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The Relationship Between Energy Consumption Levels, Stress Levels and Nutritional Status Of Women Traders In New Normal Era At The Gianyar Public Market

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ABSTRACT

Background: During the Covid-19 pandemic, there was a new term in society called New Normal. New Normal is an adaptation to new habits, which means carrying out activities by implementing health protocols. One of the things that can be caused by Covid-19 is stress on traders due to a decrease in the number of buyers. Stress can lead to emotional eating and will affect consumption levels and nutritional status. The purpose of this study was to determine the relationship between stress levels, energy consumption levels, and the nutritional status of women traders in the new normal era at the Gianyar public market. **Methods:** This type of observational research with a cross sectional design using a purposive sampling technique with a total of 94 people. Data collected by interview method and taking measurements. Data is presented with frequency tables, and analyzed using the Spearman Rank correlation test ($\alpha=0.05$). **Results:** The data shows that 65.0% of the sample had moderate stress levels and 35.0% had mild. Energy consumption level, 68.0% had a normal, 27.7% an excessive, and 4.3% a mild deficit. The nutritional status of the sample, 8.5% had underweight, 57.4% normal, 12.8% overweight, and 21.3% obese. The Rank Spearman test showed that there was no significant relationship between stress levels and energy consumption levels ($p=0.215$) and there was a significant relationship between energy consumption levels and nutritional status ($p=0.001$). Advice that can be given to traders with obese and very obese nutritional status is to start adopting a healthy lifestyle.

Keywords: New Normal; Stress Levels; Energy Consumption Levels; Nutritional Status



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INTRODUCTION

Since March 2020, Indonesia has been shocked by one of the phenomena, namely the Covid-19 pandemic. The Corona Virus Disease 2019 (Covid-19) pandemic was announced by WHO (World Health Organization) for the first time on March 11, 2020 (Taufik & Ayuningtyas, 2020).

Stress, anxiety, and depression resulting in heightened emotional levels. A national survey showed that more than 35% of Chinese experienced traumatic stress related to COVID-19. A national survey of US adults reported that 13.6% had symptoms associated with serious psychological distress; three times higher than in 2018. Likewise, COVID-19-related mental health problems such as depression, anxiety, and post-traumatic stress disorder symptoms are prevalent among U.S. young adults, affecting 43%, 45%, and 31% of the population, respectively this (Shen et al., 2020).

The Association of Indonesian Mental Medicine Specialists conducted a survey of the public regarding mental health through online self-examinations, explaining that 80% of respondents had symptoms of post-traumatic psychological stress due to experiencing or witnessing unpleasant events related to Covid-19 (Ridlo, 2020). Based on research journals on food consumption of the productive age population during the Covid-19 pandemic, data was obtained, 37.6% of respondents experienced an increase in consumption of main foods with the majority consuming 1-3 portions/day. These results are in line with a study which stated that more than half of respondents experienced an increase in the frequency of their main meals by 3x/day during the Covid-19 pandemic. Furthermore, it was

found that 49.6% of respondents experienced an increase in snack food consumption with the most common frequency being 1-3 servings/day (57.9%). These results are in line with a study of the productive age population in Samarinda which showed that 43.75% of respondents experienced an increase in snack food consumption and this was associated with increased body weight (Noviasty, 2020).

Dietary energy and fat intake increases under stressful conditions and a stress-induced preference for “comfort foods” containing high amounts of added sugars and solid fats is common. Studies have shown that emotional eating is positively related to body mass index, stress, and depression. In most studies, women are more affected by emotional eating, which leads to greater weight gain than men (Shen et al., 2020).

During the Covid-19 pandemic, there was a new term in society called New Normal. New Normal is an adaptation of new habits, meaning carrying out activities by implementing health protocols. Principle, new normal is a phase where the public is allowed to return to their activities with a number of health protocols. This is implemented to support the economy becoming active again as before, so the new normal is an opportunity for the economy to bounce back (Irawati, 2020).

The Gianyar Public Market has been operating since it was inaugurated in 2021. However, in 2022 many traders left the Gianyar Public Market because there were few buyers. In 2023 the market has started to be repopulated by traders, but the number of buyers who come is not as many as before the Covid-19 pandemic. This can be a stressor for traders. The stress experienced by these women traders can



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influence their eating habits which will have an impact energy intake and nutritional status. Therefore, researchers are interested in examining the relationship between energy consumption levels, stress levels and the nutritional status of women traders at the Gianyar Public Market.

METHOD

This type of research is observational with a cross sectional design. The research was carried out at the Gianyar Public Market on 21 February-7 March 2023. The population in this study were all women traders at the Gianyar Public Market during the data collection period. The research sample is part of the population that has inclusion criteria, namely: women traders aged 15-59 years, not experiencing illness, not menstruating, not pregnant, willing to be a sample and their weight and height can be measured. The sample size was calculated using Yamane formula and a sample size of 94 people was obtained. The sampling technique uses a purposive sampling method. After obtaining a sample that meets the inclusion criteria, sample

selection is then carried out using a simple random sampling method by drawing lots.

The data collected is primary data including sample identity data (name, age, religion, address and income) obtained by interviews using questionnaires, body weight data was obtained using the Tanita brand stepping scale and height data using the OneMed brand microtoise. Energy consumption data was recorded using a 24-hour food recall form and stress levels were obtained using the Perceived Stress Scale (PSS-10) questionnaire. Secondary data includes a general description of Gianyar Market and the number of traders selling there obtained through interviews. The data was then processed and presented descriptively with frequency and percentage distributions for each variable, and the relationship between variables was analyzed using Spearman Rank correlation ($\alpha=0.05$)

RESULTS

Samples identity data, hereinafter referred to as sample characteristics, are presented in the table, including age, religion and sample income. Details are presented in Table 1.

Table. 1 Characteristic of Research Subjects

Category	Variabel	f	%
Age	20-39	41	43,6
	40-59	53	56,4
	Total	94	100,0
Religion	Hindu	84	89,4
	Islam	7	7,4
	Kristen	3	3,2
	Total	94	100,0
Income	Below UMK (Rp. 2.837.680)	84	89,4
	Above UMK (Rp. 2.837.680)	10	10,6
	Total	94	100,0



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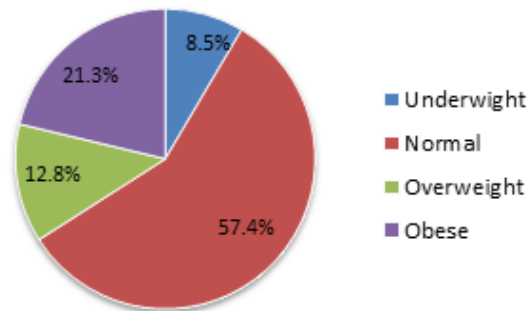
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Table 1 shows the 94 samples. Based on age distribution, most of the samples belonged to the 40-59 year age group with 53 samples (56.4%). Characteristics based on religion are that the majority of the 84 samples (89.4%) are Hindu. Based on total income, the majority of the sample had income below the UMK (District Minimum Wage), namely 84 samples (89.4%).

Observation Results of Research Subjects based on Research Variables

A. Nutritional Status

The nutritional status of the samples obtained from anthropometric data (body weight and height) then determined using body mass index. Complete data is presented in Figure 1.

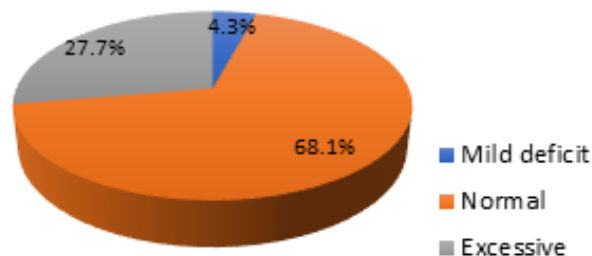


Picture. 1 Graph of Sample Distribution Based on Nutritional Status

Figure 1 shows the distribution of samples based on nutritional status, the majority with normal nutritional status were 54 samples (57.4%), while the smallest frequency was 8 samples (8.5%) with underweight. The maximum value of BMI is 35.88 and the minimum value of BMI is 17.01, with an average value of 23.79 (SD = 3.99).

B. Energy Consumption Levels

The energy consumption levels obtained using the daily recall form for two non-consecutive days, then analyzed for nutritional value and averaged into daily consumption. Complete data is presented in Figure 2.



Picture. 2 Sample Distribution Graphs Based on Energy Consumption Levels

Figure 2 shows the level of energy consumption, the majority have normal energy

consumption levels, namely 64 samples (68.1%), while the smallest frequency, namely 4 samples



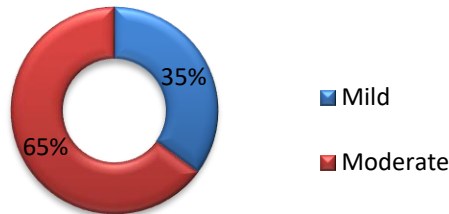
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(4.3%) has a mild deficit energy. The maximum value of the energy consumption level is 128.02% and the minimum value of the energy consumption level is 83.88%, with an average value of 107.80% (SD = 10.86).

C. Stress Levels

The stress levels obtained using the Perceived Stress Scale (PSS-10) questionnaire, then analyzed and categorized. Complete data is presented in Figure 3.



Picture. 3 Sample Distribution Graphs Based on Stress Level

Figure 3 shows the level of stress, most of them have a moderate level of stress, namely 61 samples (65%). The maximum value of stress level is 26 and the minimum value of stress level is 10, with an average value of 17.23 (SD = 4.47).

Data Analysis Results

Stress levels and energy consumption levels was analyzed using the Spearman Rank correlation test with a value of $\alpha=0.05$ presented in Table 2

Table. 2 Distribution Of Energy Consumption Levels Based On Stress Levels

Stress Levels	Energy Consumption Levels						Total		p value	r
	Mild Deficit		Normal		Excessive					
	f	%	f	%	f	%	f	%		
Mild	0	0,0	28	43,8	5	19,2	33	35,1	0,215	0,129
Moderate	4	100,0	36	56,3	21	80,8	61	64,9		
Total	4	100,0	64	100,0	26	100,0	94	100,0		

Table 2 shows that of the 33 samples with relatively mild stress levels, the majority had normal energy consumption levels 28 samples (43.8%), of the 61 samples with moderate stress levels the majority had normal energy consumption levels 36 samples (56.3%) and excessive energy consumption level of more than 21 samples (80.8%).

Based on the results of statistical tests on the relationship between stress levels and energy consumption levels using the Spearman rank

test, a p value (sig.2 tailed) was obtained of 0.215 ($p < 0.05$) with an r value of 0.129 so it can be said that there is no significant relationship between stress levels. with the level of energy consumption, but the direction of the relationship is the same but with a very weak correlation.

Nutritional status and energy consumption levels were analyzed using the Spearman Rank correlation test with a value of $\alpha=0.05$ presented in Table 3.



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Table. 3 Distribution Of Nutritional Status Based On Energy Consumption Levels

Energy Consumption Levels	Nutritional Status								Total		<i>p value</i>	<i>r</i>
	Underweight		Normal		Overweight		Obese					
	f	%	f	%	f	%	f	%	f	%		
Mild Deficit	4	50,0	0,0	0,0	0	0,0	0	0,0	4	4,3	0,001	0,605
Normal	4	50,0	54	100,0	3	25,0	3	15,0	64	68,1		
Excessive	0	0,0	0	0,0	9	75,0	17	85,0	26	27,7		
Total	8	100,0	54	100,0	12	100,0	20	100,0	94	100,0		

Table 3 shows that of the 4 samples with a mild deficit energy consumption level, all had a underweight 4 samples (50%), of the 64 samples with a normal energy consumption level the majority had a normal 54 samples (100%), and of the 26 samples with excessive energy consumption the majority had the nutritional status of obese 17 samples (85%) and overweight 9 samples (75%).

Based on the results of statistical tests on the relationship between energy consumption levels and nutritional status using the Spearman rank test, a *p* value (sig.2 tailed) was obtained of 0.001 ($p < 0.05$) with an *r* value of 0.605 so it can be said that there is a significant relationship that is strong and in the same direction, between energy consumption and nutritional status, which means that if the level of energy consumption increases, nutritional status will also increase, and vice versa

DISCUSSION

In this study, looking at the sample distribution according to stress level, 61 people (64.9%) were found to have moderate stress levels and 33 people (35.1%) of the sample had mild. Stress and negative emotions can influence the development and course of cardiovascular disease by altering underlying physiological

processes. For example, people who live in conditions of chronic stress have a greater tendency to smoke, start overeating, and not exercise (Dewi., 2018). When stressed, the liver will produce blood sugar (glucose) which can usually increase energy. Unused blood sugar will be re-absorbed by the body. The danger is, if you experience prolonged stress, the body will no longer be able to store excess glucose. This can result in a person experiencing an increased risk of type 2 diabetes (Adrian, 2020).

In this study, looking at the distribution of samples according to energy consumption levels, 64 people (69.1%) were found to have normal energy consumption levels, 26 people (27.7%) had excessive, and 4 people (4.3%) has a mild deficit. Consuming foods high in energy beyond reasonable limits can put you at risk of becoming overweight or obese. Women who consume foods with high total energy intake have a 2.27 times higher risk of developing obesity than women who consume low food energy intake (Pamelia, 2018).

In this study, looking at the distribution of samples according to nutritional status, 54 people (57.4%) were found to have normal, 20 people (21.3%) had very obese, 12 people (12.8%) had an obese, and 8 people (8.5%) had a underweight. Being overweight or obese in women causes many serious health problems. A



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study published in the International Journal of Obesity stated that obesity can have a negative impact on health at every stage of a woman's life cycle. Obesity in young women impacts psychosocial health and as they age and become parents, this health problem also impacts their reproductive health. Apart from that, obesity also poses a number of serious risks during pregnancy. Then, in older women, obesity is associated with the emergence of a number of chronic diseases, such as type 2 diabetes and cardiovascular disease as well as an increased risk for almost all types of cancer (Fadli, 2022).

Spearman's Rank correlation test analysis showed that there was no relationship between stress levels and energy consumption levels among women traders at the Gianyar Public Market. This research is in line with research conducted by (Defie & Probosari, 2018) which states that there is no relationship between stress levels and energy intake with a p value = 0.120. This is due to differences in a person's ability to deal with stress and reduce and avoid the effects of stress that can arise. This ability is considered a strategy that depends on the individual's psycho-physical characteristics related to stress coping which is usually used when facing difficult situations.

Spearman's Rank correlation test analysis showed that there was a relationship between the level of energy consumption and the nutritional status of women traders at the Gianyar Public Market. This research is in line with research conducted by (Rohimah, 2019) which states that there is a relationship between the level of energy consumption and nutritional status with a p value = 0.016. This research is also in line with research conducted by (Koryaningsih., 2019) which states that there is a relationship between the level of energy

consumption and nutritional status with a p value = 0.038. This can be caused by an imbalance between energy intake and output which results in weight gain. Obesity is a state of imbalance between energy in and energy out over a long period of time. The amount of energy consumption from ingested food exceeds the energy used for metabolism and daily activities. This excess energy will be stored in the form of fat and adipose tissue so that it can result in weight gain (Koryaningsih., 2019).

CONCLUSION(S)

According to stress levels, 61 people (65.0%) had moderate stress levels and 33 people (35.0%) had mild stress levels. According to the energy consumption levels, 64 people (68.0%) had normal energy consumption levels, 26 people (27.7%) were classified excessive, and 4 people (4.3%) were classified as mild deficit. According to nutritional status, 8 people (8.5%) had underweight nutritional status, 54 people (57.4%) were normal, 12 people (12.8%) were overweight, and 20 people (21.3%) were obese. The results of the Spearman Rank correlation analysis showed that there was no significant relationship between stress levels and energy consumption levels (p = 0.215) and there was a significant relationship between energy consumption levels and the nutritional status of women traders at the Gianyar Public Market (p = 0.001).

Advice that can be given to traders with overweight and obese nutritional status is to start adopting a healthy lifestyle and for women traders with moderate levels of stress, it is recommended to learn how to manage stress.

Conflict of Interest



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The author has no conflict of interest regarding all elements in this study.

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