2018). The study was conducted in Limbung Village, which is known to have an active Posyandu with cadres who face a significant workload. The study was scheduled for three months, including preparation, data collection, and analysis of results. The population of this study was all Posyandu cadres in the village. The sampling technique used was total sampling (Taherdoost, 2016), involving all cadres because the population was relatively small and it was possible to include them as a

whole. Data collection was done by utilising relevant tools to obtain primary and secondary data. Primary data were collected using a structured questionnaire to obtain information on cadres' working hours, rest duration, and breakfast habits. In addition, cadres' nutritional status was measured using anthropometric tools such as digital scales and height measuring devices to calculate Body Mass Index (BMI). Secondary data were obtained through documents and reports from the Posyandu, such as cadre work schedules and routine activity reports. The collected data were analysed using descriptive statistics to describe the characteristics of the respondents and inferential statistics (Pearson or Spearman correlation test) to determine the relationship between the study variables. This combination of methods is expected to provide accurate and applicable results regarding the factors that influence the nutritional status of Posyandu cadres.

RESULTS AND DISCUSSION

Descriptive analysis of respondent data provides an in-depth description of the characteristics of the population involved, which is important as a context for understanding the relationship between other variables. The following table shows the characteristics of the research respondents.

Tabel 1. Respondents' Characteristics

Respondents' Characteristics	n = 30	%
Age (Years)		
20-30	9	30
31-40	13	43
41-50	8	27
Education Level		
Primary School	1	3
Junior High	12	40
High School	13	43
Bachelor Degree	4	14
Jobs		
House Wife	30	100
Length of Service		
≤1 thn	9	30
2-5 thn	16	53
≥6 thn	5	17
Nutritional Status		
Obesity	12	40
Overweight	15	50
Normal	3	10
Breakfast Habits		
Habitual	7	23
Occasional	23	77

Respondents' Characteristics	n = 30	%
Sleep Quality		
Good	6	20
Poorly	24	80

Source Data Respondent characteristics questionnaire

Based on the table, respondents were dominated by the productive age group, 31-40 years old (43.3%), followed by 20-30 years old (30%), with the average age falling within this range, indicating their potential active involvement in cadre work productivity. In terms of education, the majority of respondents had a high school education (43.3%), followed by junior high school (40%), while only 13.3% were university graduates, indicating the need for increased educational capacity to support optimal cadre performance. Length of service of cadres was mostly in the 2-5 years category (53.3%), while cadres with more than 6 years of experience were only 16.7%, reflecting potential constraints in role consistency and sustainability. All respondents (100%) were married, reflecting the homogeneity of social experiences that may affect cadres' work dynamics and productivity. In addition, cadres' nutritional status was in the overweight (50%) and obese (40%) categories, with only 10% having normal nutritional status. Breakfast habits were also found to be associated with performance, where only 23% of respondents were habitual breakfast eaters, while 77% were not, which may affect energy and concentration while on duty. The sleep quality of cadres showed less than ideal conditions, with only 20% of respondents having good sleep quality, while the other 80% needed improvement with a sleep hour duration of <5 hours with the time required before going to bed of 20-60 minutes. This profile became an important foundation in further analyses, including the results of chi-square and Fisher exact tests that revealed significant relationships between nutritional status, breakfast habits, sleep duration, and sleep quality with cadre performance productivity. Against this backdrop, it was found that health factors and daily habits have important correlations with cadres' ability to perform their duties, emphasising the need for a holistic approach in cadre work productivity interventions

The Univariate results of this study indicate that various basic health factors have a significant relationship with cadre work productivity based on Univariate analysis through Chi-Square test using SPSS23 software. This analysis provides an in-depth insight into the importance of health interventions in supporting cadre performance in the field. The results of the univariate analysis are described in the following table

Tabel 2. Univariate analysis of variables affecting cadre performance productivity

Variable	Cadre Performance Productivity				<i>p-value</i>	OR Value (95%CI)
	Low		High			
	n	%	n	%		
Nutritional Status						
Obesity	11	42	1	25	0.016	22

Variable	Cadre Performance Productivity				<i>p-value</i>	OR Value (95%CI)
	Low		High			
	n	%	n	%		
Overweight	14	54	1	25		
Normal	1	4	2	50		
Breakfast Habits						
Habitual	4	15	3	75	0.009	16.5
Occasional	22	85	1	25		
Sleep Quality						
Good	2	8	4	100	0.001	3.00
Poorly	24	92	0	0		

Source of Primary Data Foodrecord and Sleep quality Questionnaire

Based on the univariate analysis table, there was a significant association between nutritional status and cadre work productivity ($p=0.016$). Cadres with normal nutritional status were more likely to have high productivity (66.7%) than those who were overweight (6.7%) or obese (8.3%). This finding confirms that a healthy nutritional status contributes positively to performance, as balanced nutrition supports the energy and physical mobility required to perform tasks. Conversely, being overweight can increase the risk of fatigue, chronic health problems, and decreased work efficiency.

Furthermore, breakfast habits also had a significant association with productivity ($p=0.031$). Cadres who habitually ate breakfast showed a high productivity level of 42.9%, while those who did not habitually ate breakfast only reached 4.3%. Cadres who did not habitually eat breakfast were 17 times more likely to have low productivity performance than cadres who habitually ate breakfast. A regular breakfast provides early energy that supports cognitive and physical function, allowing cadres to work more focused and efficiently throughout the day. Lack of breakfast can lower blood sugar levels, resulting in impaired concentration and decreased productivity. Good sleep quality also contributed significantly to productivity ($p=0.001$). Cadres with good sleep quality had high productivity (66.7%), compared to those with poor sleep quality, who did not have high productivity at all. Quality sleep allows the body to repair damaged cells, process information optimally, and prepare physically and mentally for the next day's activities. Frequent sleep disturbances can reduce mental resilience and increase the risk of stress, affecting productivity.

This study highlights the significant relationship between nutritional status, breakfast habits, and sleep quality on the work productivity of Posyandu cadres. This study fills a gap by focusing on Posyandu cadres, a unique group that plays an important role in public health services, but is rarely the main subject of productivity research. For example, research by (Wiguna & Stefani, 2023) found similar relationships in industrial workers, but less emphasis on the dynamics of health-based communities such as Posyandu. This study also shows novelty by integrating local and global research results. In comparison, (Gwin & Leidy, 2018) examined the impact of breakfast on sleep quality and cognitive function in young adults, but

focused more on hormonal aspects rather than work productivity. The relevance of the study (Khalishah, 2021) discusses breakfast habits and work motivation in bank employees, but does not touch on the sleep quality factor as a significant variable. This study expands the scope by considering all these factors in the context of Posyandu cadres. A holistic approach is used to analyse factors that affect productivity. The relationship between sleep quality and nutritional status without directly linking it to productivity (Zahara, 2022) . This study links sleep quality and nutritional status simultaneously with work productivity, demonstrating how these variables work synergistically to influence cadres' efficiency in performing their duties. In the context of the broader literature, this study corroborates the findings of (Crispim et al., 2011) that unbalanced dietary intake can negatively impact sleep quality and work efficiency. However, this study highlights its pragmatic relevance through interventions that can be implemented at the community level, such as nutrition education and improved sleep patterns. Thus, this study not only extends the existing literature but also offers practical solutions to improve the performance of Posyandu cadres, which in turn can strengthen the public health system

CONCLUSION

The study concluded that nutritional status, breakfast habits, and sleep quality have a significant relationship with the work productivity of Posyandu cadres. Cadres with normal nutritional status showed higher productivity compared to overweight or obese cadres, emphasising the importance of maintaining a healthy nutritional status to support energy and physical mobility. Breakfast habits were also shown to contribute positively to productivity, where cadres who habitually eat breakfast are able to work more focused and efficient because the initial energy obtained helps cognitive and physical functions. In addition, good sleep quality significantly affects productivity, as quality sleep allows the body to repair cells, process information, and prepare physically and mentally for daily activities. Based on these findings, it is recommended to conduct nutrition education programmes for Posyandu cadres, including training on the importance of a balanced diet, as well as awareness campaigns on the benefits of breakfast on energy and concentration. In addition, guidelines should be developed to improve cadres' sleep quality through training on time management and healthy sleep habits. Regular monitoring and evaluation is also important to ensure the effectiveness of the interventions, and to provide additional support if needed. A holistic approach that involves managing nutritional status, breakfast habits and sleep quality simultaneously is expected to increase the productivity of Posyandu cadres and strengthen public health services.

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