

Analysis of Seafarers' Nutrition and Dietary Patterns to Support Occupational Health on AHTS Pelangi Escort 2

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ABSTRACT

This study aims to analyze the influence of nutrition and dietary patterns on the health of crew members (ABK) aboard the AHTS Pelangi Escort 2 using a quantitative approach. Based on a survey of 30 respondents and multiple linear regression analysis, the results show that both nutrition and dietary patterns have a positive and significant impact on crew health, contributing 89.9% to the variation in their health conditions. The t-values and significance levels indicate strong relationships between the variables, while the Body Mass Index (BMI) measurements reveal that some crew members are experiencing overnutrition. These findings highlight the importance of balanced nutrition and regular eating habits in maintaining the health and productivity of ship crews.

Keywords: Nutrition, Dietary Patterns, Health, Ship Crew

ABSTRAK

Dengan menggunakan metode kuantitatif, penelitian ini meneliti bagaimana pola makan dan gizi berdampak pada kesehatan anak buah kapal (ABK) di kapal AHTS Pelangi Escort 2. Dengan menggunakan analisis regresi linear berganda dan survei yang dilakukan terhadap 30 peserta, ditemukan bahwa pola makan dan gizi memiliki dampak positif dan signifikan terhadap kesehatan ABK, dengan kontribusi sebesar 89,9% terhadap variasi kondisi kesehatan mereka. Nilai t hitung dan signifikansi menunjukkan kekuatan hubungan antara variabel, dan hasil pengukuran IMT menunjukkan bahwa beberapa ABK mendapatkan gizi yang lebih baik. Hasilnya menunjukkan bahwa kesehatan dan produktivitas kerja kru kapal sangat bergantung pada pola makan teratur dan asupan gizi seimbang.

Kata kunci: Gizi, Pola Makan, Kesehatan, Anak Buah Kapal, IMT

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1. INTRODUCTION

Health, as defined by the WHO, encompasses physical, mental, and social well-being and is crucial for seafarers to perform their duties smoothly, supported by adequate rest, exercise, emotional balance, and nutrition. To protect their health, Standard A2.3 of the MLC 2006 establishes maximum working hour limits, stating they must not exceed 14 hours in any 24 hour period and 72 hours in any seven-day period, ensuring sufficient recovery time. Despite the importance of maintaining health and balanced nutrition for physical endurance, the reality of seafaring life as experienced by Indonesian crew members on the Long Xing 629 often reveals challenges in maintaining health and a balanced diet. In this regard, Regulation 3.2 of the MLC 2006 mandates the provision of high-quality, nutritious, and hygienic food and drinking water. Furthermore, seafarers are advised to avoid processed foods, saturated fats, and excessive alcohol consumption, which can weaken the immune system despite providing a temporary warming sensation, and instead replace them with healthy food, regular exercise, and a balanced nutritional diet to maintain fitness amidst heavy workloads and unpredictable weather.

2. METHOD

2.1 Research Type

Every research activity requires a systematic, rational, and empirical method in accordance with scientific principles to obtain relevant and accountable data. According to Sugiyono (2013), a method is a scientific way to obtain valid data used to find, develop, and prove knowledge. Choosing the right method is crucial as it determines the quality of the results, covering not only data collection but also how data is processed, analyzed, and interpreted. In this study, a quantitative method is used because it aims to explain the relationship between variables measured numerically and analyzed using statistics. The chosen research design is cross-sectional, which is an observational design conducted at a specific point in time. This design allows researchers to examine a snapshot of the relationship between independent variables (such as diet and nutrition) and the dependent variable (crew health conditions) simultaneously, without intervention. Therefore, it is considered appropriate to observe the contribution of diet and nutrition toward the occupational health of the crew (ABK) on the AHTS Pelangi Escort 2.

2.2 Operational Definition of Variables

This study focuses on the relationship between nutrition, dietary patterns, and crew health. Occupational nutrition is vital for seafarers as it aims to provide the right nutrients according to their job type and work environment, with the goal of increasing efficiency, productivity, and maintaining health and work capacity. These nutritional needs are influenced by age, gender, workload, and environmental conditions. The second variable, dietary patterns, includes their daily habits in regulating the amount, type, time, and frequency of meals, which is crucial to ensure energy and nutrient requirements are met to perform physiological functions and activities in challenging work environments. Finally, crew health is a vital component of occupational health, directly affecting productivity, safety, and well-being. A good work environment and health can prevent occupational diseases, reduce the risk of accidents and absenteeism, and improve overall work efficiency.

2.3 Population and Sample

This study uses a total of 30 respondents from two vessels, selected using the purposive sampling technique (sample selection based on the researcher's specific considerations). This technique was chosen due to differences in physical requirements and dietary patterns among the crew. The research sample specifically focuses on crew members directly involved in physical vessel operations, such as Oilers (engine crew maintaining the main engine), Able Seamen (AB) (deck ratings handling daily operations like cranes and ropes), and Bosuns (deck foreman). This group was chosen because they work in open environments, bear significant physical workloads, and are prone to fatigue and nutritional imbalances. Conversely, Ship Officers (such as the Captain and Chief Engineer) and Cooks were not sampled because their work patterns are more administrative or they have different working hours and food access. This sample selection aims to provide an accurate picture of the correlation between diet, nutritional adequacy, and specific occupational health conditions of physical workers on board.

2.4 Data Collection Techniques and Research Instruments

This study uses a quantitative approach to ensure the measured data is objective. Three primary data collection techniques were used: questionnaires, direct observation, and documentation. The questionnaire consists of a closed-ended survey with a five-point Likert scale (ranging from "often" to "never") and was

developed based on the General Guidelines for Balanced Nutrition (Kemenkes RI, 2021), focusing on variables such as type, frequency, and nutritional habits. Direct observation was conducted to verify and strengthen questionnaire data by observing the crew's eating activities, including menus, schedules, and dining conditions on the ship. Meanwhile, documentation (daily menus, work shift data, and basic medical records) serves as supporting data. Specifically, the crew research instrument is measured using three main indicators: frequency of nutritious food consumption, dietary patterns (regularity and portion adequacy), and crew health (understanding and practice of balanced nutrition), all of which are assessed using a four-point Likert scale.

2.5 Data Analysis Techniques

Data analysis is a crucial part of research that serves to sort, organize, and interpret raw data into relevant information from which conclusions can be drawn (Sugiyono, 2013). In this study, since the collected data is numerical from questionnaires, the researcher uses descriptive quantitative data analysis techniques. The primary objective of this descriptive analysis is to provide statistical descriptions and summaries of data regarding dietary patterns, nutritional fulfillment, and occupational health habits of the crew. The researcher focuses on analyzing trends and the distribution of responses obtained from the questionnaire rather than performing formal hypothesis testing.

3. RESULTS AND DISCUSSION

3.1 General Description of Respondents

Based on the research results, the characteristics of respondents based on age range can be explained as follows:

Table 6: Respondent Age Range

Rentan Usia	Responden	Presentase
20 – 29	20	66%
30 – 39	7	21.3%
40 – 49	2	6.6%
50 - 59	1	3.3%

Source: Primary data, processed 2025

Based on the age distribution data, it can be concluded that the majority of respondents are in the 20–29 age range (66%). This range generally represents the early entry into the workforce and is considered the most physically and mentally productive age group. The high participation from this group may reflect high enthusiasm, openness to technology, and readiness to face dynamic work demands. Conversely, the number of respondents decreases with age, where the 30–39 age group accounts for only 21.3%, and older groups even less. This might indicate that while the 30–49 age range is still productive, work commitments or family responsibilities may reduce their participation in such surveys. Meanwhile, the group aged 50 and above, which has the fewest respondents (3.3%), may be experiencing a decline in work productivity or approaching retirement. Thus, this data highlights that productivity and engagement in activities like surveys tend to be higher among younger workers, particularly in the early stages of their careers.

3.2 Data Analysis Results

1. Classical Assumption Test

a. Normality Test

The normality test aims to determine the distribution of data in independent and dependent variables. In this study, the normality test uses Asymp. Sig. A value > 0.05 indicates normal distribution. Based on the table, all variables have Asymp. Sig (2-tailed) values > 0.05 , concluding that all research data is normally distributed and can proceed to the next testing stage.

Table 7: Normality Test

No.	Variabel	Asymp. Sig (2-tailed)	Hasil
1.	Gizi Anak Buah Kapal (X1)	0,200	Normal
2.	Pola Makan Anak Buah Kapal (X2)	0,200	Normal
3.	Kesehatan Anak Buah Kapal (Y)	0,200	Normal

Source: Data primer, diolah 2025

b. Multicollinearity Test

This test determines the correlation level between independent variables using Variance Inflation Factor (VIF). Multicollinearity does not occur if the tolerance value is > 0.1 and $VIF < 10$.

Tabel 8 Uji Multikolinearitas

No	Variabel	Tolerance	VIF	Keterangan
1.	Gizi Anak Buah Kapal (X1)	0,103	9,726	Tidak Terjadi Multikolinearitas
2.	Pola Makan Anak Buah Kapal (X2)	0,103	9,726	Tidak Terjadi mutlikolinearitas

Source: Data primer, diolah 2025

c. Heteroscedasticity

Aims to determine if there is a difference in residual variance between observations. Using the Glejser test, heteroscedasticity does not occur if Sig. > 0.05.

Tabel 9 Uji Heteroskedastisitas

No.	Variabel	Sig.	Keterangan
1.	Gizi Anak Buah Kapal (X1)	0,975	Tidak Terjadi Heterokedastisitas
2.	Pola Makan Anak Buah Kapal (X2)	0,440	Tidak Terjadi Heterokedastisitas

Source: Data primer, diolah 2025

2. Multiple Linear Analysis

This analysis aims to determine the influence or relationship between dependent and independent variables.

Tabel 10 Uji regresi

Variabel	Koef. Regresi	t hitung	t tabel	Sig. t	Keterangan
Gizi Anak Buah Kapal (X1)	0,227	2,723	2,04841	0,027	Signifikan
Pola Makan Anak Buah Kapal (X2)	0,526	2,342	2,04841	0,011	Signifikan
(constan)	0,825				
F hitung	119,901				
Sig. F	0,000				
	0,899				

Source: Data primer, diolah 2025

a. Partial Test (t-test)

Crew Nutrition (X1) has a t-count of 2.723 > t-table 2.04841 with Sig. 0.027 < 0.05, indicating a positive and significant effect on Crew Health (Y). Crew

Dietary Patterns (X2) also shows a significant positive effect (t -count 2.342 > t -table 2.04841, Sig. 0.011 < 0.05).

b. Simultaneous Test (F-Test)

F-count 119.901 > F-table 3.35 with Sig. 0.000 < 0.05, meaning X1 and X2 simultaneously have a positive and significant effect on Y.

c. Coefficient of Determination (R Square)

The value of 0.899 indicates that nutrition and diet account for 89.9% of the variance in health, while 10.1% is influenced by other variables.

3. Body Mass Index

The value of 0.899 indicates that nutrition and diet account for 89.9% of the variance in health, while 10.1% is influenced by other variables.

Tabel 11 Index masa tubuh responden

Berat Badan (kg)	Tinggi Badan (M)	IMT	Kategori
40	1,55	16,64932	Sangat Kurus
67	1,68	23,73866	Normal
58	1,7	20,0692	Normal
60	1,67	21,51386	Normal
82	1,68	29,05329	Sangat Gemuk
73	1,7	25,25952	Gemuk
77	1,67	27,60945	Sangat Gemuk
63	1,71	21,54509	Normal
60	1,65	22,03857	Normal
55	1,63	20,70082	Normal
58	1,68	20,54989	Normal
60	1,65	22,03857	Normal
65	1,7	22,49135	Normal
70	1,71	23,93899	Normal
71	1,73	23,72281	Normal
56	1,71	19,15119	Normal
68	1,67	24,38237	Normal
80	1,8	24,69136	Normal
52	1,6	20,3125	Normal
63	1,65	23,1405	Normal

58	1,62	22,10029	Normal
57	1,55	23,72529	Normal
60	1,7	20,76125	Normal
52	1,68	18,42404	Kurus
55	1,68	19,48696	Normal
62	1,58	24,83576	Normal
68	1,71	23,25502	Normal
60	1,72	20,28123	Normal
64	1,74	21,13886	Normal
40	1,5	17,77778	Kurus

Source: Data primer, diolah 2025

4. CONCLUSION

Data analysis results indicate that the nutrition and dietary patterns of crew members (ABK) have a positive and significant impact on their occupational health. Specifically, good nutrition has a significant and positive influence ($p = 0.027$; regression coefficient = 0.227), meaning that an improvement in quality nutritional intake will increase crew health by 0.227 units. The impact of healthy dietary patterns was found to be even stronger, with very high significance ($p = 0.011$; regression coefficient = 0.256), indicating that an improvement in healthy eating habits can enhance crew health by 0.256 units. These findings reinforce the theory that balanced nutrition and regular eating habits are vital for physiological function, physical endurance, concentration, and the performance of crew members in demanding work environments.

Nevertheless, the study also identified a risk of overnutrition among the crew, evidenced by a tendency toward high-calorie diets which correlates with a Body Mass Index (BMI) range of 23–29. Consequently, it is recommended that ship management prioritize the provision of balanced nutrition, establish controlled dietary patterns, and implement regular nutritional education programs and BMI monitoring to create a healthier and more productive work environment.

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