Relationship of Age, Knowledge, Level of Education to Nutritional Behavior in Facing the Covid-19 Pandemic in Bengkulu Province

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Abstract

Background: Healthy eating during the Coronavirus Pandemic (Covid-19) is important for maintaining a healthy body. Eating patterns that need attention are the consumption of vegetables, fruit, sugar, salt, fat, and water.

Objective: The study aims to analyze the relationship between age groups, knowledge, and education level with the nutritional behavior of Bengkulu people in the face of the Covid-19 pandemic.

Method: This study used a cross-sectional design with a sample of 966 people aged 16 years and over and residing in Bengkulu Province. Questionnaire in the form of e-survey with Google form. Chi-square test was used to analyze the relationship between age groups, knowledge, and education level with nutritional behaviour.

Results: The results showed that 85.2% of respondents in the age group < 25 years had poor nutritional behavior. More than 50% of respondents consume fruits and vegetables as well as salt, oil, and sugar that were not following good nutritional behavior. 98.2% of respondents thought that Covid-19 would eventually be successfully controlled. Age (OR = 1,588; 95% CI: 1,032 - 2,444) was significantly related to nutritional behavior while knowledge (OR = 0.862; 95% CI: 0.322-2,303) and education level (OR = 1,297; 95% CI: 0.910 - 1,849) were not related to nutritional behavior.

Conclusion: Good nutritional behavior needs to be applied to the age group < 25 years to prevent and reduce transmission of the COVID-19 outbreak.

Keyword: *Age, Education level, Nutritional behavior, COVID-19 pandemic*

Introduction

COVID-19 is a disease caused by infection with the novel coronavirus. This disease was first notified in Wuhan, China, in December 2019. Coronavirus is a type of virus that causes disease in both animals and humans. The type of coronavirus that has recently caused a pandemic has belonged to the novel of coronavirus or 2019-nCoV or SARS-CoV-2 (1) (2). The COVID-19 pandemic is a health and humanitarian crisis that threatens the food and nutrition security of millions of people around the world. In the long term, the effects of COVID-19 could disrupt the functioning of the food system with disastrous consequences for health and nutrition (3). In response to the expanding case of the pandemic, the World Health Organization (WHO) declared a public health emergency of international concern on January 30, 2020, and called for collaborative efforts for all countries to prevent the spread of COVID-19. (4).

The prevalence of COVID-19 in Indonesia has increased substantially from March to April 2020. The increase in prevalence is due to the lack of public attention to the Government's appeal. According to the Ministry of Health (2020), to reduce the number of cases in the community, people must carry out a healthy life under the Guidelines for Preventing COVID-19 Control and the Healthy Living Community Movement (known as GERMAS) and the application of balanced healthy nutrition (5)(6).
Bengkulu Province is a province in Indonesia with Bengkulu City as the capital city. This province is located in the southwestern part of Sumatra Island. There were 279 positive cases of COVID-19 of August 17, 2020, with 24 death cases. This is a big case for Bengkulu province, which has a population of 2.0198 million inhabitants in 2020 (7).

Efforts to prevent COVID-19 require optimal body defence, one of which is by consuming a balanced nutritional diet (1). Consumption of adequate nutrition is essential for the immune system, which will protect us from diseases caused by viruses and prevent other diseases. The immune system is always monitoring for signs of invasion or danger to the body. Nutrition can have a direct or indirect impact on immune cells, which can improve health status (8). The COVID-19 pandemic must be controlled by increasing the knowledge, attitudes, and nutritional behavior of the community. General dietary intake recommendations are recommended for the prevention and management of COVID-19 (9). This study aims to analyze the relationship between age, knowledge, and level of education toward nutritional behavior to face the COVID-19 pandemic in Bengkulu Province.

Methods

This study used a cross-sectional study design, which was conducted in Bengkulu Province in June 2020. The independent variables consisted of age, Knowledge over COVID-19, and level of education. There were also variables of respondent attitudes regarding opinions over COVID-19 that can finally be controlled or not. The age was classified as an adult if ≥25 years old and adolescent if <25 years old (10). The knowledge questionnaire regarding COVID-19 consists of 12 questions that were adopted from the research of Zhong et al. (2020) (11). The education level is categorized as ≤ Senior High School and tertiary education/college. The dependent variable was the nutritional behavior consisted of 8 nutritional practices, which was adapted from the guidelines for balanced nutrition (12).

Collecting data was using a structured questionnaire that was distributed using the google form application, which was distributed through social media, WhatsApp, Facebook, and Instagram. Data processing included editing, coding, cleaning, and data entry. Univariate data analysis was presented in the frequency distribution table. To determine the relationship between age, knowledge, and level of education with nutritional behavior was using the Chi-square test.

Result

This study involved 966 respondents aged 16 years and over. The questions raised regarding knowledge of COVID-19, education level, attitudes regarding opinions of whether COVID-19 can finally be controlled and nutritional behavior.

Table 1. Distribution of Age, Knowledge, Education Level, Attitude (COVID-19 finally can be controlled) and Nutritional Behavior of Respondents.

Variable	Categories	n	%
Age	≥25 years old (adult)	813	84.2
	<25 years old (adolescent)	153	15.8
Knowledge	Bad	28	2.9
	Good	938	97.1
Education	≤ Senior High School	630	65.2
	Tertiary education/college	336	34.8
Attitude (COVID-19 finally can be controlled)	Disagree	17	1.8
	Agree	949	98.2
Nutritional behaviour	Bad	813	84.2
	Good	153	15.8

Note: n = sample size, % = percentage

Table 1 shows that most of the respondents were ≥25 years old or categorized as adults (84.2%), and only 15.8% of respondents were <25 years old or classified as adolescents. Respondents' Knowledge about Covid-19 was categorized as bad, only 2.9%, so that almost all respondents had good Knowledge about COVID-19. Most of the respondents' education level was ≤ Senior High School (65.2%). About 98.2% of respondents agreed with the opinion that COVID-19 will eventually be controlled. Nutritional behavior showed the opposite where 84.2% of respondents still had bad dietary behavior, such as behaving, not in accordance with the recommendations for balanced nutrition.

The data on nutritional behavior that was collected consisted of 8 behavioral items, which were summarized from the guidelines for balanced nutrition, as shown in Table 2. There were four behavior items that were less than half of which were carried out by respondents according to balanced nutrition recommendations, i.e., consumption of vegetables and fruit, salt, oil, and sugar.

Table 2. Distribution of Nutritional Behavior based on Good Nutritional Behavior (According to Balanced Nutrition Recommendations

Statement	Advice	n	%
Cook own meals consumed	Self-cooking	946	97.9
Fruit and vegetable consumption	Every day	361	37.4
Fresh food consumption	Every day	940	97.3
Food preservation / instant consumption	Rarely consumed	931	96.4
Portion of salt consumed	<1 tsp / day	348	36.0
Portion of oil consumed	<5 tbsp / day	461	47.7
Portions of sugar consumed	<4 tbsp / day	353	36.5
Portions of water consumed	≥8 glass / day	703	72.8

Table 3. Relationship between Age, Knowledge, Level of Education toward Nutritional Behavior

Variables	Categories	Nutritional behavior				Total (n=966)	p-value	OR (95% CI)
		Bad (n=813)		Good (n=153)				
		n	%	n	%			
Age	≥25 years old (Adult)	693	85.2	120	14.8	81	0.034	1.588 (1.032-2.444)
	<25 years old (Adolescent)	120	78.4	33	21.6	153		
Knowledge	Bad	23	82.1	5	17.9	28	0.767	0.862 (0.322-2.303)
	Good	790	84.2	148	15.8	936		
Education	≤ Senior high school	538	85.4	92	14.6	630	0.150	1.297 (0.910-1.849)
	Tertiary education /college	275	81.8	61	18.2	336		

Table 3 shows there was a significant relationship between age and nutritional behavior (p = 0.034, OR (95% CI): 1.588 (1.032-2.444)). Anyhow, there was no significant relationship between knowledge (p = 0.767, OR (95% CI).): 0.862 (0.322-2.303)) and education level (p = 0.150, OR (95% CI): 1.297 (0.910-1.849)) toward the nutritional behavior of the respondents. Respondents aged ≥25 years (adults) had more bad nutritional behavior (85.2%) than respondents aged <25 years (adolescents). About 82.1% of respondents with a lack of knowledge was practiced bad nutritional behavior, as well as about 84.2 % of respondents with good knowledge also practiced bad nutritional behavior. The education level of respondents ≤ senior high school and tertiary education/college had a not significant of bad nutritional behavior percentage, which was about 85.4% and 81.8%, respectively.

Discussion

The behavior practiced is not only in the form of short-term response to the outbreak of COVID-19 but, more broadly, a long-term adaptive response. When referring to the new normal concept of McNamee, Miller & Matthew Benjamin, and Hinssen, the new normal concept designed by the Government includes more short-term behavior changes as an emergency response to the COVID-19 outbreak (13). One of these behaviors is related to maintaining the immune system through balanced nutritional behavior (6) (14).

Balanced nutrition is a daily diet containing nutrients in the type and amount according to the body's needs, by taking into account the principles of food diversity, physical activity, clean living habits, and maintaining a normal body weight to prevent nutritional problems. The concept of balanced nutrition must be met with complete nutritional elements (carbohydrates, protein, fat, vitamins, minerals, water, and fiber) in sufficient quantities, not excessive and not deficient, and according to the body's needs. (12).

This study shows there was a relationship between age and nutritional behavior. The respondents with age <25 years (adults) had better dietary behavior than those aged ≥25 years (adolescents). Behavior in adolescence can experience changes towards better behavior because adolescents begin to accept responsibility as a result of their positive knowledge and attitudes (15). Nutritional knowledge is needed to advocate for nutritional quality and access to healthy food for families (16). Researches in China shows respondents have good knowledge, an optimistic attitude, and the right practices towards COVID-19 during a period of the rapid increase in the COVID-19 outbreak (11).

COVID-19 has changed the trend of eating patterns where families have more time to cook and eat fruits and vegetables even though this has not improved the overall quality of food. Most people also have a higher consumption of sweet foods, possibly due to boredom and

Stress due to COVID-19 (17). A study conducted by Ammar et al. (2020) shows that the behavior of consuming unhealthy food was carried out by most of the respondents during the COVID-19 period (18).

Diet management, especially the consumption of vegetables and fruit as recommended to fulfill the vitamins and minerals, is a strategy to minimize the potential risk of COVID-19 infection in certain conditions (19). The results showed that most of the respondents still did not consume fruits and vegetables according to the recommended balanced nutrition. By consuming a variety of fruits and vegetables, the adequacy of vitamins and minerals can be fulfilled since fruits and vegetables are a source of vitamins, minerals, and anti-oxidants. The respondents' consumption of salt, oil, and sugar also exceeds the recommended portion. This is likely due to the increased consumption of snacks, sweets, and cakes during the COVID-19 period.

Within months, COVID-19 has brought about behavioral changes that many nutrition educators consider essential for the health and sustainability of people's nutrition, such as cook our meals. The results showed that almost all respondents cooked the food they consumed themselves, ate fresh food, and drank water according to the recommended balanced nutrition. Besides, negative nutritional behavior has also developed in connection with the COVID-19 pandemic, where sales of processed food and preserved / instant food have increased since early March 2020. The pandemic has led to increased stressful conditions, which often lead to the desire to eat delicious but unhealthy foods (16).

A survey conducted by Hunter (2020) shows more than half of the respondents said they cooked their food at home more often than in pre-pandemic conditions. Three-quarters of respondents stated that they became more confident if they cooked their meals at home, and 51% said they would continue to prepare their meals at home even though the crisis was over (20).

Long-term, good nutritional behavior can have a positive impact on the prevention of chronic diseases and complications related to COVID-19 (21). The financial and administrative capacity of a country, as well as the nature and effectiveness of existing public policies, particularly regarding food and nutrition, is critical factors in overcoming the COVID-19 pandemic (22).

Conclusion

There is a relationship between age and nutritional behavior, the age group <25 years has better nutritional behavior than the age group ≥25 years during the COVID-19 period. Positive dietary behavior during the COVID-19 pandemic is including cooking the food consumed by ourselves, consuming fresh food, and drinking water according to the recommended balanced nutrition. Understanding nutritional behavior during the COVID-19 pandemic will help determine nutrition policies going forward

Conflict Of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

Ethical Clearance

The study received ethical approval by the Health Research Ethics Committee of Health Polytechnic – Ministry of Health, Bengkulu No. KEPK / 063/06/2020

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