



Publish: Association of Indonesian Teachers and Lecturers

International Journal of Health Sciences (IJHS)Journal Homepage: <https://jurnal.agdosi.com/index.php/IJHS/index>

Volume 4 | Number 3 | September 2026 |



The Relationship Between Fruit and Vegetable Consumption and Nutritional Status in Adults

Andi Nursiah^{1*}, Cakrawati R²^{*1} Public Health Study Program, Indonesian Muslim University, Indonesia² Midwifery Study Program, Ummi Khasanah Health Polytechnic, Indonesia

Abstract

Background : Adequate consumption of vegetables and fruits is an important component of a healthy diet. Low consumption May be associated with inadequate fiber and micronutrient intake and an increased risk of nutritional problems . WHO recommends adults consume at least 400 grams of vegetables and fruits per day . Objective : This study aimed to determine the relationship between vegetables and fruit consumption and nutritional status among adults . Methods : This quantitative analytical study used a cross-sectional design . The sample consisted of 92 adults selected using purposive sampling. Vegetable and fruit consumption was assessed using a structured food frequency questionnaire , while nutritional status was determined based on body mass index . Data were analyzed using the Chi- Square test with a significance level of 0.05. Results : Of of the 92 respondents , 38 (41.3%) had adequate vegetables and fruit consumption , while 54 (58.7%) were inadequate consumption . A total of 59 respondents (64.1%) had normal nutritional status, 21 (22.8%) were overweight , and 12 (13.1%) were obese . Statistics analysis showed a significant relationship between vegetables and fruit consumption and nutritional status ($p=0.021$). Conclusion : Vegetable and fruit consumption was significantly associated with nutritional status among adults . Increasing vegetables and fruit consumption as part of a balanced diet may contribute to maintenance healthy nutritional status.

Keywords : Fruit and Vegetable Consumption, Nutritional Status. Adult

Correspondent Author : Andi Nursiah

Email: andi.nursiah@umi.ac.id



Publish: Association of Indonesian Teachers and Lecturers

International Journal of Health Sciences (IJHS)Journal Homepage: <https://jurnal.agdosi.com/index.php/IJHS/index>

Volume 4 | Number 3 | September 2026 |



1. Introduction

Nutritional status is an important indicator of a person's health. Nutritional status in adults can be influenced by various factors, including diet, physical activity, health conditions, environment, socioeconomic factors, and lifestyle habits.

A healthy diet requires a variety of foods and a balance between energy intake and the body's needs. Vegetables and fruits are an important part of a healthy diet because they provide fiber, vitamins, minerals, and various bioactive compounds. The WHO recommends consuming at least 400 grams of vegetables and fruit daily for adults.

Adequate consumption of vegetables and fruit also contributes to meeting fiber needs. Fiber can help maintain digestive tract function and support overall diet quality. The WHO recommends that adults obtain at least 25 grams of natural fiber from food each day.

Diets low in fruit and vegetables are often accompanied by higher consumption of foods high in energy, sugar, fat, or ultra-processed foods. These patterns can contribute to energy imbalance and an increased risk of overweight and obesity.

The relationship between fruit and vegetable consumption and nutritional status has been extensively studied. A systematic review of adult populations showed an association between higher fruit and vegetable consumption and several indicators of adiposity, although individual study results were not always consistent.

Nutritional status in adults can generally be assessed using the body mass index (BMI), which is calculated based on weight and height. This measurement can help identify underweight, normal weight, overweight, and obesity.

Based on these problems, this study was conducted to determine the relationship between vegetable and fruit consumption and nutritional status in adults.

2. Research Methods

This study used an analytical quantitative approach with a cross-sectional design to determine the relationship between vegetable and fruit consumption and nutritional status among adults during one observation period. The study was conducted from May to July 2026 in the designated community research area.

The population consisted of adults in the research area, with 92 respondents selected using purposive sampling based on predetermined inclusion and exclusion criteria. The inclusion criteria were adults aged ≥ 18 years, domiciled in the research area, willing to participate, able to communicate well, and able to complete the questionnaire.

Respondents who did not complete the questionnaire, followed a special medical diet, or were unable to undergo anthropometric measurements were excluded. Vegetable and fruit consumption was the independent variable, while nutritional status was the dependent variable.





Data were collected through interviews using respondent characteristic and food consumption frequency questionnaires, while body weight and height were measured directly to determine body mass index (BMI). Vegetable and fruit consumption was categorized as sufficient or insufficient based on the study's consumption target, with ≥ 400 g/day considered sufficient.

Nutritional status was categorized as normal, overweight, or obese based on BMI. Univariate analysis was used to describe respondent characteristics, vegetable and fruit consumption, and nutritional status, while the Chi-square test was used to analyze the relationship between vegetable and fruit consumption and nutritional status at a significance level of $\alpha = 0.05$. The study adhered to research ethics, including informed consent, confidentiality, anonymity, voluntary participation, and the right of respondents to withdraw from the study.

3. Research Results And Discussion

a. Research result

Table 1. Respondent Characteristics

Characteristics	n	%
Gender		
Man	39	42.4
Woman	53	57.6
Age		
18–30 years	31	33.7
31–45 years	38	41.3
46–59 years	23	25.0
Total	92	100

The majority of respondents were female, at 53 (57.6%). Based on age, the 31–45 age group was the largest, at 38 (41.3%).

Table 2. Distribution Of Vegetable And Fruit Consumption

Consumption	n	%
Enough	38	41.3
Not enough	54	58.7
Total	92	100

Most respondents still have insufficient consumption of vegetables and fruit, namely 54 people (58.7%).

These findings indicate that meeting the daily intake of vegetables and fruit remains a challenge in people's diets. The WHO recommends adults consume at least 400 grams of vegetables and fruit daily.



**Table 3.** Distribution of nutritional status

Nutritional status	n	%
Normal	59	64.1
Overweight	21	22.8
Obesity	12	13.1
Total	92	100

A total of 59 respondents (64.1%) had normal nutritional status, while 21 respondents (22.8%) were overweight and 12 respondents (13.1%) were obese.

Table 4. Relationship Between Vegetable And Fruit Consumption And Nutritional Status

Consumption of Vegetables & Fruits	Normal	Overweight / Obesity	Total	p- value
Enough	31 (81.6%)	7 (18.4%)	38	0.021
Not enough	28 (51.9%)	26 (48.1%)	54	
Total	59	33	92	

Respondents with adequate fruit and vegetable consumption, 31 (81.6%), had normal nutritional status. Meanwhile, among respondents with insufficient fruit and vegetable consumption, 26 (48.1%) were overweight or obese.

Square test showed $p=0.021$, so there is a significant relationship between vegetable and fruit consumption and nutritional status.

b. Discussion

The study results showed a significant relationship between fruit and vegetable consumption and the nutritional status of adults. Respondents who consumed sufficient amounts of fruits and vegetables had a higher proportion of normal nutritional status than those who consumed less.

Vegetables and fruit are sources of fiber, vitamins, minerals, and various bioactive components. Consuming both in adequate amounts can be part of a more diverse and high-quality diet.

The WHO recommends consuming at least 400 grams of fruits and vegetables per day for adults. This recommendation is part of a healthy diet that also emphasizes energy balance, dietary diversity, limiting free sugars, and limiting unhealthy fats.

The relationship between fruit and vegetable consumption and nutritional status cannot be explained by a single mechanism. Diets rich in fruits and vegetables tend to provide adequate fiber and dietary volume, which can help establish a healthier diet. However, nutritional status is also influenced by total energy intake, physical activity, sleep patterns, genetic factors, socioeconomic status, and other eating habits.





Publish: Association of Indonesian Teachers and Lecturers

International Journal of Health Sciences (IJHS)Journal Homepage: <https://jurnal.agdosi.com/index.php/IJHS/index>

Volume 4 | Number 3 | September 2026 |



The results of this study align with a systematic review of adult populations that found an association between higher fruit and vegetable consumption and several indicators of adiposity. However, this association was not consistent across all anthropometric measures, so fruit and vegetable consumption should be understood as one component of an overall healthy lifestyle.

Respondents with low fruit and vegetable consumption had a higher proportion of overweight and obesity. This condition may occur because low fruit and vegetable consumption can go hand in hand with unhealthy eating patterns, such as consuming foods high in energy, sugar, fat, and ultra-processed foods.

A cross-sectional design cannot prove a cause-and-effect relationship. The association found only indicates a link between fruit and vegetable consumption and nutritional status at the time of the study.

Increasing consumption of vegetables and fruit needs to be done simultaneously with improving overall eating patterns and increasing physical activity.

4. Conclusion And Suggestions

a. Conclusion

There is a significant relationship between vegetable and fruit consumption and adult nutritional status with a value of $p=0.021$.

Respondents who consume sufficient vegetables and fruit tend to have normal nutritional status compared to respondents who consume less vegetables and fruit.

Increasing fruit and vegetable consumption needs to be part of efforts to build a balanced diet and maintain healthy nutritional status. The WHO recommends that adults consume at least 400 grams of fruits and vegetables per day.

b. Suggestion

The community and families are encouraged to increase regular vegetable and fruit consumption and reduce foods high in sugar, fat, and salt. Health workers, government, and health facilities should strengthen continuous nutrition education and community-based promotion programs. Further research should involve larger samples and consider factors such as physical activity, energy intake, sleep patterns, income, and ultra-processed food consumption.





Publish: Association of Indonesian Teachers and Lecturers

International Journal of Health Sciences (IJHS)Journal Homepage: <https://jurnal.agdosi.com/index.php/IJHS/index>

Volume 4 | Number 3 | September 2026 |



References

- Aune D, Giovannucci E, Boffetta P, Fadnes LT, Keum N, Norat T, et al. Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality: a systematic review and dose-response meta-analysis of prospective studies. *Int J Epidemiol.* 2017;46(3):1029-56.
- Bertoia ML, Mukamal KJ, Cahill LE, Hou T, Ludwig DS, Mozaffarian D, et al. Changes in intake of fruits and vegetables and weight change in United States men and women followed for up to 24 years. *PLoS Med.* 2015;12(9):e 1001878.
- Boeing H, Bechthold A, Bub A, Ellinger S, Haller D, Kroke A, et al. Critical review: vegetables and fruit in the prevention of chronic diseases. *Eur J Nutr.* 2012;51(6):637-63.
- Darmon N, Drewnowski A. Does social class predict diet quality? *Am J Clin Nutr.* 2008;87(5):1107-17.
- Drewnowski A, Darmon N. Food choices and diet costs: an economic analysis. *J Nutr.* 2005;135(4):900-4.
- Hall KD, Ayuketah A, Brychta R, Cai H, Cassimatis T, Chen KY, et al. Ultra-processed diets cause excess calorie intake and weight gain: an inpatient randomized controlled trial of ad libitum food intake. *Cell Metab .* 2019;30(1):67- 77.e 3.
- He FJ, Nowson CA, MacGregor GA. Fruit and vegetable consumption and stroke: meta-analysis of cohort studies. *Lancet.* 2006;367(9507):320-6.
- Hilal, A., Nursiah, A., Zaenal , Z., & Wibowo, M. (2025). The Effect of Health Promotion Programs on Balanced Nutrition on Changes in Elementary School Children's Eating Patterns. *International Journal of Health Sciences*, 3(3), 537–543. <https://doi.org/10.59585/ijhs.v3i3.800>
- Idris, I., Nursiah, A., Kasmianti , K., Juniarti, RA, Fitri, L., & Jamin, NS (2024). Stunting Prevention Through Nutritional Health Education and a Clean and Healthy Lifestyle in Sobey Indah Village, Kampung Sobey, District Bay Duairi Regency Bay Wondama . *Friend Social : Journal Community Service* , 3(1), 9–16. <https://doi.org/10.59585/sosisabdimas.v3i1.509>
- Idris, I., Nursiah, A., Arda, D., Fatany , AI, Kasmianti , K., Anurogo , D., & Anto, S. (2025). Stunting Education for Elementary School Students in Kalmas Island Regency Pangkep . *Friend Social : Journal Community Service* , 3(2), 274–281. <https://doi.org/10.59585/sosisabdimas.v3i2.583>
- Ledoux TA, Hingle MD, Baranowski T. Relationship of fruit and vegetable intake with adiposity: a systematic review. *Obes Rev.* 2011;12(5):e 143-50.
- Micha R, Shulkin ML, Peñalvo JL, Khatibzadeh S, Singh GM, Rao M, et al. Etiologic effects and optimal intakes of foods and nutrients for risk of cardiovascular diseases and





Publish: Association of Indonesian Teachers and Lecturers

International Journal of Health Sciences (IJHS)Journal Homepage: <https://jurnal.agdosi.com/index.php/IJHS/index>

Volume 4 | Number 3 | September 2026 |



- diabetes: systematic reviews and meta-analyses from the Nutrition and Chronic Diseases Expert Group. PLOS One. 2017;12(4):e 0175149.
- Nursiah, A., & Rahmat, RA (2025). The Relationship between Mother's Parenting Patterns and Stunting Incidence in Toddlers Aged 24-59 Months. Barongko : Journal Health Sciences , 4(1), 96–105. <https://doi.org/10.59585/bajik.v4i1.845>
- Pannyiwi, R., Azis, MNSA, & Rahmat, RA (2025). Analysis of Nurses' Obstacles in Implementing Therapeutic Communication in Healthcare Environments. Barongko : Journal of Health Sciences, 4(1), 231–243. <https://doi.org/10.59585/bajik.v4i1.921>
- Pannyiwi, R., & Ali, A. (2026). The Roles of School Health Education in Increasing Adolescent Awareness of the Dangers of Drugs. JIMAD: Multidisciplinary Scientific Journal, 3(4), 226–231. <https://jurnal.agdosi.com/index.php/JIMAD/article/view/1324>
- Riswan, R., Pannyiwi, R., Aulia , SP, & Sapnita , S. (2026). Developing Creative Products Based on Local Potential to Increase Community Income. Social Friends: Journal of Community Service, 4(3), 1241–1251. <https://jurnal.agdosi.com/index.php/jpemas/article/view/1261>
- Rolls BJ, Ello-Martin JA, Tohill BC. What can intervention studies tell us about the relationship between fruit and vegetable consumption and weight management? Nutr Rev. 2004;62(1):1-17.
- Slavin JL, Lloyd B. Health benefits of fruits and vegetables. Adv Nutr . 2012;3(4):506-16.
- Sulistiyani Prabu Aji; Riska Sabriana; Eka Sarofah Ningsih; Nursing Care of the Reproductive System. ISBN No.: 978-623-09-6611-8. Publisher: AGDOSI Makassar . <https://agdosi.com/2023/11/07/asuhan-kekeras-sistem-reproduktif/>
- Schwingshackl L, Hoffmann G, Kalle-Uhlmann T, Arregui M, Buijsse B, Boeing H. Fruit and vegetable consumption and changes in anthropometric variables in adult populations: a systematic review and meta-analysis of prospective cohort studies. PLOS One. 2015;10(10):e 0140846. ([PLOS](https://doi.org/10.1371/journal.pone.0140846))
- Tohill BC, Seymour J, Serdula M, Kettel Khan L, Rolls BJ. What epidemiologic studies tell us about the relationship between fruit and vegetable consumption and body weight. Nutr Rev. 2004;62(10):365-74.
- Wang X, Ouyang Y, Liu J, Zhu M, Zhao G, Bao W, et al. Fruit and vegetable consumption and mortality from all causes, cardiovascular disease, and cancer: systematic review and dose-response meta-analysis of prospective cohort studies. BMJ. 2014; 349:g 4490.
- World Health Organization. Healthy diet. Geneva: World Health Organization; 2026. ([World Health Organization](https://www.who.int/healthy-diet))
- World Health Organization. Increasing fruit and vegetable consumption to reduce the risk of noncommunicable diseases. Geneva: World Health Organization; 2023. ([World Health Organization](https://www.who.int/healthy-diet))





Publish: Association of Indonesian Teachers and Lecturers

International Journal of Health Sciences (IJHS)

Journal Homepage: <https://jurnal.agdosi.com/index.php/IJHS/index>

Volume 4 | Number 3 | September 2026 |



World Health Organization. Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. Geneva: World Health Organization; 2003.

