Analysis of Nutritional Food Consumption Behavior in the People of Kendari City during the Covid-19 Pandemic

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Abstract. Improving immunity is one of the keys to preventing the transmission of the Covid-19 virus. Consuming balanced nutritional food is one way to keep the immune system primed. Nutritional food consumption is the daily average dietary intake, grouped into carbohydrates, proteins, fats, vitamins, and minerals. Food consumption is strongly influenced by a person's behavioral factors. Food consumption behavior is a form of eating habits practice that is strongly influenced by knowledge, attitudes, and actions of a person toward food. This study aimed to analyze the nutritional food consumption behavior in the people of Kendari City during the Covid-19 pandemic. The samples in this study amounted to 1,133 people. Based on the results of the study using logistic regression analysis, obtained a significant value (Sig.) for the variables of knowledge, attitudes, and actions was < 0.05, which means that knowledge, attitudes, and actions have an influence on nutritional food consumption behavior in the people of Kendari City during the Covid-19 pandemic.

Keyword: consumption behavior, knowledge, attitudes, actions

Introduction

The highly contagious respiratory disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), commonly known as Covid-19 has been declared a worldwide public health emergency by the World Health Organization (WHO) following an unprecedented outbreak that happened in Wuhan City, China in December 2019. Several factors were identified that could lead to the development of Covid-19. A person who has poor nutritional status and suffers from comorbidities such as cardiovascular disease, diabetes, hypertension, cancer, liver, and kidney disease is susceptible to severe Covid-19 infection because of patients with reduced immunity or reduced systemic immunity and increased mortality (Huq et al., 2021).

Based on WHO data until January 28, 2022, there were 364,191,494 confirmed cases of Covid-19, including 5,631,457 deaths worldwide (WHO, 2022). The number of Covid-19 cases in Indonesia until January 30, 2022 was 4,343,185 people, the number of deaths was 144,303 people, and 4,137,164 people had recovered. Based on data from kemkes.go.id, covid19.go.id, dan BNPB, until Sunday, January 30, 2022, the number of people infected corona virus in Southeast Sulawesi Province has reached 20,182 people, 529 people died, 9 people are still being treated (active positive), and 19,644 people have been declared cured. In Kendari City, the number of positive cases has reached 7,718 people, the number of deaths was 95 people, and there are no active positive people (still being treated), and 7,623 people were declared cured (AndraFarm.com, 2022).

The Covid-19 pandemic has impacted various sectors, especially the health sector. Many efforts have been made to tackle the spread of Covid-19, one of them is by maintaining a balanced dietary intake (Rachmah et al., 2021). Maintaining a healthy and balanced dietary intake is very important to do during the Covid-19 pandemic. Nutritional food is useful in forming immunity to provide protection for the body against disease-causing pathogens (Humas UNS, 2020). A balanced dietary intake is also very important to help the healing process for Covid-19 patients. The need for energy, macronutrients, micronutrients and fluids can increase the immunomodulatory, anti-inflammatory, anti-oxidant, and probiotic systems as a reference in the preparation of nutritional therapy protocols for Covid-19 patients (Akbar,

2020). Improving immunity is one of the keys to preventing the transmission of the Covid-19 virus. Consuming a balanced dietary intake is one way to keep the immune system primed. Adequate nutrition, especially vitamins and minerals, is needed to maintain an optimal immune system (Ministry of Health Republic of Indonesia, 2020).

The World Health Organization (WHO) together with health professionals such as doctors and nutritionists worldwide, promote and recommend the nutrition through an adequate and balanced dietary intake that can support the immune system in preventing the transmission of Covid-19 (Yılmaz et al., 2020). A study stated that nutrition has a major role in increasing the immune response to viral infections. In preventing the transmission of Covid-19, it is much emphasized to be able to improve the immune system as part of prevention efforts (Octavia & Harlan, 2021). A study conducted by Vu et al. (2021), found that nutritional factors can affect the immune system. In addition, respondents with healthy food consumption behaviors (for example, increasing vegetable intake and reducing processed meat intake) were less likely to be positive for Covid-19.

Nutrition is a basic need of life. Food consumption behavior can be influenced by sociological, psychological, and physiological factors (Yılmaz et al., 2020). Knowledge about food greatly contributes to eating behavior, if someone has good food knowledge, it will form good eating behavior (Liu et al., 2021). In addition, nutritional food consumption behavior is strongly influenced by knowledge and attitudes as well as a person's perspective in determining or choosing the food to be consumed. Choosing to consume healthy and nutritional food during the Covid-19 pandemic can help in efforts to increase endurance (Lisnawaty et al., 2020). The Covid-19 pandemic greatly affects behavior, especially behavior related to buying, preparing, and consuming food (Hassen et al., 2021).

Based on these conditions, the aim of this study is to analyze the nutritional food consumption behavior in the people of Kendari City during the Covid-19 pandemic. In analyzing the nutritional food consumption behavior in this study, three factors were identified, namely; knowledge, attitudes, and actions in choosing food.

Methods

Type of this study is a descriptive survey research. In accordance with the aims of study, which is to see an overview of the consumption behavior in the people of Kendari City during the Covid-19 pandemic. The survey method carried out is online by distributing questionnaires in the form of google forms through social media to be filled out and disseminated. Data collection was carried out in January-February 2022. The samples in this study were all respondents who were domiciled in Kendari City and had filled out the google form questionnaire completely, if the respondent did not fill it out completely, it would be excluded. Of the 1,521 people who had filled out the google form sheet, only 1,133 people filled it completely, so the number of samples in this study was 1,133 people.

The main source of information comes from respondents' answers via google forms, complemented by the results of a review of related journals, reports from the Kendari City Health Office, and reference books. The stages of this research started from compiling a questionnaire in the form of a google form, conducting validity tests, distributing online questionnaires, sorting data, and then the complete data were analyzed through the SPSS program version 16 and using the Logistics Regression test with a 95% confidence interval (CI). Furthermore, the data is presented in the form of tables and narratives. The data to be presented are (1) description of consumption behavior towards staple foods, side dishes, vegetables and fruits based on frequency, portion, and consumption pattern change (2) univariate analysis, and (3) logistic regression analysis.

Results and Discussion

This study, to analyze nutritional food consumption, includes three components, namely the consumption of staple foods, the consumption of side dishes, and the consumption of vegetables and fruit. Eating behavior was measured using a questionnaire by looking at meal frequency, meal portion, and consumption pattern change. To analyze the influence of nutritional food consumption behavior by looking at three indicators, namely: knowledge, attitudes, and actions. The results of the distribution analysis of nutritional food consumption can be seen in Table 1.

Table 1. Distribution of Nutritional Food Consumption

Type of Food Consumption	Number of Respondents	%
Consumption of Staple Foods (Carbohydrates: Rice, Corn, Cassava, Noodles, etc.)		
Frequency		
1 time/day	156	13.77
2-3 times/day	694	61.25
> 3 times/day	278	24.54
1 time/week	5	0.44
Meal Portion (grams)		
< 100 grams	293	25.86
100 grams	159	14.03
200-300 grams	644	56.84
> 300 grams	37	3.27
Consumption Patterns Change		
Increase	417	36.80
Decrease	92	8.12
Do not change	624	55.08
Consumption of Side Dishes (Protein and Fat: Meat, Fish, Shrimp, Egg, Tofu, Tempe, etc.)		
1 time/day	8	0.71
2-3 times/day	615	54.28
> 3 times/day	510	45.01
Meal Portion (grams)		
< 100 grams	64	5.65
100 grams	296	26.13
200-300 grams	521	45.98
> 300 grams	252	22.24
Consumption Patterns Change		
Increase	275	24.27
Decrease	74	6.53
Do not change	784	69.20
Consumption of Vegetables and Fruits		
1 time/day	115	10.15
2-3 times/day	671	59.22
> 3 times/day	341	30.10
1 time/week	6	0.53
Meal Portion (grams)		
< 50 grams	53	4.68
50 grams	137	12.09
60-100 grams	319	28.16

110-200 grams	446	39.36
> 200 grams	178	15.71
Consumption Pattern Changes		
Increase	547	48.28
Decrease	102	9.00
Do not change	484	42.72

Based on Table 1 shows that the consumption behavior of staple foods (rice, corn, cassava, noodles, and other tubers as a source of carbohydrates), and the majority of respondents, or 694 people (61.25%) consume staple foods 2-3 times/day. In addition, there are 278 respondents (24.54%) who consume the staple food more than 3 times/day, 156 respondents (13.77%) who consume the staple food 1 time, and 5 respondents (0.44%) who consume the staple food 1 time/week. For the meal portion of the staple foods in a day, most of the respondents consume staple foods of 200-300 grams/day, and the least consume staple foods of more than 300 grams/day, namely 37 respondents (3.27%). When viewed from changes in staple food consumption patterns during the Covid-19 pandemic, there were 624 respondents (55.08%) who had no change in consumption patterns, 417 respondents (36.80%) whose consumption patterns of staple food increased, and 92 respondents (8.12%) who have decreased consumption patterns of staple foods.

When viewed from the consumption patterns of side dishes during the Covid-19 pandemic, there were 8 respondents (1.71%) who consume side dishes 1 time/day, 615 respondents (54.28%) who consume side dishes 2-3 times/day, and 510 respondents (45.01%) who consume side dishes more than 3 times/day. For the meal portion of side dishes in a day, most of them consume side dishes of 200-300 grams/day, namely 521 respondents (45.98%), consume less than 100 grams/day as many as 64 respondents (5.65%), consume 100 grams/day as many as 296 respondents (26.13%), and 252 respondents (22.24%) who consume side dishes of more than 300 grams/day. For consumption pattern change of side dishes during the Covid-19 pandemic, namely 275 respondents (24.27%) increased, 74 respondents (6.53%) decreased, and 784 respondents (69.20%) did not change their consumption patterns.

Based on the consumption patterns of vegetables and fruit during the Covid-19 pandemic, there were 115 respondents (10.15%) who consume 1 time/day, 671 respondents (59.22%) who consume 2-3 times/day, 341 respondents (30.10 %), and 6 respondents (0.53%) who consume vegetables and fruit 1 time/week. For the meal portion of vegetables and fruit in a day that is, as many as 53 respondents (4.68%) have a meal portion of fewer than 50 grams/day, 137 respondents (12.09%) have a meal portion of 50 grams/day, 319 respondents (28.16%) have a meal portion of 60-100 grams/day, 446 respondents (39.36%) have a meal portion of 110-200 grams/day, and 178 respondents (15.71%) have a meal portion of more than 200 grams/day. For the consumption patterns change of side dishes during the Covid-19 pandemic namely 547 respondents (48.28%) increased, 102 respondents (9%) decreased, and 484 respondents (42.72%) did not change their consumption patterns.

Based on the results of the study, it was found that the people of Kendari City really maintain the consumption patterns of nutritional food, especially during the Covid-19 pandemic. Nutritional foods that are generally consumed by the people consist of staple foods (rice), side dishes, fruits, and vegetables. Based on the results of the study, it was also known that there was an increase in the consumption of vegetables and fruit during the Covid-19 pandemic. It was influenced by public understanding and awareness to always maintain dietary intake in order to form antibodies so as to prevent disease transmission.

Nutritional food consumption is the average dietary intake consumed daily which is grouped into carbohydrates, proteins, fats, vitamins, and minerals (Mustakim, Efendi & Sofiany, 2021). Nutritional food consumption is very important, especially during the Covid-

19 pandemic because consuming nutritional food is not only beneficial for growth and development, it is also beneficial for increasing body immunity and health (Agustina & Pristya, 2020).

Table 2. Analysis of the Relationship between Knowledge and Nutritional Food Consumption Behavior

Knowledge	Consumption Behavior				Total		*P value*
	Inadequate		Adequate				
	n	%	n	%	n	%	
Lack	103	56.3	80	43.7	183	100	0.000
Sufficient	374	39.4	576	60.6	950	100	
Total	477	42.1	656	57.1	1,133	100	

Table 2 shows that there are 183 respondents have lack knowledge, there are 80 respondents (43.7%) who have adequate consumption behavior, and 103 respondents (56.3%) whose inadequate consumption behavior. Of 950 respondents who have sufficient knowledge, there are 374 respondents (39.4%) whose inadequate consumption behavior, and 576 respondents (60.6%) who have adequate consumption behavior. Based on the results of the statistical test, the P-value = 0.000 means that knowledge is related to the nutritional food consumption behavior during the Covid-19 pandemic. Food consumption behavior is a form of eating habits practice that is strongly influenced by the knowledge and attitudes of a person toward food. This behavior includes knowledge, perceptions, attitudes, and actions (practices) towards food and the nutrients contained in it (Yaslina et al., 2014).

Nutritional knowledge can help in implementing healthy living by regulating consumption patterns and a balanced dietary intake based on the knowledge and information received by a person (Asmiranti, Masithah et al., 2021). Nutritional knowledge greatly influences attitudes and actions in regulating a balanced nutritional pattern, where this condition will have an impact on a person's nutritional status (Fatharanni et al., 2019).

Nutritional knowledge is an important basic in choosing food consumption. Knowledge is a person's ability to understand an object with the help of the five senses obtained from various sources (Lisnawaty et al., 2020). Based on the results of the study, it was found that knowledge has an influence on nutritional food consumption behavior. It is because most people already know the benefits of consuming nutritional food, especially during the Covid-19 pandemic, and people have practiced it in their daily dietary intake. Public knowledge regarding the benefits of consuming nutritional food is also influenced by various information obtained by mass media, electronic media, and socialization provided by health service institutions and other institutions that play a role in the prevention of Covid-19.

A study found that there was a change in the food consumption patterns of the Russian people during the Covid-19 pandemic, where during the pandemic they adopted a healthier consumption pattern, namely by consuming more vegetables and fruits and reducing unhealthy foods. This behavior change is closely related to the knowledge and understanding of the people to maintain their health and nutrition in an effort to increase immunity (Ben Hassen et al., 2021).

Table 3. Analysis of the Relationship between Attitudes and Nutritional Food Consumption Behavior

Attitudes	Consumption Behavior				Total		*P value*
	Inadequate		Adequate				
	n	%	n	%	n	%	
Lack	89	51.7	83	48.3	172	100	0.004
Sufficient	388	40.4	573	59.6	950	100	
Total	477	42.1	656	57.1	1,133	100	

Table 3 shows that of the 172 respondents have lack attitude but have adequate consumption behavior as many as 83 respondents (48.3%) and 89 respondents (51.7%) have inadequate consumption behavior. 950 respondents have sufficient attitude but have inadequate consumption behavior as many as 388 respondents (40.4%), and have adequate consumption behavior are 573 respondents (59.6%). Based on the results of the statistical test, it was found that the P-value = 0.004 which means that attitudes are related to the nutritional food consumption behavior during the Covid-19 pandemic. Attitudes toward nutrition are an advanced stage of nutritional knowledge. Sufficient nutritional knowledge can develop a person's sufficient nutritional attitudes. Furthermore, sufficient knowledge and attitudes toward nutrition will also foster good behavior toward nutrition, which will later affect actions in regulating the consumption patterns of nutritional food (Khomsan, 2021).

In this study, it was found that attitudes have an influence on nutritional food consumption. People who have sufficient attitudes tend to consume nutritional food. This positive attitude toward nutritional food consumption is also driven by public knowledge regarding the benefits of consuming nutritional food. The people gave a positive response and strongly agreed to maintain a healthy and nutritional dietary intake to maintain endurance during the Covid-19 pandemic. People's attitudes about consuming nutritional food also play a role in providing and processing food ingredients. Attitude is a readiness or willingness to take an action (Notoadmodjo, 2010). A study showed that there was a relationship between attitudes toward student behavior in choosing snack consumption (Febryanto, 2016). Another study showed that there was an effect on attitude toward the implementation of balanced nutrition during the new normal Covid-19 (Asmiranti, Masithah et al., 2021).

Table 4. Analysis of the Relationship between Actions and Nutritional Food Consumption Behavior

Actions	Consumption Behavior				Total		*P value*
	Inadequate		Adequate				
	n	%	n	%	n	%	
Lack	302	63.6	247	37.7	549	100	0.000
Sufficient	175	36.7	409	62.3	584	100	
Total	477	42.1	656	57.1	1,133	100	

Table 4 shows that of the 549 respondents have lack actions, but have adequate consumption behavior as many as 247 respondents (37.7%) and 302 respondents (63.6%) have inadequate consumption behavior. 584 respondents have sufficient actions but have inadequate consumption behavior as many as 175 respondents (36.7%) who have adequate consumption behavior as many as 409 respondents (62.3%). Based on the results of the statistical test, it was found that the P-value = 0.000, which means that the actions are related to the nutritional food consumption behavior during the Covid-19 pandemic.

In this study, actions (practices) also have a significant influence on nutritional food consumption behavior during the Covid-19 pandemic. This is because people already know the

benefits of consuming nutritional food, especially during the Covid-19 pandemic. They have made it happen in real actions. The form of actions taken by the people starts from the selection of food ingredients, where people only choose foods that contain enough nutrients to be consumed. Likewise, in processing and serving food, people are also very concerned about the hygiene factor of the food to be consumed. In addition, people also pay more attention to their consumption patterns, starting from the food type, the meal frequency, and the food amount consumed. The average frequency of people's meals is three times a day with the menu structure consisting of staple foods, side dishes, vegetables, and fruit.

In consuming food, it is recommended to consume balanced and varied food. This is because there is no single type of food that contains all the elements of nutrients. Therefore, it is very necessary to consume a variety of foods so that it expected to meet nutritional needs (Ministry of Health Republic of Indonesia, 2020). Description of dietary intake can be seen from a person's eating behavior. Nutritional behavior is related to illness/disease because food and drink can increase or decrease health and it can cause disease. It depends on a person's nutritional behavior (Notoadmodjo, 2010).

Table 5. Logistics Regression Analysis

The Dependent Variable: Food Consumption Behavior during the Covid-19 Pandemic			
The Independent Variable	**Koef.B**	**Exp (B)**	**Sig.**
Knowledge	0.388	1.474	0.031
Attitudes	1.002	2.724	0.000
Actions	0.962	2.618	0.000

Based on the logistic regression test obtained a significant value (Sig.) for the knowledge, attitudes, and actions variables was < 0.05, which means that knowledge, attitudes, and actions have influenced nutritional food consumption behavior during the Covid-19 pandemic in people of Kendari City. The magnitude of the effect can be seen from the value of Exp (B), where the knowledge variable is 1.474, which means that respondents with sufficient knowledge tend to experience consumption behavior changes of nutritional food as many as 1.474 times. The attitudes variable is 2.724, which means that respondents with sufficient attitudes experience consumption behavior changes as many as 2.724 times. In the actions variable, the effect is 2.618, which means that respondents with sufficient actions tend to experience consumption behavior changes as many as 2.618 times.

Conclusion

Based on the results of the study, it can be concluded that nutritional food consumption behavior during the Covid-19 pandemic shows a better change, while knowledge, attitudes, and actions affect the behavior of the people of Kendari City in consuming nutritional food during the Covid-19 pandemic. The suggestions/recommendations of this study namely:

1. For the government, especially health offices and community health centers, to regularly provide education to the public regarding disease prevention and control and education about nutritional food and food diversification.
2. The community is expected to always be able to process and consume healthy and nutritional food, and also food diversification in order to increase body resistance so as to prevent disease transmission.

Conflict of Interests

There is no conflict of interest.

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References

Agustina, F. R., & Pristya, T. Y. R. (2020). *Analisis Perbedaan Konsumsi Gizi Seimbang Sebelum dan pada Masa Covid-19 pada Remaja Analysis of Differences in Balanced Nutrition Consumption Before and The Time of Covid-19 in Adolescents*. *13*, 7–15.

AndraFarm.com. (2022). *Tabel seputar kasus perkembangan virus Corona (COVID-19) di seluruh Indonesia per Provinsi sampai tanggal 30 Januari 2022*. Https://M.Andrafarm.Com/_andra.Php?_i=daftar-Co19-Provinsi&urut=2&asc=00100000000. https://m.andrafarm.com/_andra.php?_i=daftar-co19-provinsi&urut=2&asc=00100000000

Asmiranti, Masithah, S., Suherman, S., Nurcahyani, I. D., & Yusuf, K. (2021). Pengaruh Pengetahuan Dan Sikap Remaja Terhadap Penerapan Gizi Seimbang Selama Masa New Normal Covid-19 Di MA DDI Alliritengae Maros. *PREPOTIF: Jurnal Kesehatan Masyarakat*, *5*(1), 204–209. https://doi.org/10.31004/prepotif.v5i1.1521

Ben Hassen, T., El Bilali, H., Allahyari, M. S., Berjan, S., & Fotina, O. (2021). Food purchase and eating behavior during the COVID-19 pandemic: A cross-sectional survey of Russian adults. *Appetite*, *165*(January), 105309. https://doi.org/10.1016/j.appet.2021.105309

Dara Maulidini Akbar, Z. A. (2020). *Jurnal Menara Medika*, *2*(2), 119–127. https://e-resources.perpusnas.go.id:2125/media/publications/326196-hubungan-pengetahuan-tentang-kesehatan-r-0e91516f.pdf

Fatharanni, M. O., Angraini, D. I., & Oktaria, D. (2019). Hubungan Pengetahuan, Sikap dan Perilaku Mengenai Gizi Seimbang dengan Status Gizi pada Wanita Usia Subur di Kecamatan Terbanggi Besar Kabupaten Lampung Tengah Relationship between Knowledge , Attitudes and Behavior Related to Balanced Nutrition with Nut. *Medula*, *9*(50), 26–37.

Febryanto, M. A. B. (2016). Hubungan Antara Pengetahuan Dan Sikap Dengan Perilaku Konsumsi Jajanan di MI Sulaimaniyah Jombang. *Jurnal Keperawatan Muhammadiyah*, *1*(1), 7–17.

Humas UNS. (2020). *Pola Makan Sehat dan Bergizi untuk Meningkatkan Imunitas saat Terserang Covid-19*. https://uns.ac.id/id/uns-opinion/pola-makan-sehat-dan-bergizi-untuk-meningkatkan-imunitas-saat-terserang-covid-19.html

Huq, A. K. O., Uddin, I., Islam, T., & Ahmed, E. (2021). *Current Research in Nutrition and Food Science COVID-19 Pandemic and Immune Boost up : The Synergistic Role of Nutrients*, *9*(3).

Kementerian Kesehatan, R. (2020). *Final-Panduan-Gizi-Seimbang-Pada-Masa-Covid-19*. Https://Covid19.Go.Id/Storage/App/Media/Materi%20Edukasi/Final-Panduan-Gizi-Seimbang-Pada-Masa-Covid-19-1.Pdf; Kemenkes RI. https://covid19.go.id/storage/app/media/Materi Edukasi/final-panduan-gizi-seimbang-pada-masa-covid-19-1.pdf

Khomsan, A. (2021). *Teknik Pengukuran Pengetahuan Gizi*. PT. IPB Press.

Lisnawaty, L., Ocktaviani, R. E. S., Meliahsari, R., Aldian, A., & Haerati, N. (2020). Perilaku Mengonsumsi Makanan Bergizi Selama Pandemic Covid-19 Pada Masyarakat Sulawesi

Tenggara. *Preventif Journal*, *5*(1), 0–5. https://doi.org/10.37887/epj.v5i1.15586

Liu, Z., Mutukumira, A. N., & Shen, C. (2021). Food safety knowledge, attitudes, and eating behavior in the advent of the global coronavirus pandemic. *Plos One*, *16*(12), e0261832. https://doi.org/10.1371/journal.pone.0261832

Mustakim, Efendi, R., & Sofiany, I. R. (2021). *Pola Konsumsi Pangan Penduduk Usia Produktif Pada Masa Pandemi Covid-19 Dietary Patterns Among Productive Age Population During Covid-19 Pandemic In South Tangerang*. *17*(November). https://doi.org/10.19184/ikesma.v0i0.27203

Notoadmodjo, S. (2010). *Pendidikan dan Prilaku Kesehatan*. PT. Rineka Cipta.

Octavia, L., & Harlan, J. (2021). The role of nutrition the covid-19 pandemic. *International Journal of Public Health Science*, *10*(2), 304–310. https://doi.org/10.11591/ijphs.v10i2.20662

Rachmah, Q., Nindya, T. S., Aji, A. S., Pattimah, S., Rachmah, N., Maulana, N. I., Agustin, A. M., & Astina, J. (2021). Peningkatan Pengetahuan Dan Self-Efficacy Upaya Pencegahan Covid-19 Melalui Edukasi Gizi Konvensional. *Media Gizi Indonesia*, *16*(3), 273. https://doi.org/10.20473/mgi.v16i3.273-279

WHO. (2022). *Coronavirus disease (COVID-19) pandemic*. Word Health Organization. https://covid19.who.int/

Yaslina, Anggraini, M., & Nordila. (2014). Perilaku Konsumsi Makanan dengan Kejadian Obesitas pada Anak Usia Sekolah. *Jurnal Kesehatan Perintis*, 23–29.

Yılmaz, H. Ö., Aslan, R., & Unal, C. (2020). Effect of the COVID-19 pandemic on eating habits and food purchasing behaviors of university students. *Kesmas*, *15*(3), 154–159. https://doi.org/10.21109/KESMAS.V15I3.3897