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The Relationship Between Diet and Healthy, Clean-Living Behavior with The Nutritional Status of Scavengers

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ABSTRACT

Introduction: This study aims to determine the relationship between dietary patterns and healthy, clean-living behavior with scavenger's nutritional status in Batam City. **Methods**: This study used a cross-sectional design. The location was conducted at Garbage's Final Disposal Site (TPA) Telaga Punggur in Batam City in December-February 2023. A sample size of 79 Scavengers was obtained using simple random sampling—data collection using anthropometric measurements and questionnaires. Bivariate analysis was performed with the Spearman rank test, and multivariate analysis was performed with multiple linear regression tests. **Results**: The study's results showed poor dietary patterns (83,5%). Clean and healthy living behavior was in the poor category (82,3%)—the nutritional status of Scavengers was in the skinny nutritional status category (32,9%). The Spearman rank test shows a significant relationship between dietary patterns and nutritional status and a significant relationship between healthy, clean-living behavior and nutritional status (p=0,002, 0,021). **Conclusion**: Multiple linear regression test shows there is a significant relationship between the dietary pattern and healthy, clean-living behavior with nutritional status of Scavengers $Y = 14,358 + 0,137X_1 + 0,074X2$ (p=0,003), that meaning there is a relationship between the dietary pattern and healthy clean-living behavior with the nutritional status of Scavengers in Batam City.

Keywords: Dietary patterns, Healthy, clean-living behavior, Nutritional Status

INTRODUCTION

Nutritional status measures the fulfillment of nutritional needs from the body's intake and use of nutrients. Nutritional status is influenced by health status, knowledge, economy, and consumption patterns. Nutritional status is influenced by various factors that are closely related to diet (Arieska & Herdians, 2020)

Diet is a factor that affects health because it pays attention to the type, amount, and frequency of food by recommended nutritional standards (Zhao *et al.,* 2021). A policy from the Minister of Health of the Republic of Indonesia No. 41 in 2014 about Balanced Nutrition Guidelines regulates eating patterns following balanced nutrition guidelines. A good diet will promote optimal nutritional status, health, intellectual growth, and development, while a poor diet will result in nutritional problems and health problems (Zoohori & Duckworth, 2020)

Based on the National Socioeconomic Survey (Susenas), Indonesian household consumption of food and beverages is higher than that of fruit and vegetables (Central Agency Statistics, 2021). Riau Islands Province is the highest contributor to food and beverage consumption at 32% and grains at 11.08%. In comparison, the low consumption of vegetables and fruits by the

people of Riau Islands is only 7.70%. Building a diet with balanced nutrition and awareness of clean and healthy living behavior is needed to prevent the onset of diseases that can cause nutritional problems (Central Agency Statistics, 2021; Kemenkes RI, 2020)

Individuals or community groups apply clean and healthy living behavior as a result of understanding and realizing the health of themselves and society (Kemenkes RI, 2016). The Indonesian Ministry of Health has set a target for implementing households to reach 70%. Riau Islands Province based on the achievement target, as many as three indicators that have not reached the target, namely the behavior of using clean water by 65.59%, the behavior of eradicating mosquito larvae by 44.12%, the consumption of fruits and vegetables according to the portion of 9.5%. (Natsir, 2019; Central Agency Statistics, 2021). Based on data from the Kabil Health Center, according to a survey conducted by Kabil Health Center officers, clean and healthy living behavior data for Nongsa District was generally obtained from as many as 6,419 families. The results of the 2021 Puskesmas survey conducted on the third quarter data (July-September) amounted to 66.8 percent of households monitored by 24.3 percent that behaved clean and healthy. The fourth quarter monitoring (October-December) of 33.1 percent of households monitored was found to be 42.4% of households that behaved clean and healthy. The observation results are still below the achievement target (70%) set by the Health Ministry of Indonesia.

Based on observations made in Nongsa District, Kabil Village, there is a Telaga Punggur landfill. Around the landfill, as many as 370 families live and work as scavengers. Most of those who become scavengers are homemakers. Low income and family economic difficulties encourage mothers to involve themselves in adding to the family economy. Scavenger mothers work from 8 a.m. to 5 p.m. daily, and waste picker mothers who have children usually bring their children to the place where they scavenge. The daily life of this scavenger mother is spent in a garbage pile, ranging from eating, working, socializing, and raising her children.

The condition and daily environment of waste picker mothers cause a lack of care and awareness of mothers towards aspects of health and hygiene behavior. A slum environment and poor food consumption can affect the mother's nutritional status. There is a need to pay attention to waste picker mothers' nutritional status, health, and work productivity. The role of mothers in the family is also to provide and regulate family food, which plays a pivotal role in fulfilling family nutrition. Based on this description, this study aims to determine the relationship between diet and clean and healthy living behavior with nutritional status (Qoriah, 2022).

METHOD

The research site was conducted at the Telaga Punggur Landfill (TPA), Nongsa District, Batam City. The research period was carried out in December 2022-February 2023. The population in this study was all waste picker mothers living in the Telaga Punggur landfill area, consisting of 370 people. The research subjects were selected by *simple random sampling*, with the number of

research samples as many as 79 scavenger mothers. This study used a *cross-sectional research design*.

The instrument used in this study was a questionnaire. The data collected in this study are primary and secondary. Primary data include questionnaires on respondents' characteristics, diet, and healthy, clean-living behavior. Secondary data includes data on the number of waste pickers and landfill overview. Dietary data was collected through a questionnaire containing 20 questions and *a food frequency questionnaire* (FFQ) form. Data on healthy, clean-living behavior was collected through a questionnaire containing 50 questions—a collection of nutritional status data through BMI anthropometric measurements (weight/height(m)^2).

Diet is categorized into two, namely good diet (≥ 50%) and bad diet (< 50%). Healthy clean-living behavior is categorized into two, namely good healthy clean-living behavior (≥ 50%) and healthy clean-living behavior is not good (< 50%). The score is based on the overall score of the variable indicators studied using the interval formula (I). Nutritional status is obtained from BMI by measuring body weight and height (kg/m^2) and categorized into five, namely very thin (< 17.0), thin (17.0 - 18.4), normal (18.5-25.0), overweight (25.1-27.0), obesity (> 27.0) (Ministry of Health, 2014).

Data processing includes editing, coding, scoring, and data entry using Microsoft Excel and SPSS. Statistical tests used Spearman rank and multiple linear regression. Test Spearman rank to determine the relationship between diet and nutritional status and determine healthy, clean-living behavior with nutritional status. Multiple linear regression test to determine the relationship between diet and healthy, clean-living behavior with nutritional status.

RESULTS AND DISCUSSION

1. Respondent Characteristics

The characteristics of respondents consist of marital status, age of respondents, respondent education, husband's education, husband's occupation, husband's income, and family size. Table 1 shows the highest percentage of respondents' marital status at 93.7% and the lowest percentage of marital status at 2.5%. The average age of respondents was 36.57±13.39, with the highest percentage of respondents' age being late adulthood (36-45 years) at 29.1% and the lowest percentage of respondents' age being seniors (> 65 years) at 1.3%.

Based on this study, the average education of respondents was 7.59±2.79 with the highest percentage of respondents' education being elementary school (6 years) of 54.4% and the lowest percentage of respondents' education of not attending school / not finishing elementary school (0 years) of 3.8%. The average husband's education is 7.97±2.58, with the highest percentage of the husband's education being elementary school (6 years) at 44.3% and the lowest percentage of the husband's education being out of school/not finishing elementary school (0 years) at 2.5%.

The respondent's husband's occupation is mainly as a waste picker at 82.3%, and only 2.5% of the husband's work is self-employed. The average income of respondents was Rp.630,379±141,742, with the highest percentage of respondents' income being in the low category

(< Rp.1,500,000) of 100%. The average income of respondents' husbands was Rp.694,936±273,110, with the highest percentage of respondents' husbands' incomes being in the low category of (<Rp.1,500,000) of 100%. The average number of respondents' families was 4.18±1.23, with the highest percentage of family size, namely small families (1-4 people) at 57%, and the lowest percentage of family size, namely large families (>7 people) at 5.1%.

Table 1. Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Total (n)	Percentage (%)
Marriage Status		
Not Married	0	0
Married	74	93,7
Divorced (Died)	3	3,8
Divorced	2	2,5
Total	79	100
Respondent Age		
17-25 y.o (Late Adolescents)	22	27,8
26 – 35 y.o (Early Adults)	16	20,3
36 – 45 y.o (Late Adults)	23	29,1
46 – 55 y.o (Early Elderly)	9	11,4
56 – 65 y.o (Late Elderly)	8	10,1
> 65 Tahun (Elderly)	1	1,3
Total	79	100
Min-Max	18-67	
Mean±SD	36,57±13,39	
Education Level		
Not attending school/being out of school	3	3,8
Elementary School	43	54,4
Junior High	18	22,8
Senior High	15	19,0
University	0	0
Total	79	100
Min-Max	0-12	
Mean±SD	7,59**±**2,79	
Husband Education		
Not attending school/being out of school	2	2,5
Elementary School	35	44,3
Junior High	28	35,4

Respondent Characteristics	Total (n)	Percentage (%)
Senior High	14	17,7
University	0	0
Total	79	100
Min-Max	0-12	
Mean±SD	7,97±2,58	
Husband Occupation		
Not Working/Jobless	9	11,4
Self-employed	2	2,5
Laborer	3	3,8
Scavenger	65	82,3
Total	79	100
Respondent Income		
Low (<Rp.1.500.000)	79	100
Medium (Rp.1.500.000 - Rp. 2.500.000)	0	0
High (Rp.2.500.000 -Rp.3.500.000)	0	0
Very high (Rp.3.500.000)	0	0
Total	79	100
Min-Max	Rp.300.000 -900.000	
Mean±SD	Rp.630.379±141.742	
Husband Income		
Low (<Rp.1.500.000)	79	100
Medium (Rp.1.500.000 - Rp. 2.500.000)	0	0
High (Rp.2.500.000 -Rp.3.500.000)	0	0
Very high (Rp.3.500.000)	0	0
Total	79	100
Min-Max	Rp.0 – 1.000.000	
Mean±SD	Rp.694.936±273.110	
Size of the Family		
Small (1-4 orang)	45	57,0
Medium (5-6 orang)	30	38,0
Big (>7 orang)	4	5,1
Total	79	100

2. Diet

Diet is related to food selection and eating choices of an individual or household that will affect the nutritional adequacy and nutritional status of individuals or households. Based on the

results of the study in Table 2, the diet of waste picker respondents amounted to 83.5% in the category of bad diet and only 16.5% in the category of good diet.

In eating food, waste pickers tend to eat readily available foods regardless of the type, amount, and frequency consumed. This result aligns with research conducted by the Alak landfill in Kupang City; there is a low diet of waste pickers related to the type, amount, and frequency of food consumed (Managing *et al.,* (2011).

Waste pickers at TPA Punggur have a diet of consuming the main meal one to two times a day and replacing the main meal with snacks. The type of food consumed is not diverse, such as eating more food sources of fat and carbohydrates than foods that are sources of protein, vitamins, and fiber, and the amount of food that is not by the recommended portion of the respondents. The results of research conducted by Yang showed a low diet of waste pickers, such as eating one to two times a day and limited food consumption in waste pickers at Tumininting Landfill due to low income generated per day. (Kawalo A, 2016)

Table 2. Frequency Distribution of Eating Pattern

Eating Pattern	Total (n)	Percentage (%)
Good	13	16,5
Bad	66	83,5
Total	79	100

3. Clean Healthy Living Behavior

Healthy, clean-living behavior is carried out as an awareness of a person or family to maintain, improve, and realize the health of individuals, families, communities, and the environment. Based on Table 3, waste pickers' healthy, clean-living behavior amounted to 82.3% in the healthy, clean-living behavior that was not good and only 17.7% in the sound, clean, healthy living behavior.

This study's results align with research conducted on the awareness of how waste pickers will behave when washing their hands and using clean water. The availability of latrines is still low, while in studies that have been conducted, there are indicators such as smoking behavior and awareness of eradicating waste picker mosquito larvae that are still low (Sajiwo R, 2020; Paramita *et al.*, 2022)

Scavengers work by collecting and utilizing waste or used goods that can still be used and resold to collectors to survive. With their jobs and residences, waste pickers neglect their hygiene and health. Low healthy, clean-living behavior in waste pickers who work and live in slum environments dramatically affects the health of individual scavengers. Poor healthy hygiene behavior can cause infectious diseases that can affect nutritional status (Herlist & Muniroh, 2016)

Table 3. Frequency Distribution of Clean and Healthy Living Behaviour

Healthy and Clean-living Behaviour	Total (n)	Percentage (%)
Good	14	17,7
Bad	65	82,3
Total	79	100

4. Nutritional Status

Nutritional status is the health of individuals and groups determined by physical fitness, energy, and nutrients obtained from various foods, which can be seen from physiology by measuring body weight and height. Table 4 shows that waste picker mothers have different nutritional statuses, including obese 12.7%, fat 19%, average 31.6%, thin 32.9%, and skinny 3.8%. Based on the results of this study, waste pickers classified as underweight nutritional status amounted to 32.9% (Iqbal & Semi-paningtyas, 2018).

This study's results align with research conducted by Alak Kupang landfill scavengers in the category of undernutrition status as much as 56.76%. Low nutritional status in research can occur due to various factors, one of which is food intake that is not balanced with the nutritional needs of waste pickers and sustainably the formation of poor nutritional status—management (Health Agency, 2011).

Table 4. Nutritional Status Distribution

Nutritional Status	Total (n)	Percentage (%)
Very Thin	3	3,8
Thin	26	32,9
Normal	25	31,6
Overweight	15	19,0
Obesity	10	12,7
Total	79	100

5. The Relationship between Diet and Nutritional Status

Based on the results of the Spearman rank correlation test, there is a relationship between diet and nutritional status in this study, showing a correlation coefficient value of 0.340 and a p-value of 0.002 at a significant level of 0.05. A p-value smaller than 0.05 is obtained from the correlation value, so the results are positive and significant, meaning they are unidirectional and related. So, the better the dietary behavior, the better the nutritional status of scavengers.

Several factors, especially socioeconomic conditions, influence the diet of low-waste pickers. The low economic condition of waste pickers causes limited access to food, such as low purchasing power, low knowledge, and public awareness of diverse and nutritious diets. A diet that is less than needed in a certain period can affect nutritional status (Rindians, 2020)

6. The Relationship between Clean, Healthy Living Behavior and Nutritional Status

Based on the results of *the* Spearman rank correlation, there is a relationship between clean and healthy living behavior and nutritional status in this study, showing a correlation coefficient value of 0.259 and a p-value of 0.021 with a significant level of 0.05. A p-value smaller than 0.05 is obtained from the correlation value, so the results are positive and significant, meaning they are unidirectional and related. So, the healthier, clean-living behavior of scavengers is, the better the nutritional status of scavengers.

This study shows that waste pickers' healthy, clean-living behavior is still in the category of healthy, clean-living behavior, which is unsuitable due to several factors, such as lack of awareness and lack of facilities to maintain individual health. This is in line with the research results, which show a relationship between clean and healthy living behavior with p Saudah's (2016) value results of 0.000 in workers at the landfill in the Lowokwaru District. Clean and healthy living behavior is critical because it looks at the environmental conditions of work and residences adjacent to waste that can cause infectious diseases. The low application of clean and healthy living behavior in individual households can occur due to several factors such as knowledge, attitudes, economic factors, the role of health workers, and infrastructure (Anggraini et al., 2021).

7. The Relationship between Diet and Healthy Clean-living behavior with Nutritional Status

Based on the results of multiple linear regression related to the relationship between diet and healthy, clean-living behavior with nutritional status, this study showed a p-value of 0.003 with a significant level of 0.05. A p-value smaller than 0.05 is obtained from the correlation value, so the results are positive and significant, meaning they are unidirectional and related. So, the better the diet and healthy, clean-living behavior of scavengers are, the better their nutritional status. The result of the multiple linear equation is obtained from the calculation result where Y = (14.358) + (0.137) + (0.074). The constant value of 14.358 indicates a relationship between nutritional status with a healthy, clean diet and living behavior, the constant value of 0.137 indicates the magnitude of diet, and the constant value of 0.074 indicates the magnitude of clean and healthy living behavior. $\alpha\beta_1 X_1 \beta_2 X_2$

This result is in line with research conducted by the study; there is a significant relationship with a p-value of 0.023 with a significant level of 0.05 between diet and clean and healthy living behavior with maternal nutritional status. This means that clean, healthy living behavior and low diet will impact the mother's low nutritional status. Diet and clean and healthy living behavior can be interconnected with nutritional status. A good diet with balanced nutrition guidelines and clean and healthy living behaviors to prevent disease can improve a person's nutritional status (Gaspersz *et al*., 2020).

CONCLUSIONS

Based on the results of the respondent characteristics study, the marital status of respondents is married chiefly, the average age of scavenger respondents is 36.57±13.39, most of the respondents' education and respondents' husbands are in elementary schools (SD), most of the respondents' husbands' jobs are scavengers, the income of respondents and husbands is in a low category with an average of Rp.630,379±141,742, the size of the family is included in the small family category.

The diet of waste pickers is included in the wrong category by 83.5%. Waste pickers' clean and healthy living behavior is in a bad category by 82.3%. The nutritional status of waste pickers is included in the category of underweight nutritional status by 32.9%. The results of the Spearman rank correlation test analysis showed a positive and significant relationship between the diet and nutritional status of waste pickers with a p-value of 0.002 at a significant level of 0.05, meaning that the better the diet, the better the nutritional status of scavengers**.** The results of the Spearman rank correlation test analysis showed a positive and significant relationship between healthy clean-living behavior and the nutritional status of waste pickers with a p-value of 0.008 at a significant level of 0.05, meaning that the better the healthy clean-living behavior, the better the nutritional status of scavengers**.** The multiple linear regression test analysis results show a positive and significant relationship between diet, healthy, clean-living behavior, and nutritional status in waste pickers with sig values of 0.003 at a significant level of 0.05, 0.003 < 0.05 means that the better the diet and healthy, clean-living behavior, the better the nutritional status.

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