Vol. 8, Issue 2, August 2026, pp 484-493
https://doi.org/10.36590/jika.v8i2.1103
http://salnesia.id/index.php/jika
jika@salnesia.id, p-ISSN: 2337-9847, e-ISSN: 2686-2883
Penerbit: Sarana Ilmu Indonesia (salnesia)

RESEARCH ARTICLES

Consumption of Sweet, Salty, and Fatty Foods and the Incidence of Obesity in Adolescents

Konsumsi Makanan Manis, Asin dan Berlemak dengan Kejadian Obesitas pada Remaja

Hanita[1], Muhammad Nur Hasan Syah[1]*
[1]Nutrition Study Program, Universitas Pembangunan Nasional Veteran, Jakarta, Indonesia

Abstract

Adolescent obesity is emerging as a global public health concern, primarily driven by unbalanced dietary habits and a lack of physical activity. This study aimed to explore the relationship between the consumption of sugary, salty, and fatty foods and the incidence of obesity among adolescents. A cross-sectional study was conducted involving 122 subjects selected through simple random sampling. Data were analyzed using the chi-square statistical test. The findings revealed a significant association between the consumption of sugary foods (p <0.001) and fatty foods (p <0.001) with adolescent obesity, while no significant link was found between salty food consumption and obesity (p = 0.160). These results highlight the need for early prevention strategies through regulating the intake of sugary and fatty foods, promoting balanced nutrition, and encouraging an active lifestyle to reduce future obesity risks.

Keywords: fatty food, obesity, salty food, sweet food

Article history:

Submitted 20 July 2024
Accepted 24 May 2026
Published 02 August 2026

PUBLISHED BY:
Sarana Ilmu Indonesia (salnesia)
Address:
Jl. Dr. Ratulangi No. 75A, Baju Bodoa, Maros Baru, Kab. Maros, Provinsi Sulawesi Selatan, Indonesia

Email:
info@salnesia.id, jika@salnesia.id
Phone:
+62 85255155883

Abstrak

Obesitas pada remaja menjadi isu kesehatan global yang semakin mengkhawatirkan, dipicu oleh pola makan yang tidak seimbang serta aktivitas fisik yang rendah. Penelitian ini bertujuan untuk mengidentifikasi hubungan antara konsumsi makanan tinggi gula, garam, dan lemak dengan kejadian obesitas pada remaja. Studi ini menggunakan pendekatan potong lintang dengan melibatkan 122 subjek yang dipilih secara acak sederhana. Analisis hubungan antar variabel dilakukan menggunakan uji chi-square. Hasil analisis menunjukkan adanya hubungan signifikan antara konsumsi makanan manis (p <0,001) dan makanan berlemak (p <0,001) dengan obesitas, sementara konsumsi makanan asin tidak menunjukkan hubungan yang bermakna (p = 0,160). Oleh karena itu, penting untuk melakukan langkah pencegahan obesitas sejak usia remaja dengan cara membatasi konsumsi makanan manis dan berlemak, menerapkan pola makan seimbang, serta gaya hidup aktif untuk mencegah risiko obesitas jangka panjang.

Kata Kunci: *obesitas, makanan asin, makanan manis, makanan berlemak*

*Correspondence Author:
Name, email: email@gmail.com

*This is an open access article under the **CC–BY** license*

Highlight:

- Sweet food intake was significantly associated with adolescent obesity, and limiting simple-carbohydrate consumption was a protective factor against excess weight.
- A high frequency of fatty-food consumption was significantly linked to adolescent obesity through the accumulation of body-fat stores from excess energy intake.
- Salty-food consumption showed no direct association with adolescent obesity, correlating instead with vascular risks such as hypertension.

INTRODUCTION

Adolescence is a period that is vulnerable to nutritional problems due to the high demand for nutrients as well as changes in lifestyle. Adolescents are a group that is vulnerable to obesity, which, if not properly addressed, may persist into adulthood and trigger various health problems (Marbun et al., 2021). The incidence of obesity among adolescents continues to increase, and this condition has become a concern in the health sector because it has the potential to increase the risk of diseases associated with excess body weight (Jihadi et al., 2016). The phenomenon of obesity is now not only limited to developed countries but has also begun to spread in developing countries. For example, in Asia, the prevalence of adolescent obesity reaches 8.6% (Mazidi et al., 2018). In Indonesia, according to the 2018 Basic Health Research *(Riskesdas)*, the prevalence of obesity among adolescents aged 16–18 years was 4.0%, an increase from 1.6% in 2013. This increase is also reflected in West Java and Depok City, which showed a higher increasing trend in the prevalence of adolescent obesity compared with the provincial average (Kemenkes, 2018). One of the main factors contributing to adolescent obesity is a shift in dietary habits, particularly the consumption of foods that are high in calories, fat, simple carbohydrates, cholesterol, and sodium but low in fiber (Rafiony et al.,

2015). Data on the consumption of risky foods in Indonesia indicate that among the 15–19-year-old age group, the daily consumption of sweet foods reached 41%, salty foods 30.5%, and oily foods 43.8% (Kemenkes, 2018).

Excessive consumption of risky foods, such as sweet and fatty foods, has been shown to contribute to weight gain. Added sugars, such as fructose in sweet foods, may trigger an increase in calorie intake by reducing satiety signals in the brain, which can lead to overeating (Fatmawati, 2019). This is also consistent with the study conducted by Torre et al. (2016), which demonstrated that high consumption of sweet foods and beverages may increase the risk factors for obesity among adolescents.

Meanwhile, salty foods contain high levels of sodium, which, although essential for the body, may cause health problems when consumed excessively. Although some studies have reported an association between sodium intake and obesity, other studies have indicated that its association is more closely related to hypertension (Ramadhini and Suryati, 2018). Salt is used by the body to maintain fluid balance; however, excessive salt consumption may lead to adverse health conditions (Triandhini et al., 2018). Excessive sodium consumption is also closely associated with obesity. According to a study by Kartolo and Santoso (2022), there was a significant association between salt intake and the incidence of obesity among adolescents.

Fat also plays an important role in the body; however, excessive consumption may trigger the accumulation of body fat, resulting in excess body weight. High-fat foods are generally palatable and do not quickly produce a feeling of satiety, making them more likely to be consumed excessively (Yanto et al., 2019). This is consistent with the findings of Mardiana et al. (2022), which showed that one of the factors closely associated with the risk of obesity is dietary fat intake.

Optimal and balanced consumption patterns of sweet, salty, and fatty foods in accordance with nutritional guidelines are essential. This is necessary to prevent an increase in the incidence of obesity during adolescence. Based on the description above, this study aimed to determine the association between the consumption of sweet, salty, and fatty foods and the incidence of obesity among adolescents at SMAN 5 Depok.

METHODS

This study was a quantitative study with a cross-sectional design, which aimed to analyze the association between two variables. The population in this study consisted of adolescents aged 15–17 years who were enrolled in grades X and XI at SMAN 5 Depok in 2024. A total of 122 students participated in the study and were selected using a simple random sampling technique. The inclusion criteria were being physically and mentally healthy, being able to communicate well, and residing in Depok City. The exclusion criteria were withdrawing from the study during the research process and currently following a specific dietary program, particularly a weight-loss program.

Data collection was conducted by measuring body weight using a digital scale and height using a microtoise (height-measuring instrument). Nutritional status was determined based on the body mass index-for-age (BMI-for-age) using the Z-score standards issued by the Ministry of Health of the Republic of Indonesia in 2022, with obesity defined as a Z-score >2 SD. Other nutritional status categories included overweight (1 SD to 2 SD), normal (-2 SD to 1 SD), and underweight (-3 SD to < -2 SD).

Subject characteristics were obtained through a self-administered identity questionnaire, while information regarding the consumption of sweet, salty, and fatty

foods was collected using a Food Frequency Questionnaire (FFQ). Data analysis consisted of univariate analysis to describe the distribution of subject characteristics and bivariate analysis using the chi-square test to examine the association between the consumption of these food types and the incidence of obesity. This study received ethical approval under protocol number 53/IV/2022/KEPK.

RESULTS AND DISCUSSIONS

Subject characteristics

The results are presented through the subject characteristics and the association of sweet, salty, and fatty food consumption. Based on Table 1, most subjects were non-obese (86.1%), comprising the underweight, normal, and overweight categories, while 13.9% were obese.

Table 1. Subject characteristics

Category	n	%
Obesity status		
Non-obese	105	86.1
Obese	17	13.9
Total	**122**	**100.0**

Source: Primary data, 2024

In this study, the subjects were classified based on sex into two groups, namely female and male. Based on Table 2, the majority of participants who were not obese were male, accounting for 83.1%. The subjects' ages were categorized into three groups, namely 15, 16, and 17 years. The analysis showed that adolescents aged 16 years dominated the non-obese group, accounting for 81.2%. The educational level of the subjects' parents was divided into two categories, namely low education (no formal education or did not complete elementary school, junior high school, or senior high school) and high education (completion of senior high school/equivalent through higher education, such as diploma or bachelor's degree). Table 2 shows that most of the non-obese subjects came from families in which the parents had a high level of education, accounting for 90.6% for fathers and 92.8% for mothers, respectively.

Table 2. Distribution of subject characteristics (n = 122)

Subject characteristics	Obese status				Total	
	Non-obese		Obese			
	n	%	n	%	n	%
Sex						
Female	51	89.5	6	10.5	57	100
Male	54	83.1	11	16.9	65	100
Age						
15 years	24	96.0	1	4.0	25	100
16 years	69	81.2	16	18.8	85	100
17 years	12	100.0	0	0	12	100
Father's education						
Low	10	100.0	0	0	10	100

Subject characteristics	Obese status				Total	
	Non-obese		Obese			
	n	%	n	%	n	%
High	95	84.8	17	15.2	112	100
Mother's education						
Low	11	84.6	2	15.4	13	100
High	94	86.2	15	13.8	109	100
Parental income						
High	71	84.5	13	15.5	84	100
Low	34	89.5	4	10.5	38	100
Pocket money						
High	68	89.5	8	10.5	76	100
Rendah	37	80.4	9	19.6	46	100

Source: Primary data, 2024

Parents' income was also categorized into two groups, namely high (≥ IDR 4,378,000.00) and low (< IDR 4,378,000.00), based on the minimum provincial wage (UMP) for Depok City according to the Decree of the Governor of West Java Number 561/Kep.774 of 2021. The results showed that 84.5% of subjects who were not obese had parents with a high income. The subjects' daily allowance was categorized as high (≥ IDR 20,000.00) and low (< IDR 20,000.00). Based on the analysis presented in Table 2, the majority of non-obese subjects had a daily allowance in the high category, accounting for 89.5%.

Association between sweet food consumption and obesity among adolescents at SMA Negeri 5 Depok

Table 3 shows that most subjects were non-obese and had an infrequent (rare) frequency of sweet-food consumption (54.9%). The p-value for the association between sweet-food consumption and obesity among adolescents at SMA Negeri 5 Depok was 0.000 ($p < 0.05$), indicating an association between sweet-food consumption and obesity.

Table 3. Association between sweet food consumption and obesity among adolescents at SMA Negeri 5 Depok

Sweet Food Frequency	Non-obese		Obese		Total		*p-value*
	n	%	n	%	n	%	
Frequent	38	31.1	14	33.6	52	100	<0.001*
Rare	67	54.9	3	2.4	70	100	

Note: *Chi-square test, significant if p-value < 0.05

Individuals who rarely consume sweet foods tend to have a lower risk of obesity because the amount of sugar consumed by the body is not excessive, making their nutritional status more likely to be within the normal category compared with those who frequently consume sweet foods. This finding is consistent with a previous study that found a significant association between high consumption of simple sugars and the incidence of obesity among junior high school students, with a *p-value* of 0.001 ($p < 0.05$) (Fatmawati, 2019). Similar findings were also reported by Sitorus et al. (2020), who demonstrated a positive correlation between the consumption of sweet

foods/beverages and nutritional status, as indicated by a *p-value* of 0.000 ($p < 0.05$). However, this study is not consistent with the findings of Kusteviani (2015), which showed that there was no association between sweet food consumption and the incidence of obesity among individuals of productive age, including adolescents, in Surabaya City.

One of the main reasons why the consumption of sweet foods is closely associated with obesity is their high sugar content. This study highlights simple sugars, such as glucose and fructose, which are commonly found in packaged sweet foods that are widely available on the market. Fructose, in particular, plays an important role in promoting weight gain. Excessive fructose intake can cause an increase in calorie intake in the body, which interferes with the mechanisms regulating satiety in the brain, causing individuals to tend to overeat (Fatmawati, 2019). Therefore, excessive consumption of simple carbohydrates can lead to the formation of fat and glycogen stores in the body, resulting in increased body weight and consequently increasing the risk of obesity.

The significant association between sweet food consumption and obesity among adolescents may be attributable to several other factors, such as food selection. This finding is consistent with the study conducted by Torre et al. (2016), which reported that the consumption of sweet foods and beverages in relation to obesity among adolescents is influenced by food selection because of their appealing taste. This was demonstrated by the findings of the study, which showed a positive association between the consumption of sweet food and beverage sources and the incidence of obesity (Borges et al., 2017).

Association between salty food consumption and obesity among adolescents at SMA Negeri 5 Depok

Table 4 shows that most subjects were non-obese and had a frequent frequency of salty-food consumption (68.8%). The *p-value* for the association between salty-food consumption and obesity among adolescents at SMA Negeri 5 Depok was 0.160 (significance threshold $p < 0.05$), indicating no association between salty-food consumption and obesity.

Table 4. Association between salty food consumption and obesity among adolescents at SMA Negeri 5 Depok

Salty Food Frequency	Non-obese		Obese		Total		*p-value*
	n	%	n	%	n	%	
Frequent	84	68.8	16	13.1	100	100	0.160
Rare	21	17.2	1	0.8	22	100	

Note: *Chi-square test, significant if p-value < 0.05

This study is consistent with the study conducted by Syah et al. (2020), which found no significant association between local snack foods, including salty foods, and the incidence of obesity among adolescents at a vocational high school in Bekasi. One factor that may explain why salty food consumption was not associated with obesity is that salty foods are considered a type of high-risk food with a high sodium content.

Another review indicated that salty food consumption is not directly associated with obesity but is more closely related to hypertension, which may cause an increase in blood pressure due to the high salt or sodium content of salty foods. Other studies have

also reported findings indicating that excessive sodium intake among adolescents may increase the risk of obesity-related hypertension. This condition may occur because excessive sodium intake into the body can increase cardiac workload, plasma volume, and blood pressure (Kautsar et al., 2014).

However, these findings differ from those of Asritya et al. (2018), who reported a significant association between snack food consumption (high sodium intake) and the incidence of obesity among adolescents at a senior high school in Yogyakarta. Similar findings were also reported by Kartolo and Santoso (2022), who found a significant association between salt intake and the incidence of obesity. The reason why salt intake may contribute to obesity is related to increased fluid retention resulting from excessive consumption of foods containing sodium or salt. This condition can lead to weight gain due to the accumulation of intracellular fluid and can stimulate thirst and hunger. The resulting increase in hunger may increase the frequency of food consumption among subjects, leading to excess calorie intake, which is subsequently stored in adipose tissue.

Association between fatty food consumption and obesity among adolescents at SMA Negeri 5 Depok

Table 5 shows that most subjects were non-obese and had an infrequent (rare) frequency of fatty-food consumption (57.4%). The *p-value* for the association between fatty-food consumption and obesity among adolescents at SMA Negeri 5 Depok was 0.000 ($p < 0.05$), indicating an association between fatty-food consumption and obesity.

Table 5. Association between fatty food consumption and obesity among adolescents at SMA Negeri 5 Depok

Fatty Food Frequency	Non-obese		Obese		Total		*p-value*
	n	%	n	%	n	%	
Frequent	35	28.7	15	12.3	50	100	<0.001*
Rare	70	57.4	2	1.6	72	100	

*Note: *Chi-square test, significant if p-value < 0.05*

A person who rarely consumes fatty foods is not at risk of obesity because fatty-food intake is not excessive, so their nutritional status is more likely to be non-obese; those who consume fatty foods frequently are at greater risk of obesity. This is consistent with Kurdanti et al. (2015), who found a significant association between fatty-food consumption and obesity among senior high school students in Yogyakarta. A similar finding was reported by Mokolensang et al. (2016) among senior high school adolescents in Bitung City, showing an association between fatty-food consumption and obesity.

The association between fatty food and adolescent obesity in this study may arise because excess fat intake leads to excess body-fat accumulation. High-fat foods are very palatable and less satiating, so individuals may overconsume them. The capacity limit of macronutrients also determines energy balance. Fat has an essentially unlimited storage capacity. When excess fat intake is not matched by increased fat oxidation, about 96% of the fat can be stored in the body. The body has a virtually inexhaustible capacity to store fat (Dewi and Kartini, 2017). Increased fat intake therefore affects body weight and can trigger obesity.

Another contributing factor was noted in nearly 33% of American children aged 4–19 years, in whom daily fat consumption could cause weight gain of up to 3 kg per

year. The real problem of obesity, however, lies not in overeating as such but in the wrong choice of certain foods, especially risky food types. Adolescents account for 30% or more of total daily caloric intake. Consumption of these foods high in fat, sugar, and sodium can increase body weight (Kurdanti et al., 2015).

CONCLUSIONS

This study concludes that there is an association between sweet-food consumption and adolescent obesity, no association between salty-food consumption and adolescent obesity, and an association between fatty-food consumption and adolescent obesity. Future research is encouraged to add indicators with a broader range of variables and to use different measurement methods, such as portion size alongside individual eating frequency, so that the occurrence of obesity can be captured more broadly and in more varied ways.

ACKNOWLEDGMENTS

The authors thank SMAN 5 Depok City for agreeing to be a research partner and supporting the smooth conduct of the study.

REFERENCES

Asritya, N.M.A.S., Huriyati, E. Tsani, F.A., 2018. Asupan Tinggi Lemak dan Natrium dari Makanan Jajanan sebagai Faktor Risiko Obesitas atau Overweight dan Kenaikan Tekanan Darah pada Remaja SMA di Kota Yogyakarta. [Skripsi]. Universitas Gadjah Mada, Yogyakarta.

Borges, M.C., Louzada, M.L., Sa,T.H., Laverty, A., Parra, D.C., Garzillo, J.M., Monteiro, C.A., Millet, C., 2017. Artificially Sweetened Beverages and The Response to The Global Obesity Crisis. Plos Medicine 14(1), 1–9. Https://Doi.Org/10.1371/Journal.Pmed.1002195

Dewi, P.L.P., Kartini, A., 2017. Hubungan Pengetahuan Gizi, Aktivitas Fisik, Asupan Energi dan Asupan Lemak dengan Kejadian Obesitas pada Remaja SMP. Journal of Nutrition College 6(3), 257–261. https://ejournal3.undip.ac.id/index.php/jnc/article/view/16918

Fatmawati, I., 2019. Asupan Gula Sederhana sebagai Faktor Risiko Obesitas pada Siswa-Siswi Sekolah Menengah Pertama di Kecamatan Pamulang, Kota Tangerang Selatan. Ilmu Gizi Indonesia 2(2), 147. Https://Doi.Org/10.35842/Ilgi.V2i2.113

Jihadi, M., Restuastuti, T., Ernalia, Y., 2016. Hubungan Pola Makan dan Aktivitas Fisik terhadap Obesitas pada Remaja di SMA Negeri 5 Pekanbaru. Jurnal Online Mahasiswa Fakultas Kedokteran Universitas Riau 3(I), 1–20. https://www.neliti.com/id/publications/186816/hubungan-pola-makan-dan-aktivitas-fisik-terhadap-obesitas-pada-remaja-di-sma-neg#cite

Kartolo, M.S., Santoso, A.H., 2022. Hubungan Frekuensi Konsumsi, Asupan Energi, Lemak, Gula, dan Garam dalam Fast Food dengan Kejadian Obesitas pada Siswa/I SMP X Yogyakarta. Jurnal Kedokteran dan Kesehatan 28(1), 38–50. https://journal.untar.ac.id/index.php/ebers_papyrus/article/view/19419

Kautsar, F., Syam, A., Abdul, S., 2014. Obesitas, Asupan Natrium dan Kalium terhadap

Tekanan Darah Obesity, Sodium and Kalium Intake and Blood Pressure of Students. Jurnal Media Kesehatan Masyarakat Indonesia, 187–192. https://www.neliti.com/publications/212613/obesitas-asupan-natrium-dan-kalium-terhadap-tekanan-darah

[Kemenkes] Kementerian Kesehatan., 2018. Hasil Riset Kesehatan Dasar Tahun 2018. Kementrian Kesehatan 53(9), Pp. 1689–1699.

Kurdanti, W., Suryani, I., Syamsiatun, N.H., Siwi, L.P., Adityanti, M.M., Mustikaningsih, D., Sholihah, K.I., 2015. Faktor-Faktor yang Mempengaruhi Kejadian Obesitas pada Remaja. Jurnal Gizi Klinik Indonesia 11(4), 179-190. Https://Doi.Org/10.22146/Ijcn.22900

Kusteviani, F., 2015. Factors Associated with Abdominal Obesity in The Productive Age in Surabaya. Jurnal Berkala Epidemiologi 3(1), 45-56. Https://Doi.Org/10.20473/Jbe.V3i12015.45-56

Marbun, R., Sugiyanto, S., Dea, V., 2021. Edukasi Kesehatan pada Remaja dalam Pentingnya Gizi Seimbang dan Aktivitas Fisik di Era Pandemi Covid-19. Selaparang Jurnal Pengabdian Masyarakat Berkemajuan 4(3) 508-512. https://www.neliti.com/id/publications/534213/edukasi-kesehatan-pada-remaja-dalam-pentingnya-gizi-seimbang-dan-aktivitas-fisik#cite

Mardiana, M., Yusuf, M., Sriwiyanti, S., 2022. Hubungan Beberapa Faktor dengan Kejadian Obesitas Remaja di Palembang. Jurnal Kesehatan Poltekkes Palembang 17(1), 63–70. Https://Doi.Org/10.36086/Jpp.V17i1.1169

Mazidi, M., Banach, M., Kengne, A.P., 2018. Prevalence of Childhood and Adolescent Overweight and Obesity in Asian Countries: A Systematic Review and Meta-Analysis. Archives of Medical Science 14(6), 1185-1203. Http://Dx.Doi.Org/10.5114/Aoms.2018.79001

Mokolensang, O.G., Manampiring, A.E., Fatimawali, F., 2016. Hubungan Pola Makan dan Obesitas pada Remaja di Kota Bitung. Jurnal E-Biomedik 4(1), 128-135. Https://Doi.Org/10.35790/Ebm.4.1.2016.10848

Rafiony, A., Purba, M.B., Pramantara, I.D.P., 2015. Konsumsi Fast Food dan Soft Drink sebagai Faktor Risiko Obesitas pada Remaja. Jurnal Gizi Klinik Indonesia 11(4), 170-178. Https://Doi.Org/10.22146/Ijcn.23311

Ramadhini, D., Suryati, S., 2018. Hubungan Kebiasaan Konsumsi Makanan Asin dengan Kejadian Hipertensi pada Lansia di Desa Labuhan Labo Kota Padangsidimpuan Tahun 2018. Jurnal Kesehatan Ilmiah Indonesia 3(2), 22–28. https://jurnal.unar.ac.id/index.php/health/article/view/48

Sitorus, C.E., Mayulu, N., Wantania, J., 2020. Hubungan Konsumsi Fast Food, Makanan/ Minuman Manis dan Aktifitas Fisik dengan Kadar Gula Darah dan Status Gizi Mahasiswa Fakultas Kedokteran Universitas Sam Ratulangi. Journal of Public Health and Community Medicine 1(4), 10–17. https://ejournal.unsrat.ac.id/v3/index.php/ijphcm/article/view/31025/29929

Syah, M.N.H., Miranti, R.D., Noerfitri, N., Thahir, A.I., 2020. Does The Consumption of Local Snacks on Sale in The Schools Cause Adolescent Obesity? A Case Study in The Secondary Vocational Schools. Jurnal Gizi dan Dietetik Indonesia 8(1), 39-44. Https://Doi.Org/10.21927/Ijnd.2020.8(1).39-44

Torre, S.B.D., Keller, A., Depeyre, J.L., Kruseman, M., 2016. Sugar-Sweetened Beverages and Obesity Risk in Children and Adolescents: A Systematic Analysis on How Methodological Quality May Influence Conclusions. Journal of The Academy of Nutrition and Dietetics 116(4), 638–659. Https://Doi.Org/10.1016/J.Jand.2015.05.020

Triandhini, R.L.N.K.R., Rahardjo, M., Putranti, M., 2018. Sugar, Salt and Fat Consumption of Population in Batur Kidul Village Getasan Subdistrict Semarang Regency. Journal of Health 5(1), 1-11. https://www.neliti.com/publications/338297/sugar-salt-and-fat-consumption-of-population-in-batur-kidul-village-getasan-subd#cite

Yanto, N., Verawati, B., Akmalia, F., 2019. Hubungan Pengetahuan Gizi dan Konsumsi Lemak dengan Kejadian Obesitas Sentral pada Ibu Rumah Tangga di Kelurahan Sidomulyo Barat. Prepotif Jurnal Kesehatan Masyarakat 3(2), 103–112. https://journal.universitaspahlawan.ac.id/index.php/prepotif/article/view/657