

Diet Quality Profile among Urban Elderly in Jakarta during COVID-19 Pandemic in Indonesia

Profil Kualitas Diet Lansia di Wilayah Perkotaan Jakarta selama Pandemi COVID-19 di Indonesia

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ABSTRACT

Background: Elderly population was at a greater risk to be impacted by the COVID-19 pandemic. While diet quality and health status contributed to immunity improvement during this situation, a profile of these factors among the elderly has not received much attention.

Objectives: This study aimed to obtain the profile of diet quality among elderly living in the urban areas of Jakarta during the COVID-19 pandemic in Indonesia.

Methods: The study was conducted using a cross-sectional method among 126 subjects aged > 60 years in five community health centers across Jakarta province. Diet quality was assessed by 2-day 24-hour food recall and scored based on Healthy Eating Index (HEI) 2015. General characteristics of subjects were measured by structured questionnaires to obtain data on age, gender, marital status, education, household income, smoking status, disease history, and nutritional status. Data analyses were conducted by descriptive analyses where categorical data were presented as frequencies and percentages, while numerical data were presented as mean (\pm SD) or median (25th – 75th percentile).

Results: Diet quality score of 93% elderly was below 60 with a mean HEI score was 46.1, indicating the poor diet quality profile among subjects during a pandemic situation. Low scores inadequacy were found in total fruit (2.1 (0-4.9)), whole grains (0.0), and dairy (0.1 (0-0.5)). While moderation scores were poorest on refined grains (1.3 (0-5.4) and saturated fats (0.0).

Conclusions: Poor diet quality among urban elderly in Jakarta during the COVID-19 pandemic was found to be prevalent. It is expected from the study that nutrition intervention should be part of priority strategies especially for the elderly during a pandemic situation in Indonesia.

ABSTRAK

Latar Belakang: Populasi lansia merupakan kelompok yang lebih rentan dalam situasi pandemi COVID-19. Kualitas diet mempengaruhi status kesehatan lansia dan berkontribusi terhadap pembentukan imunitas tubuh selama pandemi, namun gambaran tentang isu ini masih belum banyak mendapat perhatian saat ini.

Tujuan: Penelitian ini bertujuan untuk mendapatkan gambaran tentang kualitas diet lansia yang hidup di wilayah perkotaan Jakarta selama masa pandemi di Indonesia.

Metode: Studi potong lintang dilaksanakan pada 126 lansia berusia > 60 tahun di lima pusat kesehatan masyarakat (Puskesmas) di wilayah provinsi Jakarta. Kualitas diet diukur berdasarkan food recall 2 kali 24 jam dan dihitung menggunakan skor Healthy Eating Index (HEI) 2015. Karakteristik subjek diukur dengan menggunakan kuesioner terstruktur dengan mengumpulkan data tentang usia, jenis kelamin, status pernikahan, pendidikan, penghasilan keluarga, status merokok, riwayat penyakit, dan status gizi lansia. Data analisis dilakukan secara deskriptif dengan penyajian data kategorikal berdasarkan frekuensi dan persentase, sedangkan data numerical berdasarkan nilai mean (\pm SD) atau median (persentil 25 – persentil 75).

Hasil: Skor kualitas diet dari 93% subjek lansia adalah < 60 dengan rata-rata skor HEI sebesar 46,1. Hal ini mengindikasikan kualitas diet yang buruk pada subjek selama masa pandemi. Skor rata-rata kecukupan berdasarkan nilai HEI terhadap asupan buah (2,1 (0-4,9)), whole grains (0,0), dan produk olahan susu (0,1 (0-0,5)) menunjukkan asupan yang masih kurang dari

anjuran. Sedangkan skor rata-rata HEI untuk asupan dari kelompok refined grains (1,3 (0-5,4)) dan lemak jenuh (0,0) menunjukkan nilai yang melebihi batas yang direkomendasikan.

Kesimpulan: Kualitas diet pada lansia di daerah perkotaan Jakarta selama pandemi diketahui masih rendah. Berdasarkan hasil penelitian ini, intervensi gizi bagi kesehatan lansia menjadi faktor penting sebagai salah satu prioritas yang perlu diperhatikan selama masa pandemi di Indonesia.

Kata kunci: Lansia, Kualitas Diet, Pandemi COVID-19, Wilayah Perkotaan.

INTRODUCTION

The elderly population has been one of the most vulnerable groups during the COVID-19 pandemic and those living in urban areas were at the greater risk since most of these areas have become the epicenter of the pandemic in Indonesia. The case fatality rate (CFR) of COVID-19 was 3.5% in October 2020 and the contribution of death cases related to COVID-19 among the elderly to the national number was high at 42.5%. As the capital city of Indonesia, Daerah Khusus Ibukota (DKI) Jakarta province was facing a greater challenge since 24.5% of the total confirmed cases were coming from this area.¹

Along with the pre-existing chronic disease conditions, a higher risk of severity and mortality due to COVID-19 will increase even higher among the elderly.² Before the pandemic, chronic diseases accounted for as much as 25% of the total health expenditure of the country and contributed to a financial loss of the National Insurance (JKN-KIS) program.³ On the other hand, the role of diet was found to be beneficial in preventing diseases and substantial during a pandemic situation. Poor diet quality indicated in high saturated fats, sugars, and carbohydrates will impair adaptive immunity and lead to the inability to defend against viruses.² In such conditions, higher susceptibility to diseases and infections could affect the health state among the elderly during a pandemic of COVID-19.

Previous studies reported that the use of the Healthy Eating Index (HEI) as a tool to study diet quality was associated with chronic disease outcomes in several countries.^{4,5} HEI was a measure made up of multiple adequacies and moderation components that were mostly expressed in densities and scored based on Dietary Guideline for Americans (DGA) standards. The use of HEI to assess diet quality has been studied to have good internal validity and could be used among the Indonesian population since the classification of the food components in the Indonesian Dietary Guidelines (IDG) and the DGA have resembled.⁶ Previous studies using HEI measures indicated that the tool was applicable to be used in low middle-income country settings.^{6,7}

Despite important aspects of diet quality and nutrition intake, it was reported that the prevalence of Indonesian elderly who did not practice balance diet recommendations before the pandemic was high around 65.8%.⁸ However, studies on diet quality during a pandemic situation in Indonesia were not yet known. Existing evidence conducted among adult samples in several countries during the lockdown period resulted that there was a tendency of changing dietary habits into healthy diet practices such as restricted eating, skipping meals, and overeating.⁹⁻¹¹ While unhealthy diets were proven to be higher during a pandemic, changes in the pattern among the elderly that live in urban areas were

still not yet known. As many of the urban cities in Indonesia have become an epicenter of the pandemic, the risk of an unhealthy diet among the elderly in this area should be addressed. In such conditions, the possibility of changes in dietary habits that affect poor diet quality among Indonesian elderly in an urban area might happen and impact serious health problems. In such conditions, the possibility of changes in dietary habits that affect poor diet quality among Indonesian elderly in urban areas might happen and impact serious health problems. Therefore, this study was done to obtain a depiction of the diet quality of the elderly in urban Jakarta during the COVID-19 pandemic in Indonesia.

METHODS

Subjects and study design

The study was conducted using a cross-sectional method among the elderly living in an urban area of Jakarta province the first epicenter of the pandemic in Indonesia. The elderly that came to the sub-district health center was selected to be participants since they were mandatory to have regular health check as part of the national insurance program. Cluster sampling designs were performed to select five sub-district health centers representing five municipalities including Tanjung Priok, Palmerah, Johar Baru, Matraman, and Jagakarsa. In each health center, the elderly were screened and at least 20 subjects were selected upon their visit from July to August 2020. Subject's recruitment was selected according to the following criteria: aged 60 years or above, female and male, residents of DKI Jakarta, capable to move independently, and able to follow study protocols. The minimum sample needed to estimate the mean HEI score in the population was 107 by considering $\alpha = 5\%$, estimated standard deviation = 7.4, estimation of error = 1.5, and added non-response rate of 10%.⁶ Therefore, a total of 126 elderly participated in the study were sufficient to be included in the study. A total of 126 elderly have participated in the study. All subjects that are interested in being involved in the study have signed a written informed consent before the start of the study. Ethical permission was approved by the Research Ethics Committee, Faculty of Medicine, Universitas Indonesia, and Dr. Cipto Mangunkusumo General Hospital No: KET-433/UN2.F1/ETIK/PPM.00.02/2020. This study also obtained additional permission from the Department of Health of Jakarta Province.

Data collection

During a pandemic situation, additional eligibility criteria to enter the health center were added including no symptoms of fever, headache, cough, short breath, and wearing a mask were mandatory. During data collection in the health center, the study was following health protocols as follows enumerators wear standard

health protective equipment and maintain a social distance of at least 1 meter.

Field enumerators were recruited according to their academic resumes and experiences in doing field research. Selected enumerators were trained to standardize the protocols on interview and assessment methods. Pre-testing of study protocols was conducted before data collection and adjustments were added to revise the interview flow of the final study protocols.

Dietary assessment

The diet quality of study participants was measured based on dietary intake from non-consecutive repeated 24-hour food recall based on intake during weekdays and weekends. The first dietary recall was assessed directly by the interview in the health care center and the second recall was followed up by phone. Subjects were shown the food photograph book to assist in remembering and estimating the portion consumed. Nutrisurvey version 2007 and Excel Office 2010 were used to evaluate the dietary intake analysis.

Diet quality scores were calculated based on the updated version of HEI 2015 with a food group component that was similar to the 2010 version except for empty calories that have been replaced by added sugars and saturated fats. There were nine components of adequacy and four components of moderation with the score ranging from 5 to 10 points in each component. A higher score of adequacy implied better intake of adherence to the guidelines while a higher score in moderation indicated lower intake in the food group components. The total score of 100 was summed to describe the highest diet quality score compare with the recommendation to the DGA. Categorizing scores for research analyses was not recommended to be conducted since it could lead to misinterpretation and diminishing of several useful information. This was due to variability and complexity in diet might affect this classification, especially scores at or near the cut points.¹²

Socio-demographic (SES) and general characteristics assessment

SES and general characteristics of subjects were measured by structured questionnaires to obtain data on age, gender, marital status, education, household income, and smoking status. The nutritional status of respondents was assessed using the Mini Nutritional Assessment – Short Form (MNA-SF). During anthropometric measurement, the height of the subjects was measured using ShorrBoard® and the body weight was measured using SECA weighing scale. We assessed five major chronic disease histories that are considered the highest contributors to the Non-Communicable Diseases (NCDs) related death in Indonesia including hypertension, diabetes mellitus, heart disease, lung disease, stroke, and cancer, and measured based on

previous medical checkups or medication of the diseases.¹³

Data on SES and the general characteristic of the subjects were presented as categorical variable distribution. Age of the subjects categorized as early and older elderly¹⁴ Gender was identified as either male or female based on the identification card of the subjects. Marital status is classified as currently married, widowed, or divorced based on the interview. Level of education categorized as elementary school or lower, high school graduate (junior or senior high school), and graduate from a vocational school or university degree. The income of subjects is classified based on the minimum wage of the provincial level and categorized as below minimum wage or at least minimum wage and higher.¹⁵ Subjects were also interviewed on the smoking status of any tobacco or vaping in the past year. Subjects that indicated having smoking activities in the past 12 months were classified as current smokers, those who have stopped at least one year were categorized as former smokers, and others as having never smoked.¹⁶ Nutritional status measured based on the MNA-SF and categorized as normal (12 – 14 points), at risk of malnutrition (8 – 11 points), and malnourished (0 – 7 points).¹⁷ While chronic disease history was distributed based on the disease of hypertension, diabetes mellitus, heart disease, lung disease, stroke, and cancer that presented in the frequencies and percentages.

Statistical analysis

Data analysis was conducted using SPSS Statistic ver. 20.0 (IBM Corporation, Armonk, NY, USA). Categorical variables were presented in frequencies and percentages. Data from continuous variables with normal distributions were presented as mean (standard deviation), while data that has non-normal distributions were shown as median (25th percentile – 75th percentile).

RESULTS

Subjects characteristics

The total subjects analyzed were 126 people with the majority were categorized as early elderly (mean age 65.7) (94.4%), female (57.1%), currently married (61.9%), graduated from high school (49.2%), and have a household income below minimum wage (88.9%). There were 9.5% of subjects that were currently smoking and 17.5% had a risk of malnutrition. The highest prevalence of chronic diseases was found to be hypertension (61.9%), followed by diabetes mellitus (29.4%), and heart disease (24.6%). The distribution of SES and general characteristics of the subjects were presented in **Table 1**.

Table 1. Sociodemographic and general characteristics of subjects

Variables	Total n (%)
Age	
Early elderly (60 – 75 years)	119 (94.4)
Older elderly (> 75 years)	7 (5.6)
Gender	
Male	54 (42.9)
Female	72 (57.1)
Marital status	
Married	78 (61.9)
Widowed	44 (34.9)
Divorced	4 (3.2)
Education	
Lower than elementary school	38 (30.2)
High school graduate	62 (49.2)
Graduate from a vocational school or university	26 (20.6)
Income (in million IDR)^a	
Minimum wage or higher	14 (11.1)
Below minimum wage	112 (88.9)
Smoking status	
Never smoke	103 (81.7)
Former smoker	12 (9.5)
Current smoker	11 (8.7)
Nutritional status	
Normal	103 (81.7)
At the risk of malnutrition	22 (17.5)
Malnourished	1 (0.8)
Chronic disease history	
Hypertension	78 (61.9)
Diabetes mellitus	37 (29.4)
Heart disease	31 (24.6)
Lung disease	12 (9.5)
Stroke	5 (4.0)
Cancer	5 (4.0)

^aProvincial minimum wage in Jakarta is IDR 4,267,000 (USD 300; currency level at USD 1=IDR 14,732)

^bBased on Mini Nutritional Assessment – Short Form (MNA-SF) score; normal (12 -14), at risk of malnutrition (8 – 11), malnourished (0 – 7)

Diet quality and nutritional status among the elderly were important factors that could affect health status both before and during a pandemic situation. The prevalence of malnutrition risk in the current study was 17.5% and similar to a study reported by Setiati et.al among outpatient elderly in 15 cities of Indonesia before the pandemic situation.¹⁸ Risk of malnutrition could indicate inadequate nutrition among the elderly and is often unrecognized. Having such risk could impact major problems such as the higher risk of lower cognitive performance and poor quality of life^{19,20}, thus it should be a priority consideration, especially for the elderly during a pandemic situation. In addition, the prevalence of hypertension and diabetes mellitus among subjects in the current study was high. The prevalence of hypertension in this study was similar compared with a national number from National Health Research (Riskesdas) 2018 where about 63.2% of elderly aged 65 – 74 years old have hypertension based on a doctor's diagnosis. While diabetes mellitus prevalence among subjects was higher compared to the national number (19.6%).²¹

It is important to note that majority of this study's subjects were categorized as early elderly. Therefore, having a high prevalence of chronic disease along with the risk of malnutrition could induce the occurrence of many health problems in the elderly's later life.

Diet quality profile

The Mean HEI score of the subjects was 46.1 and only 7.1% of subjects have HEI scores > 60. None of the subjects have HEI scores > 80. Most of the subjects (92.2%) have HEI scores lower than 60. Thus, the indication of poor diet quality was prevalent and underlying the need for its improvement. Based on the food group components, adequate intake of whole grains, dairy, as well as fatty acids was the lowest in both sexes. While the moderation of refined grains and saturated fats were the poorest among subjects. Female subjects showed slightly better scores in total fruit, whole fruit, total vegetables, greens, and beans, as well as refined grain intake. HEI food group distribution was summarized in **Table 2.**

Table 2. Healthy Eating Index (HEI) good group scores of study subjects

Variables	Max Score	Male (n = 54)	Female (n = 72)	Total (n = 126)
Total HEI 2015 score	100	46.2 ± 8.1	45.9 ± 8.8	46.1 ± 8.5
60 – 79% adherence		4 (7.4)	5 (6.9)	9 (7.1)
0 – 59% adherence		50 (92.6)	67 (93.1)	117 (92.9)
Food group components				
Adequacy				
Total fruit	5	1.9 (0 – 4.9)	2.1 (0 – 4.9)	2.1 (0 – 4.9)
Whole fruit	5	3.8 (0 – 5)	4.3 (0 – 5.0)	4.3 (0 – 5.0)
Total vegetable	5	3.2 ± 1.4	3.3 (2.1 – 4.8)	3.3 (2.1 – 5.0)
Green and beans	5	3.6 (1.6 – 5.0)	4.2 (1.7 – 5)	4.2 (1.7 – 5.0)
Whole grains	10	0 (0 – 0)	0 (0 – 0)	0 (0 – 0)
Dairy	10	0 (0 – 0.2)	0.1 (0 – 0.5)	0.1 (0 – 0.5)
Total protein foods	5	5.0 (4.9 – 5.0)	5.0 (4.9 – 5.0)	5.0 (4.9 – 5.0)
Seafood & plant protein	5	5.0 (5.0 – 5.0)	5.0 (5.0 – 5.0)	5.0 (5.0 – 5.0)
Fatty acids	10	0 (0 – 0)	0 (0 – 0)	0 (0 – 0)
Moderation				
Refined grains	10	1.1 (0 – 4.6)	1.3 (0 – 5.4)	1.3 (0 – 5.4)
Sodium	10	10.0 (10.0 – 10.0)	10.0 (10.0 – 10.0)	10.0 (10.0 – 10.0)
Added sugar	10	10.0 (8.9 – 10.0)	10.0 (9.7 – 10.0)	10.0 (9.7 – 10.0)
Saturated fats	10	0.1 (0 – 4.4)	0 (0 – 2.4)	0 (0 – 2.4)

^aData presented in mean ± SD; median (25th percentile – 75th percentile); or n (%)

A study using diet indices among the elderly in Indonesia was limited. One study measured balance diet practice among elderly living in South Tangerang city Indonesia. Before the pandemic, 65.8% of the subjects did not practice the recommendations, indicating the low diet profile among elderly subjects. Based on this study, a food group that was not being consumed regularly was vegetables, fiber, and high consumption of sugar, salt, and fat.⁸ By seeing the high prevalence of poor diet quality of more than 90% of subjects in the current study, it could be implied that this condition persisted during a pandemic situation. Although comparison data on diet quality during a pandemic situation in Indonesia were still unknown, currently available evidence among the US adult population showed around 30% of subjects reported having worse eating patterns and about 37% of others were not changing their diet during a pandemic situation.⁹ In addition, a study among Italian adults reported that better adherence to diet quality based on the Mediterranean score was higher among the 18 – 30 years age group compared to an elderly population.²² By these findings, the result indicated that the elderly population was facing a high risk to have poor diet quality during the pandemic situation.

Generally, better diet quality was reported to be associated with female sex, better education, access to

medical services, history of disease and medications, higher income, age, non-smoker, and good nutritional status.^{23–25} Better diet quality in females were associated with the tendency of higher attention to health concern and better intake in fruit and vegetable group.²⁴ Although general diet quality scores were low, the current study reported that subjects had good moderation scores in sugar and salt intake. The possible explanation might be contributed by pre-existing diseases condition such as hypertension and diabetes mellitus that were associated with the changing in dietary behavior such as limitation in sugar and salt intake to control the diseases.^{23,25} In addition, cross-cultural factors such as food beliefs and traditional food culture should also be considered. Common characteristics of Indonesian traditional cuisine in using rice as a staple food and coconut milk as food ingredients could explain the high intake of refined grains and saturated fats in the diet.¹⁸

We investigated the difference in HEI food group components between better and lower adherence groups. The result showed that among the lower adherence group, adequacy to total fruit, whole grains, and dairy was the poorest. While moderation scores were found to be poor in refined grains and saturated fats intake. The distribution of different HEI food group components between groups was summarized in **Table 3**.

Table 3. Distribution HEI food group scores based on adherence percentage

Variables	Max Score	60 – 79% adherence (n = 9)	0 – 59% adherence (n = 117)
Total HEI 2015 score	100	65.5 ± 3.7	44.5 ± 6.6
Adequacy	60	32.3 ± 4.3	21.6 ± 5.4
Moderation	40	33.1 ± 3.1	23.1 (20.0 – 25.4)
Food group components			
Adequacy			
Total fruit	5	5.0 (0.9 – 5.0)	1.9 (0.0 – 4.7)
Whole fruit	5	5.0 (1.8 – 5.0)	3.8 (0.0 – 5.0)
Total vegetable	5	4.6 (3.6 – 5.0)	3.0 (2.0 – 4.5)

Variables	Max Score	60 – 79% adherence (n = 9)	0 – 59% adherence (n = 117)
Green and beans	5	5.0 (1.7 – 5.0)	3.9 (1.6 – 5.0)
Whole grains	10	1.4 (0.9 – 6.0)	0.0 (0 – 0)
Dairy	10	0.1 (0.0 – 10.0)	0.0 (0.0 – 0.3)
Total protein foods	5	5.0 (4.5 – 5.0)	5.0 (4.9 – 5.0)
Seafood & plant protein	5	5.0 (3.3 – 5.0)	5.0 (5.0 – 5.0)
Fatty acids	10	0.0 (0.0 – 0.0)	0.1 (0 – 0)
Moderation			
Refined grains	10	9.3 (1.5 – 5.0)	1.0 (0.0 – 4.8)
Sodium	10	10.0 (10.0 – 10.0)	10.0 (10.0 – 10.0)
Added sugar	10	10.0 (9.8 – 10.0)	10.0 (9.1 – 10.0)
Saturated fats	10	7.0 ± 3.2	0.0 (0.0 – 2.4)

^aData presented in mean ± SD or median (25th percentile – 75th percentile)

A study on fruit and vegetable intake among outpatient elderly in Indonesia before the pandemic showed that the mean score of those group intake was 162.2 g/day and 107.4 g/day respectively.¹⁸ These amounts were not achieving recommended intake for the Indonesian elderly in those food group components²⁶, indicating that poor intake also occurred during the pandemic, especially for fruit intake. Similar findings reported by Xu et.al during lockdown among Chinese mainland adults that showed infrequent (< 5 times/week) fruit and vegetable consumption were found among 30% and 60% of the subjects respectively. It was expected that intake of fresh fruit such as fruit and vegetables might be reduced during quarantine contributed to difficulties in finding open grocery stores in the neighborhood.¹¹ On the other hand, moderation of refined grains and saturated fats intake in this study showed excess intake than the recommendation. The high intake of refined grains but low in whole grains and dairy were highly explained by cultural considerations where the majority of the population uses rice as a staple food and coconut milk as ingredients in Indonesian cuisine rather than consuming whole grains and milk that are commonly found in the healthy western diet.¹⁸ While high intake of saturated fats was similarly reported by Purba et.al among urban elderly in Jakarta and Semarang city before the pandemic. It resulted from the use of cooking oils as a common ingredient in Indonesian traditional cooking methods to enhance the flavor of many foods such as vegetables and soy products like tempeh and tofu.²⁷ During a pandemic situation, such dietary patterns that are closely related to socio-cultural factors were reported to most likely remained consistent over time, especially in older adults.¹⁰

Despite lower intake in several food groups, intake of protein among subjects in this study showed a maximum score, indicating good adherence to the recommendation. Similar findings were reported among urban elderly in Indonesia before a pandemic where the majority of 53% of the elderly have higher protein intake than the Recommended Dietary Allowance (RDA).¹⁸ Purba et.al reported that the contribution of plant protein sources food especially traditional soy products such as tempeh and tofu was an important factor in the high intake of protein sources.²⁷ Study during a pandemic lockdown in Italian adults reported that intake of protein was more likely to be stable in such conditions rather than other macronutrients.¹¹ This condition should be

maintained especially during pandemic situations since the high intake of protein among the elderly were essentials due to its role as the component that builds immune cell structure and optimizes health outcomes in the older individual.^{28,29}

The strength of this study was among the first to the report profile of diet quality and healthy aging among the urban elderly population in Jakarta during the COVID-19 pandemic. Diet quality indices were measured based on established indicators, thus comparison among studies could be conducted in the future. In addition, this study was conducted using validated assessment tools and data collection procedures were validated to ensure data quality administration. However, several limitations were needed to be considered. First, using health facility-based as a study sampling frame could be influenced by a high prevalence of diseases among subjects, since those who were coming to health facility would represent the tendency of those having more health concerns. In addition, dietary intake in this study was assessed using 24-h recall, thus it might lead to underreporting of food intake due to recall bias.

CONCLUSION

Poor diet quality was found among the elderly in urban Jakarta during the pandemic of COVID-19 in Indonesia. The Mean HEI score of the subjects was 46.1 and 92.9% of subjects had HEI scores lower than 60. The poor adherence was found especially in intake of total fruit, whole grains, and dairy, while excess intake than the recommendation was found in refined grains and saturated fats groups. This study pointed out the importance of nutrition and dietary intake improvement for the urban elderly during a pandemic in Indonesia. Further investigation in larger populations on diet quality and its associated factors is required to be done in future studies.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

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