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The Relationship between Nutritional Status and Physical Activity with Work Productivity Among Production Employees at PT. Agung Karya Atta Malang City

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ABSTRAK

Masalah gizi pada individu menggambarkan konsumsi nutrisi yang kurang atau melebihi kebutuhan tubuh. Salah satu faktor dalam menilai status gizi seseorang adalah aktivitas fisik. Seseorang yang obes biasanya cenderung lebih malas dalam melakukan aktivitas, sehingga kebugaran fisik seseorang menurun. Tingkat aktivitas fisik dapat mempengaruhi produktivitas kerja. Tujuan penelitian ini adalah untuk menganalisis hubungan antara status gizi, aktivitas fisik, dan produktivitas kerja pada karyawan bagian produksi di PT. Agung Karya Atta. Metode penelitian ini menggunakan pendekatan analisis kuantitatif dengan desain cross-sectional. Pengambilan sampel menggunakan teknik simple random sampling, dengan jumlah responden sebanyak 76 orang. Data diambil menggunakan kuesioner yang diisi oleh responden. Analisis data dilakukan secara univariat dan bivariat menggunakan program SPSS dengan uji statistik regresi logistik. Hasil uji bivariat menunjukkan bahwa ada hubungan antara variabel status gizi dan produktivitas kerja (p-value 0,001), serta ada hubungan antara variabel aktivitas fisik dan produktivitas kerja (p-value 0,029). Kesimpulan dari penelitian ini adalah bahwa ada hubungan yang signifikan antara status gizi dan produktivitas kerja, serta ada hubungan yang signifikan antara aktivitas fisik dan produktivitas kerja. Diharapkan karyawan di bagian produksi dapat mencapai keseimbangan yang baik antara status gizi, aktivitas fisik, dan produktivitas kerja mereka.

Keywords:

Nutritional Status , Physical Activity, Work Productivity

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ABSTRACT

An individual's nutritional problems describe the consumption of nutrients that are insufficient or exceed their needs. One of the factors in assessing a person's nutritional status is physical activity. Someone who is obese usually tends to be more lazy in doing activities so that a person's physical fitness decreases. The level of physical activity can affect work productivity. The aim of this research is to analyze the relationship between nutritional status and physical activity and work productivity in production employees at PT. Agung Karya Atta. This research method is a quantitative analytical approach cross sectional. Sampling using techniques simple random sampling namely as many as 76 respondents. Data was taken using a questionnaire by respondents. Data analysis was carried out univariate and bivariate using the program spss with logistic regression statistical tests. The bivariate test results show that there is a relationship between the variable nutritional status and work productivity (p-value 0.001), and there is a relationship between the physical activity variable and work productivity (p-value 0.029). The conclusion in this study is that there is a significant relationship between nutritional status and work productivity, and there is a significant relationship between physical activity and work productivity. It is hoped that employees in the production section can achieve a good balance between their nutritional status, physical activity and work productivity.

PENDAHULUAN/ INTRODUCTION

An individual's nutritional problems describe the consumption of nutrients that are insufficient or exceed their needs. A person will have normal nutritional status, if nutritional intake is in accordance with the body's needs. Insufficient nutritional intake in food can cause nutritional deficiencies, whereas individuals whose nutritional intake is excessive will result in excess nutritional status. So nutritional status can be defined as an individual's description as a result of daily nutritional intake. Nutritional status can be determined through measurements of several parameters, the measurement results can be compared with standards or references. The nutritional status assessment aims to determine whether there is an abnormal nutritional status. Assessment of an individual's nutritional status is important because it can cause morbidity and death related to nutritional status. Therefore, by knowing nutritional status, efforts can be made to improve the level of health in community groups.[1]

A person's nutritional status depends on their nutritional intake and needs. If nutritional intake and body needs are balanced, it will result in normal nutritional status. The nutritional intake needs of each individual are different depending on age, gender, physical activity, body weight and height. The prevalence of adult nutritional status consists of thin (BMI < 18.5), normal (BMI > 18.5-

25.5), and obese (BMI > 25.5).[2]

According to research by Rahmat (2017), which was carried out on the incidence of obesity in women in the city of Malang in 2017, it was found that there was a significant relationship between physical activity and the level of obesity in women in the city of Malang. Women who have low activity will have a high level of obesity, and vice versa, women who tend to have heavy activity will have a low level of obesity.[3]

The level of physical activity can affect work productivity. Physical activity can determine the overall health condition of the body. Good body condition can increase work productivity and vice versa. Physical activity activities of employees in the production department of PT. Agung Karya Atta, Malang city, has several activities, including rolling cigarettes by sitting, pouring 75 sacks of tobacco into a machine weighing 20 kg per sack in a day, then they deposit the resulting cigarette production into a packing machine at a distance of 10 meters using a tray, and weighing 5 kg cigarettes per 1 tray are made up to 180 trays every day.[4]

PT Agung Karya Atta Cigarette Company, Malang City, located at Jalan Mayjend Sungkono 3, Buring, Kedungkandang District, Malang City. East Java, is an industry that operates in the field of making kretek cigarettes. This research was conducted in the production section of PT Agung Karya Atta, Malang city. All employees in the production section are women aged ± 30 to 40 years, and tend to be overweight. The production department at PT Agung Karya Atta, Malang City itself is divided into 2 categories of employees, namely SKM (Machine Clove Cigarette) production employees and SKT (Hand Rolled Cigarette) production employees. The number of employees in the SKM production section is 16 employees and the number of SKT production employees is 288 employees. Production employees work 6 days a week with work duration from 06:00 – 17:00 WIB minus 1 hour rest time. Production capacity for SKM product types ranges from < 2,000,000,000 cigarettes per year and for SKT product types < 400,000,000 cigarettes per year. The production capacity for each person is ± 2500 cigarettes per day, which of these results still does not meet the company's expected production targets. PT Agung Karya Atta Malang City does not have a special division that handles the nutritional status of its employees, the company also does not have a special canteen for employees, the employees' daily food needs are borne by each individual, many bring provisions and buy food outside the company which does not necessarily mean that food from outside the company meets the nutritional needs of employees.[5]

Based on this description, researchers are interested in analyzing the relationship between nutritional status and physical activity and work productivity in production employees at PT. Agung Karya Atta, Malang city.[6]

METODE PENELITIAN/RESEARCH METHOD

The research design carried out in this research is cross sectional with technique simple random

sampling. This research was carried out at PT. Agung Karya Atta, Malang city with a sample of 76 workers. The independent variables in this research are the nutritional status and physical activity of production employees, while the dependent variable in this research is work productivity of production employees. Data collection using questionnaires. Data analysis was carried out using a logistic regression model with applications SPSS.

HASIL DAN PEMBAHASAN/ RESULT AND DISCUSSION

A. Respondent Characteristics

Tabel 1. Characteristics of Production Department Employees at PT. Agung Karya Atta Malang City

Indicator	Frequency (n)	Percentage (%)
Age:		
12 – 25 Years	7	9,2%
26 – 45 Years	56	73,7%
46 – 65 Years	13	17,1%
Total	**76**	**100%**
Last Education:		
SD	37	48,7%
SMP	24	31,6%
SMA	15	19,8%
Total	**76**	**100%**
Nutritional Status (BMI)		
Which ones	6	7,9%
Normal	25	32,9%
Fat	45	59,2%
Total	**76**	**100%**
Physical Activity:		
Not enough	22	28,9%
Enough	26	34,2%
Heavy	28	36,8%
Total	**76**	**100%**
Work productivity:		
Not productive	43	56,6%
Productive	33	43,4%
Total	**76**	**100%**

Based on respondent data in this study which had a sample of 76 respondents in the production department at PT. Agung Karya Atta, Malang city, all employees are female with the majority aged 26 – 45 years, namely 56 respondents (73.7%), and have more primary school education than junior and senior high school education, namely 37 respondents (48.7%).

The distribution of respondents based on nutritional status was carried out to determine the nutritional status of employees in the production department at PT. Agung Karya Atta, Malang city. The categories are divided into 3, namely thin (if BMI < 18.5), normal (if BMI 18.5 – 25.5), fat (if BMI > 25.5). Body weight and height are measured to calculate BMI, which is then compared with the norms set by the Indonesian Ministry of Health using the formula BB (kg)/TB2 (m). Based on the measurement results in this research, it shows that the majority of production employees at PT. Agung Karya Atta, Malang city, was categorized as fat by 45 respondents (59.2%), while the smallest was in the thin category by 6 respondents (7.9%).

Physical activity measurements were carried out to determine the description of the physical activity of production employees at PT. Agung Karya Atta, Malang city. The

categories are divided into 3, namely insufficient (if < 600 MET), sufficient (if 600 - 2999 MET), and severe (if ≥ 3000 MET). Based on the measurement results in this research, it shows that the majority of production employees at PT. Agung Karya Atta, Malang city, was categorized as heavy physical activity by 28 respondents (36.8%), while the minimum was categorized as less by 22 respondents (28.9%).

The distribution of respondents based on work productivity was carried out to determine the description of the physical productivity of production employees at PT. Agung Karya Atta, Malang city. The categories are divided into 2, namely unproductive (if the production target is <3000 cigarettes per day), and productive (if the production target reaches 3000 - 4000 cigarettes per day). Based on the measurement results in this research, it shows that the majority of production employees at PT. Agung Karya Atta, Malang city, was categorized as unproductive by 45 respondents (59.2%), while 31 respondents (40.8%) were in the productive category. From the data above, production employees are mostly categorized as unproductive.

B. Logistic Regression Test

1. Model Feasibility Test

Table 4.2 Model Feasibility Test Results

Step	Chi-Square	df	Sig.
1	7.402	4	.116

Based on table 4.2, the sig value is 0.116 > 0.05, so Ho is accepted and Ha is rejected. It means model binary logistic regression worthy of use for further analysis because there is no real difference between the predicted classifications (predicted probabilities) with the observed classification (observed probabilities).

2. Coefficient of Determination Test

Table 4.3 Coefficient of Determination Test Result

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	87.193[a]	.199	.267

Based on table 4.3, the Nagelkerke R Square result is 0.267, which shows that the independent variables (nutritional status and physical activity) are able to explain the dependent variable (work productivity) which is 26.7%. While the rest is influenced by other variables not studied, amounting to 73.3%.

3. F Test

Table 4.4 F Test Results

		Chi-square	df	Sig.
Step 1	Step	16.846	2	.000
	Block	16.846	2	.000
	Model	16.846	2	.000

Based on table 4.4, the sig value results are obtained. 0.000 < 0.05, then Ho is rejected and Ha is accepted, meaning that there is an influence between the independent variables of nutritional status and physical activity on work productivity.

4. T Test

Table 4.5 T Test Results

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I for EXP(B) Lower	Upper
Step 1[a]	IMT	-1.381	.432	10.197	1	.001	.251	.108	.587
	MET	-.788	.337	5.488	1	.019	.455	.235	.879
	Constant	4.777	1.397	11.690	1	.001	118.761		

Based on table 4.5, the test results of the influence of the independent variable on the dependent variable are as follows:

1. The significant value of the variable Nutritional Status (BMI) (X1) is 0.001 < 0.05, so Ho is rejected and Ha is accepted, meaning that there is an influence of nutritional status on work productivity for production employees at PT. Agung Karya Atta, Malang city.
2. The significant value of the Physical Activity (MET) variable (X2) is 0.019 < 0.05, so Ho is accepted and Ha is rejected, meaning that there is no influence of physical activity on work productivity for production employees at PT. Agung Karya Atta, Malang city.

The constant value is 0.001 < 0.05, so Ho is rejected and Ha is accepted, meaning there is a significant influence.

5. Classification Test

Table 4.6 Classification Test Results Table

Observed		Predicted		
		Work productivity		Percentage Correct
		Not productive	Productive	
Step 0	Work productivity	Not productive	43	0	100.0
		Productive	33	0	.0
	Overall Percentage				56.6

Based on table 4.6, the percentage results obtained for the accuracy of overall work productivity predictions are 56.6%. Where the percentage of unproductive accuracy is 100% and cannot be predicted at 0%, while the productive accuracy prediction is 0% and cannot be predicted at 100%.

6. Logistics Model

Logit ((π(x)) = [π(x) / (1- π(x)] = β0 + β1 X1 + β2 X2

Logit ((π(x)) = [π(x) / (1- π(x)] = -1.381 -0.788 X1 + 4.777 X2

According to the Indonesian Ministry of Health in 2006, nutritional status is defined as a condition that represents a balance between the amount of nutritional intake and the amount needed by the body for the various activities that occur within it. In relation to work productivity, a worker with good nutritional conditions will have better work capacity and body endurance (Sugeng Budiono, 2003: 154). A person who is thin and has a severe or mild degree of underweight, namely a BMI < 17.0 and a BMI of 17.0-18, will be less able to work hard, while a person who is fat or overweight, namely a BMI of 25.1- 27.0 and

BMI > 27.0 means the person is less agile and slow at work. Meanwhile, people who have a normal body weight with a BMI of 18.5-25.0 will be more agile at work (Puslitbang, 2001).

Workers, like the general public, have the right to equal basic rights, one of which is the right to live a healthy life. The variety of nutritional problems of workers is a challenge that must be faced and controlled as optimally as possible. The existence of occupational nutrition is important because nutritional status will represent the physical quality and immunity of workers, as a component of building blocks and energy input when the body feels tired from work, and can increase motivation or enthusiasm for work which will determine work productivity (Ramadhanti, 2020)

From the interviews that have been conducted, it is known that the majority of respondents always eat breakfast before work. The habit of eating breakfast will influence the nutritional condition of a worker, besides that the habit of eating breakfast also has an important influence on nutritional status (Sugeng Budiono, 2003: 159). Breakfast guarantees the provision of calories for use in the first 2 hours of work (Suma'mur, 1989:159).

Apart from that, from the interview results it was also found that the majority of respondents always consumed food that contained 4 healthy 5 perfect foods. Consuming balanced nutrition will affect the nutritional condition of workers and their work productivity. This situation is in accordance with the opinion of Sugeng Budiono (2003: 154) that the health of workers is closely related to the level or condition of nutrition which can affect work productivity. For workers, nutrition with adequate calories is the main requirement that determines the level of work productivity. There is a very real correlation between health, nutritional status and work productivity.

Based on the results of the questionnaire that has been distributed, it is known that the majority of workers' nutritional status and work productivity are classified as obese and unproductive. Nutritional status that is below normal requires attention, this is because inadequate energy consumption will cause the energy needed for work to be taken from the energy reserves contained in the cells. If this happens, the result is that the workforce concerned will not be able to do their work well and their work productivity will decrease and may even reach a low target. For workers with obese nutritional status, these workers will be less agile and slow at work. Meanwhile, workers who have a normal body weight will be more agile at work.

The research results are also supported by research by Wirapuspita, R. (2017), there

is a significant relationship between nutritional status and productivity level which has a Sig value (0.001) < α (0.05). Based on the research results of Bawinto et al (2016) from univariate analysis, it was found that the nutritional status that was often found in peanut roasting workers was fat nutritional status with a total of 27 workers with a percentage of 65.9%, while the lowest nutritional status was thin nutritional status, namely 1 workers with a percentage of 2.4%, and 13 workers with normal nutritional status with a percentage of 31.7%. The results of measuring the work productivity of peanut roasting workers showed that 22 workers (53.7%) worked productively and 19 workers (46.3%) worked unproductively. There is a relationship between nutritional status and work productivity among peanut sangria workers in Kawangkoan District with a value of p = 0.048 (p value < 0.05).

The research results are also supported by research by Novianti et al (2017) where in their research they say that there is a significant relationship (p<0.05) between nutritional status and the work productivity of assembly line operators at PT. Dr. Apart from the health aspect, occupational nutrition also contains aspects of welfare and resource development.

Physical activity is one of the factors that influences work productivity. Insufficient physical activity can result in less than optimal energy expenditure, resulting in less work productivity. Based on the results of the questionnaire that has been distributed, it is known that the majority of physical activity with work productivity is classified as less physical activity with less work productivity. This can occur due to gender factors, where in this study all respondents were female.

In research (Sabila Ruby, 2022), it is known that men are more often found in the high (8.3%) and moderate (41.7%) physical activity categories, while women are more often found in the low physical activity category (56.2%), meaning that men are more physically active than women. This is in line with research conducted by (Farradika, et al., 2019) where men are more physically active than women. The factor that allows men to be more active than women is the difference in types of physical activity. Based on research (Mao, et al., 2020), it was found that men tend to prefer physical activity with competitive sports activities, strength training and aerobic exercise. Meanwhile, women tend to prefer physical activities such as walking and participating in recreational activities. Physical activity has various benefits for the body, such as increasing physical strength and reducing the risk of disease (Welis & Rifki, 2013)

Insufficient physical activity can result in the fat obtained by our body not being able

to be converted into energy so that in the long term fat reserves increase in the body, which causes obesity (Misnadiarly, 2007: 39).

Physical activity also affects a person's height. The higher the physical activity, the better the height. Such physical activities include swimming. The research results of Fitri et al., (2016: 47) show that physical activity carried out well and regularly has an impact on better and more balanced body composition. This makes the body healthier and fitter, so that a person becomes more productive.

SIMPULAN/ CONCLUSION

Based on the results of research conducted on 76 production employees at PT. Agung Karya Atta, Malang city, concluded that the majority of production employees at PT. Agung Karya Atta, Malang city, is categorized as overnourished (obese), the majority of production employees at PT. Agung Karya Atta, Malang city, is categorized as employees with less physical activity, the majority of production employees at PT. Agung Karya Atta, Malang city, is categorized as an unproductive employee. There is a relationship between nutritional status and work productivity of production employees at PT. Agung Karya Atta, Malang city, and there is a relationship between physical activity and work productivity of production employees at PT. Agung Karya Atta, Malang city.

Then suggestions for PT. Agung Karya Atta, Malang city itself for nutritional status, namely namely providing nutrition education sessions to increase employee understanding of the importance of balanced nutrition, and organizing regular health checks to identify health problems and provide support as needed. Then for physical activity, namely inviting employees to participate in sports activities together, occasionally stretching, and providing incentives or rewards for employees who are physically active. Then for work productivity, namely involving employees in setting productivity targets, giving awards to employees who achieve productivity targets, and monitoring productivity regularly. By paying attention to these aspects, it is hoped that employees in the production department can achieve a good balance between their nutritional status, physical activity and work productivity. Then, it is hoped that suggestions for future researchers can be used as data input, thought contributions, and knowledge development, and can expand other factors related to work productivity with a wider and more varied range of respondents and research locations.

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