

5-30-2025

Social Eating Role in Ultra-Processed Food Consumption Among Urban Young Adults: The 2018 Indonesian Food Barometer

Imas Arumsari

Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, imasarumsari@uhamka.ac.id

Nabilla Ayusyah Putri

Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, nabilaayusyah@gmail.com

Siti Nur Lulu Lathifah

Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, sitinurlululathifahh@gmail.com

Gita Aisyah Astrid Rosalba

Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, gitaisyahar@gmail.com

Helda Khusun

Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, hkhusun@gmail.com

See next page for additional authors

Follow this and additional works at: <https://scholarhub.ui.ac.id/kesmas>



Part of the [Nutrition Commons](#), and the [Public Health Education and Promotion Commons](#)

Recommended Citation

Arumsari I , Putri NA , Lathifah SN , et al. Social Eating Role in Ultra-Processed Food Consumption Among Urban Young Adults: The 2018 Indonesian Food Barometer. *Kesmas*. 2025; 20(2): 87-94

DOI: 10.7454/kesmas.v20i2.2134

Available at: <https://scholarhub.ui.ac.id/kesmas/vol20/iss2/1>

This Original Article is brought to you for free and open access by the Faculty of Public Health at UI Scholars Hub. It has been accepted for inclusion in Kesmas by an authorized editor of UI Scholars Hub.

Social Eating Role in Ultra-Processed Food Consumption Among Urban Young Adults: The 2018 Indonesian Food Barometer

Authors

Imas Arumsari, Nabilla Ayusyah Putri, Siti Nur Lulu Lathifah, Gita Aisyah Astrid Rosalba, Helda Khusun, Judhiastuty Februhartanty, and Rahmatika Nur Aini

Social Eating Role in Ultra-Processed Food Consumption Among Urban Young Adults: The 2018 Indonesian Food Barometer

Imas Arumsari^{1*}, Nabilla Ayusyah Putri¹, Siti Nur Lulu Lathifah¹, Gita Aisyah Astrid Rosalba¹, Helda Khusun^{1,2},
Judhiastuty Februhartanty^{2,3}, Rahmatika Nur Aini¹

¹Faculty of Health Sciences, Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, Indonesia

²Southeast Asian Ministers of Education Organization Regional Center for Food and Nutrition (SEAMEO RECFON), Jakarta, Indonesia

³Department of Nutrition, Faculty of Medicine, Universitas Indonesia, Jakarta, Indonesia

Abstract

This study investigated the differences in ultra-processed food (UPF), fruit, vegetable, and total fat consumption in different aspects of social eating among urban young adults. This cross-sectional study used the 2018 Indonesian Food Barometer dataset with 180 participants aged 18–25 years living in urban areas from 6 provinces in Indonesia. The data on social eating (cooking habits, eating out, and eating alone), UPF, fruits, and vegetables were obtained from an extended 24-hour food recall interview. The Mann-Whitney U test (CI 95%) was employed for data analysis. This study found that groups with less frequent cooking habits tended to have more total energy intake, fat intake, and total energy from UPF (p-value <0.05). The more frequent eating out habit was related to the lower vegetable intake (p-value <0.05). This study provided relevant evidence to better understand the social and behavioral aspects of eating and its implications for public health nutrition. Extensive studies are needed to analyze the nutritional profile of frequently consumed UPF in Indonesia to provide insight into the condition of the food environment, thus relevant as a basis for policy limiting sugar, fat, and salt intake.

Keywords: social eating, urban, ultra-processed food, young adult

Introduction

Prior literature suggests that urbanization is linked to the increasing burden of noncommunicable diseases (NCDs). The urbanization and metabolic syndrome trend has been a particular concern in low- and middle-income countries.¹ A 2023 longitudinal study in Indonesia showed a trend toward an unhealthy diet aligned with the rate of urbanization. Growing urbanization correlates with a rise in food intake associated with NCDs and healthy diets; however, the significant non-linear finding is that only people living in the most urbanized areas consumed certain meals connected to an increased risk of NCDs.² Another finding showed that rural residents who move to an urban location may have worse metabolic health alterations due to urban lifestyle adoption. An increase in poor diet quality is the cause of the rising body mass index of rural people living in urbanized nations.³

Urbanization is also associated with higher consumption of ultra-processed food (UPF), the formulation of which, according to the NOVA classification system (food grouping based on the extent and purpose of industrial food processing) is mostly derived from a series of industrial processes, including adding food additives.^{4,5} This was prompted by the fact that urban regions are often the first to undergo swift modernization in food systems, characterized by the greater availability of UPF.^{4,6} Consumption of UPF is inversely related to fruit and vegetable consumption, whereas a positive association was found between UPF consumption and foods high in fat and sugar.⁷ Evidence suggests another interesting perspective on the health benefits of fruit and vegetable consumption in preventing NCDs amidst the modernization of food systems. It might help mitigate the impact of UPF on metabolic syndrome.⁸ However, there is a consistent link between the rise in UPF consumption and a decline in overall diet quality.⁹ Therefore, it is important to view UPF as not only an individual component of an unhealthy diet but also a factor that shapes the overall quality of the diet.

Correspondence*: Imas Arumsari, Faculty of Health Sciences, Universitas Muhammadiyah Prof. DR. HAMKA, Jakarta, Indonesia, Email: imasarumsari@uhamka.ac.id

Received : September 26, 2024

Accepted : May 2, 2025

Published: May 30, 2025

Social eating, defined as food consumption in the presence of family, peers, or during communal events, has been shown to influence dietary choices through peer influences and food-sharing habits. Social eating also defines norms for certain food choices.¹⁰ Social life is closely linked to the quality of diet, food choice, and eating patterns. Eating is not only a means of sustenance but also a universal human experience. Meals are frequently shared with family, friends, or coworkers in many cultures worldwide, transforming them into occasions for celebration, connection, and bonding. In addition to making food more enjoyable, these social interactions affect what, when, and how much we eat. Hence, social factors, such as eating companions, interaction during eating, cooking habits, and eating out, significantly impact eating behavior and overall diet quality, highlighting the importance of considering the social context when promoting healthy eating habit.¹¹

There is substantial evidence that people genuinely enjoy eating with others and find social eating both inherently pleasure and uplifting. However, some individuals prefer to eat alone because it is more relaxing, less stressful, and offers greater control over their eating.^{11,12} People who often eat foods prepared outside of home have higher daily intakes of energy, total fats, and sodium. Additionally, studies have consistently shown that eating out is detrimental to the diet quality of men and young adults.¹³ With data from the 2018 Indonesian Food Barometer (IFB), this study analyzed the differences in UPF, fruit, vegetable, and total fat consumption in different aspects of social eating among urban young adults. This study will provide evidence on how the social eating context, particularly how the food was prepared (cooked or purchased outside home), where the food was consumed (eaten at home or eating in and eaten away from home or eating out), and who the participants were eating with (alone or with companion) could shape the frequency of UPF, fruit, and vegetable consumption.

Method

This cross-sectional study used a dataset from the latest data from the IFB collected in 2018. The Food Barometer is a survey that aims to analyze the transformation of food habits and patterns. The IFB is a part of the Asian Food Barometer that aims to provide evidence on the relationship of social, cultural, and nutritional determinants of nutritional transition for making contextually relevant recommendations on the nutritional status of the population in Indonesia.¹⁴

This study systematically sampled provinces, urban areas, villages, hamlets, and individuals. First, the sampling focused on the most populous provinces, mostly located on Java Island. For this study, one urban district was chosen within each province, which was also likely to be the provincial capital city. The selected urban cities were Jakarta, Bandung, Surabaya, Denpasar, Padang, and Makassar. A cluster was referred to as a village, consisting of approximately 400–550 households. The survey team visited selected households and listed household members aged 18–45 years. An eligible respondent from a household was then selected at random. Subject selection was applied using multistage random sampling using the proportionate-to-population-size cluster method. A total of 180 participants aged 18–25 years living in urban areas chosen by the IFB from the most populous provinces were included in this study.

Sex, age, occupation, education, and wealth index were observed in this study. Sex differed as male and female, age was presented as mean±SD, occupation was classified based on type of employment, and wealth status was classified based on the ownership of household assets. The type of employment consisted of professional (people with specialized education or training, often in fields like law, medicine, engineering, and finance), white-collar (office-based or administrative jobs, often involving clerical work rather than physical labor), blue-collar (manual labor or skilled trades, often involved physical work), and student/unemployed (either currently enrolled in education or is seeking employment). The wealth index differed by tertile based on the ownership of household assets, such as a water source, the place for defecation, fuel for cooking, floor material, roof material, wall material, and other electronic and vehicle assets.

Social eating aspects were observed in the IFB as part of the socialization process of eating. This study observed three aspects: cooking practice, eating out, and eating alone. The pattern of eating out was calculated using the percentage frequency count based on the 24-hour dietary recalls, where the location for food preparation and food consumption was probed. The calculation steps were as follows: First, for each eating occasion, how the food was prepared (cooked or purchased outside home), where the food was consumed (eaten at home or eating in and eaten away from home or eating out), and who they were eating with (alone or with companion) were identified. Second, the frequency count for each respondent was summed up from the total number of eating occasions and presented as a percentage. The percentage for each aspect (cooking habit, eating out, and eating alone) was then categorized into

“frequent” (>66.7%) and “less frequent” (≤66.7%).¹⁵

Total fat, UPF, fruit, and vegetable intakes per day were obtained from the interview using an extended 24-hour food recall. The UPF is defined as the formulation of ingredients, mostly of exclusive industrial use, typically created by a series of industrial techniques and processes.⁵ In this study, the consumption of UPF was determined according to the NOVA classification system. Food classified as UPF in this study were ready-to-consume products (carbonated soft drinks, sweet or savory packaged snacks, chocolate and candies (confectionery), ice cream, mass-produced packaged bread and buns, margarines and other spread, cookies and biscuits, pastries, cakes, and cake mixes, cereals, energy bars, energy drinks, milk drink, fruit yogurts, fruit drinks, cocoa drinks, instant sauces); pre-prepared ready-to-heat products (nuggets, sausages, burgers, noodles, desserts); and infant formulas.¹⁶

Food intake data were presented as total energy from UPF/day (kcal), total fruit consumption/day (g), total vegetable consumption/day (g), and total fat consumption/day (g). The frequency distribution of macronutrient, fruit, and vegetable intake was compared to the Recommended Daily Allowance (RDA) for the Indonesian population and was presented in categories: <80% RDA, 80%–100% RDA, and >100% RDA. The frequency distribution of UPF was presented based on food items according to the NOVA classification system: bread, cereals, processed meat, dairy products, drinks, sauce and seasoning, snacks, fast food, and confectionery.

The characteristics of the participants in this study were presented using frequencies with percentage (n, %) for categorical variables and mean with standard deviation (mean±SD) for continuous variables. The median and interquartile range (IQR) were presented for not normally distributed data. The independent t-test and Mann–Whitney U test were used to determine the association between continuous variables (CI 95%). The Kolmogorov–Smirnov test was used to determine the normality of the dataset. The normal assumption was set when it met the p-value of <0.05. Statistical analysis was conducted using IBM SPSS Statistics Version 29 (license number c10d5d881901674c0f46).

Results

The participants' sociodemographic characteristics are presented in Table 1. There were more male (60.6%) than female (39.4%) participants. The mean age was 21.4±2.01 years. The participants mostly worked as white-collar workers (38.9%), followed by students/unemployed (16.7%). Most participants completed the secondary level of education (82.2%), followed by the tertiary level (14.5%). Most subjects were in the highest tertile of the wealth index (38.9%).

The median intakes of energy, protein, fat, and carbohydrates were 1669.2 (742.5) kcal, 56.2 (31.3) g, 62.0 (45.3) g, and 202.3 (115.3) g, respectively. The energy intake from the UPF was 342.5 (535.4) kcal, which contributed to 22.8% of the total energy intake. It was found that subjects had poorer consumption of fruit (median, 0 (0) g) and vegetables (median, 30 (100) g). Table 1 also lists the distribution of social eating aspects. Most subjects (76.1%) were less frequent to cook, less frequent to eat out (90%), but mostly frequent to eat alone (53%).

Figure 1 presents the distribution of subjects meeting the recommendations according to the Indonesian Dietary Guideline.¹⁷ The results showed that although most participants did not meet the dietary recommendation for total energy intake, fat and protein consumption tended to be excessive. This condition indicated that the diet mainly consisted of fat and protein. The consumption of fruit and vegetables was mostly insufficient. As previously mentioned in Table 1, UPF contributed 22.8% of the total energy intake. Figure 2 shows that the most frequently consumed UPFs in this study were bread (20.3%), followed by cereals (16.2%) and processed meat (15.3%).

Table 1. Participants' Sociodemographic, Food Intake, and Social Eating Characteristics

Characteristics	Category	Frequency (n)	Percentage (%)
Sex	Male	109	60.6
	Female	71	39.4
Age (years)	-		21.41±2.01*
	Professional	4	2.2
Occupation	White-collar	70	38.9
	Blue-collar	29	16.1
	Student/unemployed	30	16.7
	Housewife	47	26.1
Education	Primary (Elementary)	6	3.3
	Secondary (Junior High, Senior High)	148	82.2
	Tertiary (Diploma/bachelor's degree)	26	14.5
Wealth index	Tertile 1	47	26.1
	Tertile 2	63	35
	Tertile 3	70	38.9
Macronutrient intake	Energy (kcal)		1669.2 (742.5) [‡]
	Protein (g)		56.2 (31.3) [‡]
	Fat (g)		62.0 (45.3) [‡]
	Carbohydrate (g)		202.3 (115.3) [‡]
Energy from the UPF (kcal)	-		342.5 (535.4) [‡]
	Contribution of energy intake from UPFs (%)		22.8 (31.62) [‡]
Fruit intake (g)	-		0 (0) [‡]
	Vegetable intake (g)		30 (100) [‡]
Cooking habit	Frequent	43	23.9
	Less frequent	137	76.1
Eating out	Frequent	18	10
	Less frequent	162	90
Eating alone	Frequent	95	53
	Less frequent	85	47

*Mean±SD – SD = standard deviation
‡Median (IQR) – IQR = interquartile range
UPF = ultra-processed food

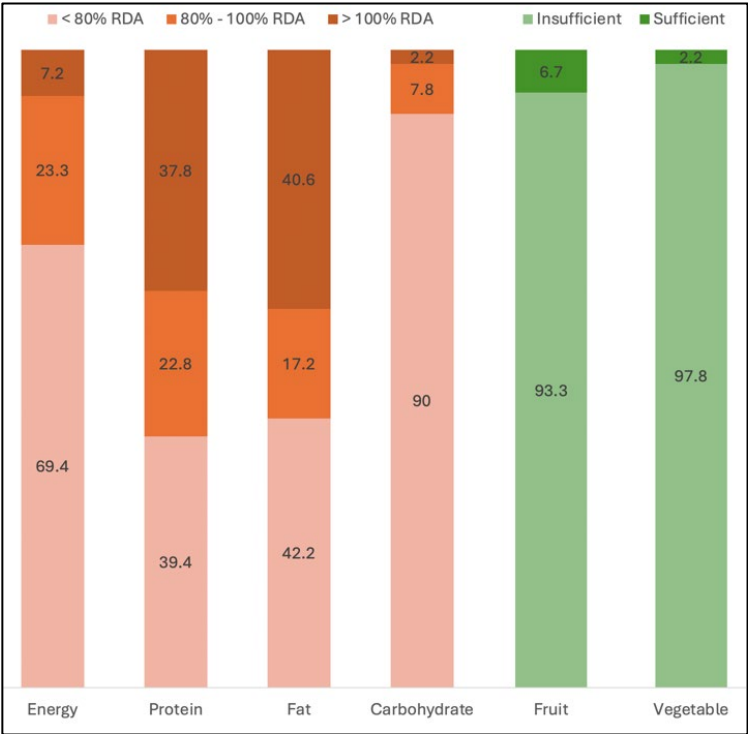


Figure 1. Frequency Distribution of Macronutrient, Fruit, and Vegetable Intake Compared to Recommendations¹⁷

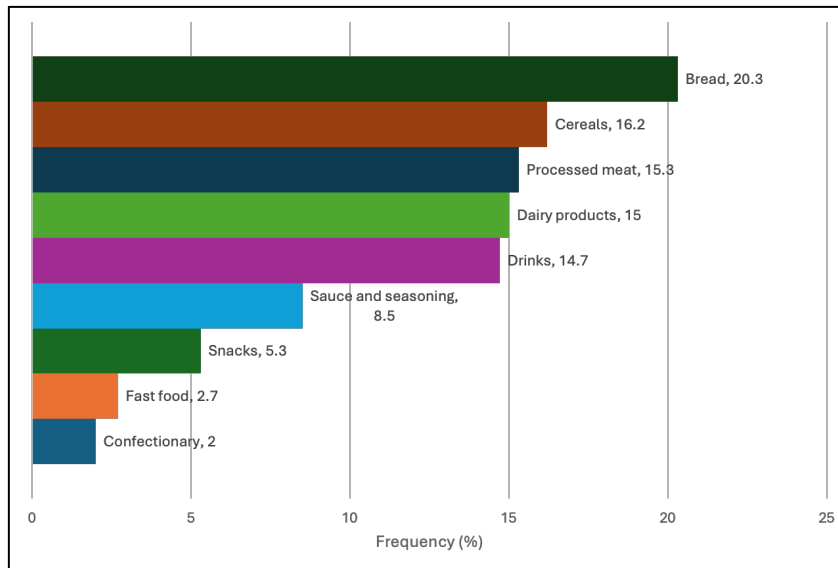


Figure 2. The Most Frequently Consumed Ultra-Processed Foods

Table 2 shows that fruit intake was not significantly different across social eating aspects. There was a slightly different trend of fruit consumption in the eating out aspect, as seen in the IQR value, suggesting that those who ate out more frequently tended to have more fruit consumption. The fruit consumption trend was similar to that of vegetable consumption. Vegetable consumption seems to be associated with eating out and eating alone. More vegetable consumption was found among those who frequently ate out and those who ate alone.

The total energy intake was different among different cooking habits. Those who were less frequent when cooking tended to have more energy intake than those who cooked more frequently. This finding was consistent with the total fat intake, which showed a similar trend. Moreover, this result was supported by the trend of UPF consumption, demonstrating that those who were less frequent to cook tended to have almost three times higher median UPF consumption. The total energy intake also tended to be higher among those who were less frequently able to eat alone. This finding was aligned with total fat and vegetable intake, which showed increased trends among those eating alone less frequently.

Table 2. Median Intake of Total Fat, Vegetables, Fruits, and Energy from Ultra-Processed Food Based on the Respective Social Eating Aspects

	Cooking habit			Eating out			Eating alone		
	Frequent	Less frequent	p-value	Frequent	Less frequent	p-value	Frequent	Less frequent	p-value
Total energy intake (kcal)	1,464.5 (918.2)	1,712.1 (768.8)	0.039	1,636 (402)	1,669.2 (837.6)	0.657	1,542 (811.8)	1,753.5 (783.8)	0.105
Total fat intake (g)	47 (39.4)	67.7 (49.9)	0.001	65.9 (23.9)	61.9 (48.3)	0.280	55.9 (44.7)	69.4 (48.3)	0.011
Fruit intake (g)	0 (0)	0 (0)	0.453	0 (103)	0 (0)	0.149	0 (0)	0 (0)	0.310
Vegetable intake (g)	30 (110)	30 (100)	0.575	1,27.5 (150)	30 (83)	0.033	20 (80)	45 (115)	0.011
Energy from the UPF (kcal)	140.1 (421.5)	411.2 (548)	0.002	422.8 (512.7)	336.35 (547.3)	0.973	287.4 (514.9)	402.9 (563.7)	0.671

Notes: data are presented as median (IQR). The difference between the two groups was analyzed using the Mann-Whitney U test (CI: 95%)

Discussion

The IFB data collected in 2018 across six different provinces in Indonesia were used for analysis in this study. Food consumption data were collected from the population aged 18–25 years living in an urban area. To the best of the authors' knowledge, this study is the first to observe the social eating aspect affecting UPF consumption among urban young adults according to IFB data. A previous study using the same secondary data was conducted to identify the quality of breakfast in terms of macronutrient and micronutrient content¹⁸ and the sociodemographic effect on social eating among adults.¹⁵

This study found that the total energy intake of the participants mostly did not meet the national recommendations based on specific age and sex. However, the consumption of fat and protein was more likely to be excessive for each macronutrient. These results implied that it is important to look beyond nutrient quantity. Apart from macronutrient

intake, fruit and vegetable intake tended to be insufficient compared with the national recommendation, 250 grams of vegetables and 150 grams of fruit. Therefore, this study emphasized the importance of consuming a balanced diet among the urban young adult population. This study supported a previous study's findings about food insecurity among young adults that raised an issue on diet quality, particularly the low intake of dietary fiber sources, and high intake of sugar and fat.¹⁹

According to the type of UPF, the most frequently consumed UPF in urban young adult was bread, followed by cereals, and processed meat. This result captures the type of available UPF in the surrounding food environment which affected the food choice, though, it needs further studies to investigate the motivation in choosing those UPFs. Previous evidence explained the role of food environment, which affect the desirability, convenience and affordability, and availability in choosing certain food.²⁰ The profile of UPF products consumed is also depends on the region and culture. A study conducted in Europe demonstrated that the products contributing most to UPF were processed meat, cakes, pies, and pastries.²¹ In India, categories of UPF preferred were bread, chips, and sugary drinks.²²

This study also found that UPF contributed to a remarkable amount of total energy intake during the day. Previous studies highlighted a similar amount of the contribution of UPF consumption to total energy intake in adults, such as one-third of total calories in Brazil,²³ 29.8% in Mexico,²⁴ 23.8% in Portugal,⁴ and 46% in Canada.²⁵ Numerous findings support the theory that UPF can be used to define overall diet quality.^{5,9} This study revealed that the most consumed UPF products in Indonesia were bread, cereals, dairy products, and processed meat. These food sources contributed to a significant amount of fat. UPF consumption is linked to obesity. The possible mechanism is that UPF consumption tends to shape a diet low in fiber and high in sugar and fat.²⁶

This study highlighted that different social eating aspects, including cooking habits, eating out, and eating alone, can potentially influence the consumption patterns of urban young adults aged 18–25 years. Less frequent cooking habits were associated with higher total energy intake, total fat intake, and the contribution of UPF energy intake. These results were in line with the previous report in 2020, which demonstrated that frequent cooking is associated with a higher healthy eating index.²⁷ Cooking at home more often is linked to higher scores of total fruit consumption,²⁸ which was not confirmed in this study.

In addition, the previous study²⁸ findings supported the positive correlation between cooking and diet quality, which is related to higher socioeconomic status. Adjusted socioeconomic status and sex in the study population are needed to confirm the theory. Beyond cooking practices, several works have gone deep into the concept of food agency, which is made of cooking self-efficacy, food, and cooking-related attitudes and structural barriers. Food agency was found to be associated with frequent cooking, less frequent use of packaged foods, and healthier dietary intake.²⁸ Regarding sex, the association between cooking skill and unhealthy diet was found to be more pronounced in males in the older population.²⁹

This study found that eating out was not significantly associated with energy, fat, and UPF consumption. However, it was associated with a higher intake of vegetables. A previous study demonstrated a similar result, showing that eating out was weakly associated with total energy intake.³⁰ However, this study tended to yield different findings compared with the trend of previous studies explaining that eating out is associated with lower vegetable intake.^{30,31} A previous study explained that the higher consumption of vegetables when eating out is related to the possibility that there are more vegetable options in the food environment outside of home, such as convenience vegetable products in the market that giving more option for vegetarian.³² It can also be explained that it is related to peer influence.³³

This study revealed that eating alone was associated with fat and vegetable intake. These findings suggested that eating together might decrease fat intake, whereas eating alone might increase vegetable intake. A previous study demonstrated that sex and age play an important role in defining the association between eating alone and diet quality.³⁴ Commensality, or eating together, is a fundamental human social activity that spans all cultures and eras. Rapid social change has altered the environments in which people eat together, leading to a decline in commensality, which is now a growing concern in modern societies.³⁴ Eating alone is also related to reduced appetite, leading to a lower energy intake.³⁵ Eating alone is also related to age; younger generations frequently eat alone. A study found that the group that ate a healthy meal was found to have less frequency of eating alone.³⁶

This study is the first to explore the role of social eating on UPF consumption among Indonesian urban young adults. The IFB report focused on exploring the nutrition transition, particularly in a social context. The present secondary data analysis focuses on a specific population: young adults (18–25 years) living in an urban setting. Given the evidence previously mentioned that urbanization leads to a shift in food consumption patterns that increases fat, sugary

beverages, UPF, and sedentaryism, this study is important to enrich the knowledge on the role of social eating among urban young adults. However, this study did not provide information about the overall dietary quality and analysis of the quantity of sugar, fat, and salt from the UPF consumed by urban young adults. Future studies are needed to analyze the nutritional profile of frequently consumed UPF in Indonesia to provide insight into the condition of the food environment, thus relevant as a basis for policy limiting sugar, fat, and salt intake.

Conclusion

The UPF consumption is observed more frequently in individuals who are less likely to cook. Moreover, less frequent cooking habits are also found in those with higher energy and fat intake. Vegetable consumption is associated with eating out. Total fat and vegetable consumption is associated with the habit of eating alone. However, the causal relationship cannot be determined from the study design. This study provides further evidence to the field by exploring the role of social eating and the growing trend of unhealthy diets among young adults. Further study is needed to confirm the role of age and sex in shaping the influence of social eating aspects on dietary habits. Extensive studies with a longitudinal design are needed to confirm the possible strategies to prevent UPF consumption in the context of social eating.

Abbreviations

NCDs: noncommunicable diseases; UPF: ultra-processed Food; IFB: Indonesian Food Barometer; RDA: recommended daily allowance; SD: standard deviation; CI: confidence interval; IQR: interquartile range.

Ethics Approval and Consent to Participate

The IFB obtained ethical clearance from the Human Ethical Committee of the Faculty of Medicine, Universitas Indonesia (reference number 927/UN2.F1/ETIK/2017). Ethical approval to research this secondary data was based on an ethical approval letter from the Ethical Committee for Health Research, Universitas Islam Negeri Syarif Hidayatullah Jakarta (Un.01/F.10/KP.01.1/KE.SP/04.08.060/2024).

Competing Interest

The authors declare no conflict of interest.

Availability of Data and Materials

All data and related materials from this study are available from the first author.

Authors' Contribution

Conceptualization: IA and RNA; methodology: IA and HK; data collection: HK and JF; data analysis: JF, NAP, SNL, and GAA; writing, review, and editing: IA, HK, and JF.

Acknowledgment

The publication of this study is made possible by publication grant from SEAMEO RECFON. The 2018 Indonesian Food Barometer Data was provided by SEAMEO RECFON.

References

1. Nsabimana P, Sombié OO, Pauwels NS, et al. Association between urbanization and metabolic syndrome in low- and middle-income countries: A systematic review and meta-analysis. *Nutr Metabol Cardiovasc Dis.* 2024; 34 (2): 235-250. DOI: 10.1016/j.numecd.2023.07.040.
2. Colozza D, Wang Y-C, Avendano M. Does urbanisation lead to unhealthy diets? Longitudinal evidence from Indonesia. *Health Place.* 2023; 83: 103091. DOI: 10.1016/j.healthplace.2023.103091.
3. Kurniawan F, Manurung MD, Harbuwono DS, et al. Urbanization and unfavorable changes in metabolic profiles: A prospective cohort study of Indonesian young adults. *Nutr.* 2022; 14 (16): 3326. DOI: 10.3390/nu14163326.
4. Popkin BM, Corvalan C, Grummer-Strawn LM. Dynamics of the double burden of malnutrition and the changing nutrition reality. *Lancet.* 2020; 395 (10217): 65-74. DOI: 10.1016/S0140-6736(19)32497-3.
5. Monteiro CA, Cannon G, Lawrence M, et al. Ultra-processed foods, diet quality, and health using the NOVA classification system. Rome: Food and Agriculture Organization of the United Nations; 2019.
6. Baker P, Machado P, Santos T, et al. Ultra-processed foods and the nutrition transition: Global, regional and national trends, food systems transformations and political economy drivers. *Obes Rev.* 2020; 21 (12): e13126. DOI: 10.1111/obr.13126.
7. Zapata ME, Cediell G, Arrieta E, et al. Ultra-processed foods consumption and diet quality among preschool children and women of reproductive age from Argentina. *Public Health Nutr.* 2023; 26 (11): 2304-2313. DOI: 10.1017/S1368980022002543.
8. Hosseinpour-Niazi S, Malmir H, Mirmiran P, et al. Fruit and vegetable intake modifies the association between ultra-processed food and metabolic syndrome. *Nutr Metabol.* 2024; 21: 58. DOI: 10.1186/s12986-024-00831-x.
9. Martini D, Godos J, Bonaccio M, et al. Ultra-processed foods and nutritional dietary profile: A meta-analysis of nationally representative samples. *Nutr.* 2021; 13 (10): 3390. DOI: 10.3390/nu13103390.
10. Moojen R, Gillebaart M, de Ridder D. Correcting the misperceived social eating norm to dispel pluralistic ignorance and increase sustainable food choices: A field study. *European J Health Commun.* 2024; 5 (4): 77-93. DOI: 10.47368/ejhc.2024.404.

11. Cruwys T, Bevelander KE, Hermans RCJ. Social modeling of eating: A review of when and why social influence affects food intake and choice. *Appet.* 2015; 86: 3-18. DOI: 10.1016/j.appet.2014.08.035.
12. Herman CP, Polivy J, Pliner P, et al. Effects of social eating. In: *Social Influence on Eating*. Cham: Springer; 2019. DOI: 10.1007/978-3-030-28817-4_13.
13. Wellard-Cole L, Davies A, Allman-Farinelli, M. Contribution of foods prepared away from home to intakes of energy and nutrients of public health concern in adults: A systematic review. *Critic rev food sci nutr.* 2022; 62 (20): 5511-5522. DOI: 10.1080/10408398.2021.1887075.
14. Khusun H, Febrihartanty J, Mognard E, et al. Indonesian Food Barometer: Food, cultures, and health. Jakarta: SEAMEO RECFON; 2022.
15. Febriana NL, Febrihartanty J, Hanisa N, et al. Eating Behavior of Indonesian Adults Differs by Metropolization Levels based on the 2018 Indonesian Food Barometer. *Med Gizi Indonesia Nat Nutr J.* 2024; 19 (1): 1-10. DOI: 10.20473/mgi.v19i1.1-10.
16. Monteiro CA, Cannon G, Moubarac J-C, et al. The UN decade of nutrition, the NOVA food classification and the trouble with ultra-processing. *Public Health Nutr.* 2018; 21 (1): 5-17. DOI: 10.1017/S1368980017000234.
17. Kementerian Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 28 Tahun 2019 Tentang Angka Kecukupan Gizi yang Dianjurkan untuk Masyarakat Indonesia. Jakarta: Kementerian Kesehatan Republik Indonesia; 2019.
18. Khusun H, Anggraini R, Febrihartanty J, et al. Breakfast consumption and quality of macro-and micronutrient intake in Indonesia: A study from the Indonesian food barometer. *Nutr.* 2023; 15 (17): 3792. DOI: 10.3390/nu15173792.
19. Larson N, Laska MN, Neumark-Sztainer D. Food insecurity, diet quality, home food availability, and health risk behaviors among emerging adults: Findings from the EAT 2010–2018 study. *Am J Public Health.* 2020; 110 (9): 1422-1428. DOI: 10.2105/AJPH.2020.305783.
20. Neufeld LM, Andrade EB, Suleiman AB, et al. Food choice in transition: Adolescent autonomy, agency, and the food environment. *Lancet.* 2022; 399 (10320): 185-197. DOI: 10.1016/S0140-6736(21)01687-1.
21. Vandevijvere S, De Ridder K, Fiolet T, et al. Consumption of ultra-processed food products and diet quality among children, adolescents and adults in Belgium. *Eur J Nutr.* 2019; 58 (8): 3267-3278. DOI: 10.1007/s00394-018-1870-3.
22. Ghosh-Jerath S, Khandpur N, Kumar G, et al. Mapping ultra-processed foods (UPFs) in India: A formative research study. *BMC Public Health.* 2024; 24: 2212. DOI: 10.1186/s12889-024-19624-1.
23. Calixto Andrade G, Julia C, Deschamps V, et al. Consumption of ultra-processed food and its association with sociodemographic characteristics and diet quality in a representative sample of French adults. *Nutr.* 2021; 13 (2): 682. DOI: 10.3390/nu13020682.
24. Marrón-Ponce JA, Sánchez-Pimienta TG, da Costa Louzada ML, et al. Energy contribution of NOVA food groups and sociodemographic determinants of ultra-processed food consumption in the Mexican population. *Public Health Nutr.* 2018; 21 (1): 87-93. DOI: 10.1017/S1368980017002129.
25. Polsky JY, Moubarac J-C, Garriguet D. Consumption of ultra-processed foods in Canada. *Health Rep.* 2020; 31 (11): 3-15. DOI: 10.25318/82-003-x202001100001-eng.
26. Harb AA, Shechter A, Koch PA, et al. Ultra-processed foods and the development of obesity in adults. *European J Clin Nutr.* 2023; 77: 619-627. DOI: 10.1038/s41430-022-01225-z.
27. Wolfson JA, Lahne J, Raj M, et al. Food agency in the United States: Associations with cooking behavior and dietary intake. *Nutr.* 2020; 12 (3): 877. DOI: 10.3390/nu12030877.
28. Wolfson JA, Leung CW, Richardson CR. More frequent cooking at home is associated with a higher Healthy Eating Index-2015 score. *Public Health Nutr.* 2020; 23 (13): 2384-2394. DOI: 10.1017/S1368980019003549.
29. Tani Y, Fujiwara T, Kondo K. Cooking skills related to potential benefits for dietary behaviors and weight status among older Japanese men and women: A cross-sectional study from the JAGES. *Int J Behav Nutr Physic Act.* 2020; 17: 82. DOI: 10.1186/s12966-020-00986-9.
30. Gesteiro E, García-Carro A, Aparicio-Ugarriza R, et al. Eating out of home: Influence on nutrition, health, and policies: A scoping review. *Nutr.* 2022; 14 (6): 1265. DOI: 10.3390/nu14061265.
31. Matsumoto M, Saito A, Okada C, et al. Consumption of meals prepared away from home is associated with inadequacy of dietary fiber, vitamin C, and mineral intake among Japanese adults: Analysis from the 2015 National health and nutrition survey. *Nutr J.* 2021; 20: 40. DOI: 10.1186/s12937-021-00693-6.
32. Hyldelund NB, Worck S, Olsen A. Convenience may increase vegetable intake among young consumers. *Food Qual Pref.* 2020; 83: 103925. DOI: 10.1016/j.foodqual.2020.103925.
33. Chung A, Vieira D, Donley T, et al. Adolescent peer influence on eating behaviors via social media: Scoping review. *J Med Inter Res.* 2021; 23 (6): e19697. DOI: 10.2196/19697.
34. Ahn Y, Lee Y, Park H, et al. Gender and age-group differences in nutrition intake and dietary quality of Korean adults eating alone: Based on Korean National Health and Nutrition Examination Survey Data, 2013–2016. *Nutr Res Pract.* 2021; 15 (1): 66-79. DOI: 10.4162/nrp.2021.15.1.66.
35. Mikami Y, Motokawa K, Shirobe M, et al. Relationship between eating alone and poor appetite using the simplified nutritional appetite questionnaire. *Nutr.* 2022; 14 (2): 337. DOI: 10.3390/nu14020337.
36. Lee EJ, Lee K-R, Kim J-Y. Analysis of differences in eating alone attitude of Koreans by dietary habits and age. *Appet.* 2020; 152: 104695. DOI: 10.1016/j.appet.2020.104695.