

## The Relationship Between Nutritional Status and Breakfast Habits and Work Productivity Among Workers in The Processing Department of PTPN IV Regional I PKS Rambutan in Tebing Tinggi City

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### Abstract

Work productivity is an important factor in achieving performance results and is influenced by the health and nutritional status of workers. This study aimed to examine the relationship between nutritional status and breakfast habits with work productivity among processing department workers at PTPN IV Regional I PKS Rambutan, Tebing Tinggi City. A quantitative cross-sectional design was applied with total sampling of 58 workers. Nutritional status was assessed using Body Mass Index (BMI), breakfast habits through a Food Frequency Questionnaire (FFQ), and work productivity using a structured questionnaire. Data analysis employed the chisquare test with a 95% confidence level. Results showed that 46.6% of respondents had normal nutritional status, 15.5% were overweight, and 34.5% were obese. Regarding breakfast habits, 62.1% were in the sufficient category and 24.1% in the poor category. Statistical analysis revealed a significant relationship between nutritional status and work productivity ( $p = 0.000$ ) as well as between breakfast habits and work productivity ( $p = 0.008$ ). Workers with normal nutritional status and good breakfast habits tended to have higher productivity, while obesity and poor breakfast habits were associated with lower performance. It is concluded that maintaining a balanced nutritional status and regular breakfast consumption can improve productivity. Companies should implement workplace nutrition programs, encourage healthy eating patterns, and facilitate access to nutritious breakfasts before working hours.

**Keywords:** Nutritional Status, Breakfast Habits, Work Productivity, Palm Oil Mill Processing.

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### INTRODUCTION

Low productivity in Indonesia has become a major concern within the context of economic development (Harahap et al., 2025). In recent years, Indonesia's labor productivity has ranked fifth among ASEAN countries, with an average contribution of approximately US\$26,328 per worker in 2023 (Adam, 2016). Although there has been a 4.8% increase in productivity over the past five years, this figure remains significantly lower than that of countries such as Singapore and Brunei Darussalam, which recorded productivity levels of US\$74 and US\$49 per working hour, respectively (Likuayang & Matindas, 2021).

The workforce plays a strategic role in ensuring the continuity of a company's operations. Nevertheless, workers' nutritional and health aspects often receive insufficient attention (Ainullah et al., 2025). Employees with good health

conditions and adequate nutritional status tend to perform their tasks optimally and demonstrate higher levels of productivity (Ulasaswini et al., 2022). Enhancing labor productivity requires improvements in work quality to ensure that organizational objectives can be achieved effectively and efficiently (Irsyad et al., 2014). High work productivity also supports the attainment of optimal performance outcomes. Therefore, companies bear the responsibility to maintain and promote workers' health as part of a strategic effort to improve performance and productivity in the workplace (Ningsih et al., 2024).

Research conducted by Fitri et al. indicates that there is a significant relationship between workers' productivity and nutritional status. Nutritional status is closely associated with work productivity; therefore, it is an important factor that must be taken into consideration. It is linked to physical endurance and overall health, which in turn can influence productivity levels (Septinyuki, 2026). An individual's nutritional status is largely determined by their daily dietary intake. Occupational nutrition is particularly important for workers in order to achieve optimal health conditions (Hamid et al., 2024). As reported by Novianti et al., there is a correlation between nutritional status and the productivity of assembly operators at PT. X. As nutritional status improves, work productivity tends to increase accordingly. Furthermore, nutritional status affects productivity across the long, medium, and short term (Selawangi & Aslam, 2020).

Nutritional status and workers' health conditions are strongly associated with the level of work productivity. Workers with normal nutritional status and good physical health tend to demonstrate better performance, both in terms of physical fitness and cognitive ability (Umaini et al., 2024). This leads to increased accuracy, motivation, and consistency in performing tasks, thereby supporting higher productivity in the workplace. Conversely, workers with imbalanced nutritional status whether undernutrition or overnutrition often experience decreased physical capacity, low work enthusiasm, indifferent attitudes, and minimal motivation (Sugiarto et al., 2023). Slower and less responsive body movements resulting from these conditions may hinder work effectiveness and ultimately have a negative impact on overall productivity. To achieve organizational goals efficiently and effectively, improvements in work quality are essential. A high level of productivity contributes to optimal and high-quality outcomes. Therefore, all stakeholders share responsibility for maximizing workers' health in order to sustain and enhance productivity.

Nutrition plays a crucial role in maintaining normal physiological function and overall health, preventing infections, enhancing work productivity, and protecting against chronic diseases as well as digestive disorders. To promote a healthier population and reduce the prevalence of chronic and non-nutrition-related diseases, dietary intake among the community must be gradually improved. Proper nutritional practices contribute significantly to improving both individual and public health (Muslihin et al., 2025).

The primary objective of breakfast consumption is to optimize work productivity by supporting and maintaining physiological health during working hours. However, a common phenomenon observed in society is that many individuals tend to skip breakfast. Ideally, breakfast provides the necessary energy to support daily activities, yet a considerable proportion of the Indonesian

population neglects this practice (Widyaningrum et al., 2024). Skipping breakfast leads to a decline in blood glucose levels. In response, the body attempts to restore glucose availability by mobilizing glycogen reserves. Under such conditions, the body is not in an optimal state to perform tasks effectively.

Breakfast plays a vital role in enhancing individual concentration levels and demonstrates a positive correlation with increased work productivity. Additionally, the habit of consuming breakfast has been shown to assist individuals with overweight conditions in managing and stabilizing their body weight (Hidayat & Nurhayati, 2021). Workers who regularly consume breakfast generally exhibit higher levels of concentration compared to those who skip it. With adequate energy intake from breakfast, individuals are more likely to complete tasks more quickly, efficiently, and productively, thereby improving their overall daily work performance (Maedah et al., 2023).

This phenomenon is not limited to workers with low energy levels, which can contribute to decreased productivity within a company. Workers who consume energy beyond their physiological requirements may also experience reduced productivity in the workplace. Employees with excessive energy intake tend to feel drowsy, lethargic, and exhibit decreased work performance (Sari & Muniroh, 2017). Moreover, excessive energy consumption may hinder workers from achieving the desired level of productivity. This issue is closely related to the imbalance between dietary intake and the body's actual energy needs. Long-term excessive energy intake can lead to overweight or obesity, which in turn may reduce individual productivity at work, as evidenced by decreased agility and increased fatigue.

Based on performance data obtained by the researcher from the Palm Oil Mill (PKS) Rambutan, there has been a decline in kernel extraction rates from 2020 to 2024. The reduction was recorded at 0.22% from 2020 to 2021, 0.19% from 2021 to 2022, 0.08% from 2022 to 2023, and 0.12% from 2023 to 2024. This trend has prompted the researcher to investigate the productivity of processing workers at PKS Rambutan.

Preliminary observations conducted at PKS Rambutan in Tebing Tinggi City revealed that the company does not provide a healthy canteen facility for its workers. In addition, the workday begins relatively early, at 06:45 WIB, requiring workers to have breakfast before leaving home. However, interviews and observations indicate that many workers skip breakfast due to time constraints associated with the early starting hours. During the initial data collection, the researcher interviewed eight processing workers by recording their height and weight to assess their nutritional status. The findings showed that five of the workers were classified as having excess nutritional status. These findings motivated the researcher to further examine "The Relationship Between Nutritional Status and Breakfast Habits with Work Productivity among Processing Workers at Perseroan Terbatas Perkebunan Nusantara (PTPN) IV Regional I Palm Oil Mill (PKS) Rambutan, Tebing Tinggi City."

This study was conducted to analyze the relationship between nutritional status and breakfast habits and work productivity among processing unit workers at PTPN IV Regional I PKS Rambutan, Tebing Tinggi City.

## RESEARCH METHOD

The research employed a quantitative approach with a cross-sectional design aimed at analyzing the relationship between nutritional status and breakfast habits and work productivity (Rahmawati et al., 2023). The study was conducted among processing workers at PTPN IV Regional I PKS Rambutan, Tebing Tinggi City, in 2025. The study population consisted of all 58 processing workers, and a total sampling technique was applied, whereby the entire population was included as respondents (Saputra & Fernos, 2023).

Data were collected using several instruments, including the assessment of nutritional status through Body Mass Index (BMI), evaluation of breakfast habits using a Food Frequency Questionnaire (FFQ), and measurement of work productivity through a structured questionnaire. Data collection was carried out directly with respondents in accordance with established research procedures (Rasidi, 2022). Data analysis was performed using both univariate and bivariate methods, with the chi-square statistical test applied at a 95% confidence level to determine the relationships between the studied variables (Sari, 2020).

## RESULTS AND DISCUSSION

### 1. Respondent Characteristics

Based on the results of the study entitled “The Relationship between Nutritional Status and Breakfast Habits with Work Productivity among Processing Workers at PTPN IV Regional I PKS Rambutan, Tebing Tinggi City,” information regarding respondent characteristics was obtained, covering several aspects as follows:

**Table 1. Distribution of Respondents by Gender among Processing Workers at PKS Rambutan, Tebing Tinggi City**

Jenis Kelamin	Frekuensi	Persentase(%)
Laki – laki	58	100
Perempuan	0	0
<b>Total</b>	<b>58</b>	<b>100</b>

Based on Table 1, all respondents were male, totaling 58 individuals (100%), while no female respondents were recorded (0%).

**Table 2. Distribution of Respondents by Age among Processing Workers at PKS Rambutan, Tebing Tinggi City**

Umur (Tahun)	Frekuensi	Persentase (%)
27 – 33	8	13,8
34 – 40	26	44,8
41 – 47	11	19,0
48 – 54	13	22,4
<b>Total</b>	<b>58</b>	<b>100</b>

Based on Table 2, respondents aged 27–33 years accounted for 8 individuals (13.8%), those aged 34–40 years comprised 26 individuals (44.8%), respondents aged 41–47 years totaled 11 individuals (19.0%), and those aged

48–54 years consisted of 13 individuals (22.4%). The largest proportion of respondents was in the 34–40 years age group.

**Table 3. Distribution of Respondents by Educational Level among Processing Workers at PKS Rambutan, Tebing Tinggi City**

Pendidikan	Frekuensi	Persentase (%)
SMP	1	1,7
SMA/Sederajat	55	94,8
S1	2	3,4
<b>Total</b>	<b>58</b>	<b>100</b>

Based on Table 3, respondents with a junior high school (SMP) education totaled 1 individual (1.7%), those with a senior high school or equivalent (SMA/equivalent) education comprised 55 individuals (94.8%), and respondents with a bachelor's degree (S1) accounted for 2 individuals (3.4%). The majority of respondents had a senior high school level of education.

## 2. Univariate Analysis

To describe the variables, a univariate analysis was employed. The purpose of this analysis was to illustrate the characteristics of each variable in the study. In this study, the independent variables were nutritional status and breakfast habits, while the dependent variable was work productivity. Measurements were conducted on 58 workers in the Processing Section of PTPN IV Regional I PKS Rambutan, Tebing Tinggi City, who were selected as research samples using a structured questionnaire.

### a. Work Productivity

**Table 4. Frequency Distribution of Work Productivity among Processing Workers at PKS Rambutan, Tebing Tinggi City**

No.	Produktivitas kerja	Frekuensi	Persentase (%)
1.	Tidak Produktif	10	17,2
2.	Produktif	48	82,8
	<b>Total</b>	<b>58</b>	<b>100</b>

Based on Table 4, the number of workers categorized as not productive was 10 individuals (17.2%), while those categorized as productive were 48 individuals (82.8%).

### b. Nutritional Status

**Table 5. Frequency Distribution of Nutritional Status among Processing Workers at PKS Rambutan, Tebing Tinggi City**

No.	Status Gizi	Frekuensi	Persentase (%)
1.	Wasting	2	3,4
2.	Normal	27	46,6
3.	Overweight	9	15,5
4.	Obesitas	20	34,5
	<b>Total</b>	<b>58</b>	<b>100</b>

Based on Table 5, workers classified as wasting totaled 2 individuals (3.4%), those with normal nutritional status were 27 individuals (46.6%), overweight workers were 9 individuals (15.5%), and obese workers accounted for 20 individuals (34.5%).

c. Breakfast Habits

**Table 6. Frequency Distribution of Breakfast Habits among Processing Workers at PKS Rambutan, Tebing Tinggi City**

No.	Kebiasaan Sarapan	Frekuensi	Presentase (%)
1.	Jarang	19	32,8
2.	Sering	39	67,2
Total		58	100

Based on Table 6, workers with infrequent breakfast habits totaled 19 individuals (32.8%), while those who frequently had breakfast were 39 individuals (67.2%).

**3. Bivariate Analysis**

Bivariate analysis is a technique used to examine the relationship between independent and dependent variables. In this study, the bivariate analysis was conducted using the chi-square test to determine whether there was a statistically significant relationship between the variables.

**Table 7. The Relationship between Nutritional Status and Work Productivity among Processing Workers at PKS Rambutan, Tebing Tinggi City**

Status Gizi	Produktivitas Kerja				Total	p-value	
	Tidak Produktif		Produktif				
	n	%	n	%	N		%
Wasting	0	0	2	3,4	2	100	0,000
Normal	0	0	27	46,6	27	100	
Overweight	0	0	9	15,5	9	100	
Obesitas	10	17,2	10	17,2	20	100	
<b>Total</b>	10	17,2	48	82,8		58	100

Based on Table 7, among 58 workers: In the wasting category, none were classified as not productive (0%), while 2 workers were productive (3.4%). In the normal category, none were classified as not productive (0%), while 27 workers were productive (46.6%). In the overweight category, none were classified as not productive (0%), while 9 workers were productive (15.5%). In the obesity category, 10 workers were not productive (17.2%), and 10 workers were productive (17.2%).

The statistical test results showed a p-value of 0.000, which is lower than the significance level of 0.05. This indicates a significant relationship between nutritional status and work productivity. Therefore, nutritional status has a statistically significant effect on workers' productivity levels.

**Table 8. The Relationship between Breakfast Habits and Work Productivity among Processing Workers at PKS Rambutan, Tebing Tinggi City**

Kebiasaan Sarapan	Produktivitas Kerja				Total		p-value
	Tidak Produktif		Produktif		N	%	
	N	%	n	%			
Jarang	9	15,5	10	17,2	19	32,8	<b>0,000</b>
Sering	1	1,7	38	65,5	39	67,2	
<b>Total</b>	<b>10</b>	<b>17,2</b>	<b>48</b>	<b>82,8</b>	<b>58</b>	<b>100</b>	

Based on Table 8, among 58 workers: Workers with infrequent breakfast habits included 9 individuals who were not productive (15.5%) and 10 individuals who were productive (17.2%). Workers with frequent breakfast habits included 1 individual who was not productive (1.7%) and 38 individuals who were productive (65.5%).

The statistical test results showed a p-value of 0.000, which is lower than the significance level of 0.05. This indicates a significant relationship between breakfast habits and work productivity. In other words, breakfast habits are significantly associated with workers' productivity levels.

## CONCLUSION

### 1. The Relationship between Nutritional Status and Work Productivity

Based on the results of the study, workers classified as wasting accounted for 2 individuals (3.4%), those with normal nutritional status totaled 27 individuals (46.6%), overweight workers were 9 individuals (15.5%), and obese workers accounted for 20 individuals (34.5%). Obesity, as one of the dominant findings in this study (34.5%), is a serious concern as it is associated with decreased physical and mental performance, fatigue, and lower productivity. Previous studies have indicated that workers with obesity tend to experience fatigue more quickly, are less active, and are less agile in performing their tasks.

Imbalanced nutritional status significantly affects work productivity, both in the short and long term. Excessive nutritional intake may also reduce productivity, as surplus energy that is not utilized can lead to drowsiness and decreased focus during work. The Chi-square test produced a p-value of 0.000, which is below the significance threshold of 0.05. This finding indicates a statistically significant relationship between nutritional status and work productivity. All workers with normal, overweight, and wasting nutritional status tended to be productive. In contrast, all non-productive workers (100%) were classified in the obese category. This suggests that non-ideal nutritional status, particularly obesity, is highly likely to hinder work productivity. Previous research conducted in a startup company in Jakarta also demonstrated a similar relationship, where workers with higher Body Mass Index (BMI) exhibited lower productivity levels compared to those with normal BMI.

These findings are consistent with the study conducted by Bakrie et al. (2021), entitled "The Relationship between Nutritional Status and Employee Work

Productivity at PT. Angkasa Pura I (Persero), Makassar City,” which concluded that there is a correlation between nutritional status and work productivity. In that study, employees with overweight status showed the highest proportion in the low-productivity category, indicating that excess body weight negatively affects performance. Nutritional status influences work productivity comprehensively in terms of quantity, quality, and timeliness of work. This is also supported by the Work Nutrition Theory (Latham, 2018), which serves as the main theoretical framework in this study.

## 2. The Relationship between Breakfast Habits and Work Productivity

Based on the univariate analysis of 58 respondents working in the processing section at PKS Rambutan, workers with infrequent breakfast habits included 9 individuals who were not productive (15.5%) and 10 individuals who were productive (17.2%). Meanwhile, among workers with frequent breakfast habits, 1 individual was not productive (1.7%), and 38 individuals were productive (65.5%). Breakfast habits are one of the key factors contributing to workers' physical and cognitive readiness in facing morning workloads. Ideally, breakfast should be consumed before 10 a.m. and provide approximately 20–35% of total daily energy requirements. When breakfast is skipped, the body tends to experience hypoglycemia (low blood sugar levels), which can lead to decreased concentration, fatigue, and slower response to work tasks.

The distribution results indicate that although the majority of workers reported frequent breakfast habits, approximately 32.8% of workers still either rarely consume breakfast or have inconsistent breakfast habits. This condition is likely influenced by the early work starting time (06:45 AM) at PKS Rambutan, which limits workers' time to prepare and consume breakfast before work. Breakfast has a positive relationship with concentration, lower stress levels, and a reduced risk of workplace accidents. Data from the United Kingdom also indicate that 62% of female workers who regularly consume breakfast demonstrate higher performance and productivity compared to those who skip it.

Poor breakfast habits may also lead to an imbalance in daily energy intake. Individuals who skip breakfast tend to experience excessive hunger during the day, leading to overeating at inappropriate times. This behavior can contribute to fat accumulation, metabolic disorders, and an increased risk of chronic diseases such as coronary heart disease and cancer, which ultimately affect long-term work productivity. Based on the Chi-square test examining the relationship between breakfast habits and work productivity, a p-value of 0.000 was obtained, which is lower than the significance level of 0.05. This indicates a statistically significant relationship between breakfast habits and work productivity, suggesting that breakfast habits are an important contributing factor to improved worker performance.

The majority of non-productive workers were found in the group with infrequent breakfast habits, indicating that irregular or inadequate breakfast consumption negatively affects work performance. Breakfast provides essential energy to initiate both physical and mental activities. According to Giantari et al. (2025), breakfast habits are directly correlated with improvements in the quantity, quality, and speed of employees' work, particularly in the processing industry sector.

Research by Amin (2019) further supports that workers who do not regularly consume breakfast tend to have lower endurance, experience fatigue more easily, and have difficulty concentrating. This results in longer task completion times and decreased work quality. One of the main factors contributing to poor breakfast habits in this setting is the early work start time (06:45 AM) and the lack of healthy canteen facilities at the workplace, as described in the research background. Consequently, workers tend to skip breakfast due to time constraints or lack of preparation at home.

The findings of this study indicate that nutritional status and breakfast habits are significantly associated with work productivity. Practically, these results suggest that companies should develop workplace nutrition programs, provide healthy breakfast facilities, and conduct regular monitoring of employees' nutritional status to enhance performance. From a policy perspective, these findings may serve as a foundation for the development of nutrition-based occupational health programs, while theoretically reinforcing the concept that nutritional factors play a crucial role in determining productivity. Nevertheless, this study has several limitations, including the use of a cross-sectional design that precludes causal inference, a relatively small sample size drawn from a single location which limits generalizability, the use of self-reported questionnaires that may introduce subjective bias, and the exclusion of other potential influencing factors such as physical activity, stress levels, and work environment, which may also affect productivity.

## **BIBLIOGRAPHY**

- Ainullah, M. (2025). Urgensi Pemeliharaan Tenaga Kerja di Lembaga Pendidikan. *Nazzama: Journal of Management Education*, 4(2), 186-196. <https://doi.org/10.24252/jme.v4i2.54376>
- Adam, L. (2016). Membangun daya saing tenaga kerja Indonesia melalui peningkatan produktivitas. *Jurnal Kependudukan Indonesia*, 11(2), 71-84. <https://doi.org/10.14203/jki.v11i2.205>
- Hamid, F., Salam, J., Dwiseli, F., & Nurgazali, N. (2024). Pengaruh Status Gizi terhadap Tingkat Kelelahan Pekerja PT. Maruki Internasional Indonesia. *Sehat Rakyat: Jurnal Kesehatan Masyarakat*, 3(3), 153-164. <https://doi.org/10.54259/sehatrakyat.v3i3.3039>
- Harahap, L. M., Samuel, Z., Nasution, A. Z., Telaumbanua, R. I., & Alfarizi, P. (2025). Isu-Isu Aktual Perekonomian Indonesia: Tantangan dan Peluang di Tahun 2025. *Jurnal Ilmu Manajemen, Bisnis Dan Ekonomi (Jimbe)*, 3(1), 56-61. <https://doi.org/10.59971/jimbe.v3i1.427>
- Hidayat, M. F., & Nurhayati, F. (2021). Hubungan kebiasaan sarapan dengan konsentrasi belajar. *Bima Loka: Journal of Physical Education*, 1(2), 72-82. <https://doi.org/10.26740/bimaloka.v1i2.11489>
- Irsyad, F. R., Lubis, P. K. D., Naibaho, A. R. O., & Sinurat, N. A. (2024). Analisis strategi perencanaan tenaga kerja untuk meningkatkan efisiensi dan produktivitas dalam organisasi. *Innovative: Journal Of Social Science Research*, 4(4), 3328-3333. <https://doi.org/10.31004/innovative.v4i4.11919>

- Likuayang, A. A., & Matindas, E. C. (2021). Komparasi Makro Ekonomi Negara-Negara Asean Tahun 2015-2018. *Klabat Journal of Management*, 2(1), 57-85. <https://doi.org/10.60090/kjm.v2i1.559.57-85>
- Maedah, A. L., Sitoayu, L., Melani, V., Kuswari, M., & Nuzrina, R. (2023). Status gizi, kebiasaan sarapan dengan produktivitas kerja karyawan startup Jakarta. *Jurnal Gizi Kerja dan Produktivitas*, 4(2), 220-229. <https://dx.doi.org/10.62870/jgkp.v4i2.24927>
- Muslihin, H. Y., Loita, A., Fauziah, Y., Rahmadani, N., & Masturoh, S. (2025). Deteksi dini gizi kurang dan risiko gagal tumbuh: Urgensi pemantauan rutin di usia golden age. *Al-Athfal: Jurnal Pendidikan Anak*, 6(3), 378-389. <https://doi.org/10.46773/alathfal.v6i3.2130>
- Ningsih, D. C., Subagja, I. K., & Hakim, A. (2024). Pengaruh penerapan Kesehatan Keselamatan Kerja (K3) dan produktivitas kerja terhadap kinerja karyawan di PT. Artefak Arkindo (MK). *Jurnal Sosial Teknologi*, 4(11), 988-1000. <https://doi.org/10.59188/jurnalsostech.v4i11.27628>
- Rasidi, E. N. (2022). Hubungan Pola Makan, Kualitas Tidur, dan Status Gizi dengan Kelelahan Kerja pada Pekerja Tambang (Operator) di PT. Pamapersada Nusantara. *Braz Dent J*, 33(1).
- Rahmawati, Y. D., Khasanah, L., & Wahyani, A. D. (2023). Hubungan Asupan Kalori, Kebiasaan Sarapan dan Status Gizi dengan Produktivitas Kerja Karyawan Universitas Muhadi Setiabudi. *Jurnal Ilmiah Gizi Kesehatan (JIGK)*, 4(02), 20-25. <https://doi.org/10.46772/jigk.v4i02.1027>
- Sari, D. P. (2020). Hubungan antara pengetahuan masyarakat dengan kepatuhan penggunaan masker sebagai upaya pencegahan penyakit Covid-19 di Ngronggah. *Infokes: Jurnal Ilmiah Rekam Medis Dan Informatika Kesehatan*, 10(1), 52-55. <https://doi.org/10.47701/infokes.v10i1.850>
- Saputra, D., & Fernos, J. (2023). Pengaruh motivasi dan lingkungan kerja terhadap kinerja pegawai di Ar Risalah Kota Padang. *Jurnal Publikasi Ilmu Manajemen*, 2(2), 62-74. <https://doi.org/10.55606/jupiman.v2i2.1613>
- Sari, A. R., & Muniroh, L. (2017). Hubungan kecukupan asupan energi dan status gizi dengan tingkat kelelahan kerja pekerja bagian produksi (Studi di PT. Multi Aneka Pangan Nusantara Surabaya). *Amerta Nutrition*, 1(4), 275-281. <http://doi.org/10.2473/amnt.v1i4.2017.275-281>
- Salawangi, A. S. E., & Aslam, M. (2020). Status gizi, asupan energi dan produktivitas kerja pada pekerja PT. Propack Kreasi Mandiri Cikarang. *Jurnal Nutrisia*, 22(2), 86-93. <https://doi.org/10.29238/jnutri.v22i2.190>
- Septinyuki, A., Basuki, P. P., & Chasanah, S. U. (2026). Hubungan status gizi dan beban kerja mental dengan produktivitas kerja pada pekerja pembangunan jalan tol. *JURNAL KESEHATAN MASYARAKAT*, 19(1). <https://doi.org/10.47317/jkm.v19i1.857>
- Sugiarto, S., Yenni, M., & Wuni, C. (2023). Surveilans gizi di tempat kerja sebagai upaya pencapaian lingkungan kerja yang sehat dan produktif. *Martabe: Jurnal Pengabdian Kepada Masyarakat*, 6(6), 1985-1990. <https://doi.org/10.31604/jpm.v6i6.1985-1990>
- Umaini, N., Amaliah, L., & Perdana, F. (2024). Hubungan Status Gizi, Asupan Energi Sarapan, Kebiasaan Sarapan, dan Lingkungan Kerja Fisik dengan Produktivitas Kerja:(Studi Kasus Tenaga Kerja Laki-laki Divisi Maintenance

- PT. X di Kota Cilegon). *Jurnal Gizi Kerja dan Produktivitas*, 5(1), 84-91.  
<https://dx.doi.org/10.62870/jgkp.v5i1.24823>
- Ulasaswini, A. A., Hamzah, M. M., & Alfiani, A. D. (2022). Hubungan Status Gizi Dengan Tingkat Produktivitas Pada Pekerja SPBU. *JoPHIN: Journal of Public Health and Industrial Nutrition*, 2(1), 1-7.
- Widyaningrum, W., Kusuma, T. U., Mustikaningrum, A. C., & Moviana, R. (2024). Hubungan Antara Asupan Makan dan Kelelahan Kerja Dengan Produktivitas Tenaga Kerja Di Tempat Produksi Kerupuk Rambak Wilayah Kecamatan Pegandon Kabupaten Kendal. *Jurnal Surya Muda*, 6(1), 90-101.  
<https://doi.org/10.38102/jsm.v6i1.361>