

ORIGINAL ARTICLE

Correlation between Appetite Disorders, Nutritional Status and Smoking Habits in Elderly

Ahmad David Royyifi Arifin^{1*}, Suradi Suradi², Diffah Hanim²

1. Postgraduate Student of Nutrition Science, Sebelas Maret University, Ir Sutami Street No 36A Kentingan, Jebres, Surakarta 57126, Indonesia
2. Departement of Public Health, Faculty of Medicine, Sebelas Maret University, Ir Surami Street No 36A Kentingan, Jebres, Surakarta 57126, Indonesia

ARTICLE INFO

Keywords:
Appetite
Nutrition
Smoking
Elderly

**Corresponding author:*
Ahmad David Royyifi Arifin,
Postgraduate Student of Nutrition
Science, Sebelas Maret University,
Ir Sutami Street No 36A Kentingan,
Jebres, Surakarta 57126, Indonesia.
Tel: +62-823-31123320
Email: royyifi@gmail.com
Received: April 18, 2019
Revised: September 26, 2019
Accepted: October 1, 2019

ABSTRACT

Background: Health is an aspect that needs attention in the elderly. So many factors can affect health of the elderly, one of them is lifestyle. Poor lifestyle such as smoking can increase a person's risk of disease. Smoking has a large impact on the elderly like reducing appetite and further lead to weight loss. This can result in the occurrence of underweight in the elderly. The aims of the study were to analyze the correlation between decreased appetite, nutritional status with smoking habits during elderly.

Methods: This was a cross-sectional study involving 182 elderly. Appetite was assessed by interview using the Simplified Nutritional Appetite Questionnaire (SNAQ). Nutritional status was obtained based on anthropometric measurements of body weight and height calculated by using the formula of Body Mass Index (BMI), and smoking habits obtained from interviews using a Smoking Questionnaire.

Results: The appetite did not have a significant relationship with smoking habits, while the nutritional status had a significant relationship with smoking.

Conclusion: The elderly with good nutritional status tend to significantly have less smoking habits.

Please cite this article as: Arifin ADR, Suradi S, Hanim D. Correlation between Appetite Disorders, Nutritional Status and Smoking Habits in Elderly. Int J Nutr Sci. 2019;4(4):192-196.

Introduction

Health is an important aspect that needs attention in the elderly (1). Increase in age can cause a decrease in physical condition and cause susceptibility to disease. One of factor that can affect health especially in the elderly as an unhealthy lifestyle like smoking (2). Older people who smoke have a greater potential for malnutrition than non-smoker (3). Weight loss in the elderly has a crucial effect. This will be cause the elderly to experience malnutrition (4, 5). Several studies revealed a relationship between smoking and food consumption and showed that smoking can suppress hunger and reduce one's appetite and

weight (6, 7).

Smoking can disrupt a person's health and cause several non-communicable diseases, such as hypertension, heart disease, COPD, cancer in young and elderly people (8). The biggest impact on elderly who smokes is the occurrence of weight loss caused by a decrease in appetite that can affects nutritional status (9-11). Elderly often experience decreased appetite. This decrease was first described as 'aging anorexia' in 1988 by John Morley (12). Increasing age in the elderly around 15% and 30% are estimated to have aging anorexia which is most commonly experienced by women living in

nursing homes and elderly who are hospitalized (13). Nutritional deficiencies and weight loss in the elderly have serious effects associated with poor health and an increased risk of death (14). This study aimed to determine the relationship between decreased appetite and nutritional status in elderly smokers.

Materials and Methods

This study used a cross sectional research design. The population of study was the elderly >60 years old who lived in the area of health centers in Klaten, Central Java. The sample of study amounted to 182 respondents. Inclusion criteria in this study were the elderly >60 years old, living with family and not being illiterate. While the exclusion criteria in this study were the elderly who lived in a nursing home or care institution, moved to houses outside the study area, getting sick, so that they cannot answer the question properly when the research took place. This study was approved by the Sebelas Maret University Health Research Ethics Commission (No.150/UN27.0/KEPK/2019).

Appetite data were obtained using a Simple Nutrition Appetite Questionnaire (SNAQ) that was validated by sties and pilgrim (14, 15). Smoking habits data were obtained using a smoking questionnaire, validated by Sponsiello-Wang (16). The data of appetite and smoking habits were collected by interviewing the research subjects. Based on the data in Table 1, scores on the results of interviews using SNAQ were added up and then divided into various categories (scores <12: often, 12-14: sometimes, 14-17: rarely, and 17-20: never).

The scores for smoking habits per day were based on different criteria (non-smokers: if <1 cigarette per day, light smoker: if 1-10 cigarettes per day, moderate smoker: if 11-20 cigarettes per day and heavy smoker: if smoking >20 cigarettes per day). Nutritional Status Data were obtained from anthropometric measurements of height and weight that were calculated using the Body Mass Index

Table 1: Classification of the study variables.

| Variables | Criteria | Classification |
|--------------------|----------------------|-----------------|
| Appetite disorders | 17-20 | Never |
| | 14-17 | Rarely |
| | 12-14 | Sometime |
| | <12 | Often |
| BMI | >25 | High |
| | 18.5-25 | Normal |
| | <18.5 | Low |
| Smoking habits | <0 sticks per day | Not a smoker |
| | 1-10 sticks per day | Light smoker |
| | 11-20 sticks per day | Moderate smoker |
| | >20 sticks per day | Heavy smoker |

BMI: Body Mass Index

(BMI) formula (scores <18.5: low, 18-25: Normal and >25: High). SPSS software (Version 21, Chicago, IL, USA) was used for statistical analysis using the Spearman test ($\alpha=0.05$). A p value less than 0.05 was considered significant.

Results

Based on data in Table 2, it can be seen that the number of elderly women involved in the study was more than men, which was 56.6%. Based on age, the majority of elderly aged 60-65 years, named as much as 51%. For appetite variable, the elderly who did not experience anorexia were more dominant with a percentage of 47.3%. Regarding the nutritional status variable of the elderly with normal nutritional status was more dominant with of 54.9% and the smoking habit variable showed the non-smoking elderly to be higher compared with a percentage of 60.4%. The elderly who did not smoke had a better appetite and nutritional status compared to the elderly with smoking habits.

Table 2: Characteristics of respondents (n=182).

| Variables | Value n (%) |
|--------------------|-------------|
| Gender | |
| Male | 43.4 |
| Female | 56.6 |
| Age (Years) | |
| 60-65 | 51 |
| 66-70 | 23.5 |
| >70 | 25.5 |
| Appetite disorders | |
| Never | 47.3 |
| Rarely | 14.8 |
| Sometime | 25.8 |
| Often | 12.1 |
| Nutritional status | |
| High | 26.9 |
| Normal | 54.9 |
| Low | 18.1 |
| Smoking habits | |
| Not a smoker | 60.4 |
| Light smoker | 17 |
| Moderate smoker | 17 |
| Heavy smoker | 5.5 |

In Table 3, it can be seen that the elderly had a habit of not smoking. Based on bivariate analysis, it is known that there was no significant relationship between decreased appetite with smoking habits ($P=0.22$). We found that older people who smoked tended to have decreased appetite. Bivariate analysis results on the nutritional status variables with smoking habits showed a significant relationship ($P=0.000$). Findings based on the results of this study indicated that elderly who did not smoke tended to have better nutritional status than those who smoked.

Table 3: Correlation of appetite disorders and nutritional status with smoking habits in elderly.

| | Smoking habits | | | | P* | r** |
|--------------------|----------------|--------------|-----------------|--------------|--------|------|
| | Not a smoker | Light smoker | Moderate smoker | Heavy smoker | | |
| Appetite disorders | | | | | 0.22 | 0.09 |
| Never | 53 | 16 | 13 | 4 | | |
| Rarely | 22 | 1 | 3 | 1 | | |
| Sometime | 23 | 10 | 11 | 3 | | |
| Often | 12 | 4 | 4 | 2 | | |
| Nutritional status | | | | | 0.0001 | 0.49 |
| More | 41 | 3 | 5 | 0 | | |
| Normal | 67 | 17 | 14 | 2 | | |
| Less | 2 | 11 | 12 | 8 | | |

*P value Spearman, **Correlation coefficient

Discussion

In this study, there was a significant relationship between nutritional status and smoking habits in the elderly, while appetite was not significantly related with smoking habits in the elderly. To the best of the authors' knowledge, the present report is the first comprehensive report investigating the relationship between the appetite and smoking habits in elderly. Appetite is the desire to fulfill the body's needs (17). Someone who enters the elderly often experience a decrease in appetite due to a decrease in biological and physiological functions. This can be a factor in the elderly experiencing malnutrition (18). Aside from age, elderly who have the habit of smoking also have a greater risk of experiencing malnutrition (3).

The occurrence of malnutrition in smokers is associated with nicotine effects that affect cholinergic nicotinic receptors in the autonomic ganglia and brain. Following nicotine and these related receptors will increase the expenditure of various neurotransmitters. This process results in systemic catecholamine release which has a role to increase metabolism as well as epinephrine, dopamine, norepinephrine, and serotonin expenditure which influence to increase satiety system so that a person experiences a decrease in appetite which results in malnutrition (19-21).

In addition, nicotine also has an effect to trigger the effects of adrenaline on the abdominal muscles so that it can suppress hunger (7). Other studies also explained that nicotine has an effect on appetite (22), despite controversies about smokers to have lower body weight when compared to nonsmokers. These findings were similar to the previous studies that show smokers, including long-term smokers, had lower body weight than nonsmokers (23-25). Other findings about smokers showed that someone who smoked had a higher risk of unhealthy behavior, when compared to nonsmokers. This is evidenced by light and heavy smokers significantly limiting a

less healthy diet than nonsmokers (3).

Nutritional status and smoking habits have a significant relationship. The findings in this study demonstrated that the elderly who had smoking habits tended to have a lower nutritional status. These findings are in line with previous researches stated that older people who smoked had difficulty in gaining weight (26). Nutritional status is one of the parameters to determine a person's health status. Nutritional status can be influenced by two factors of internal (genetic) and external ones. External factors are divided into factors that affect directly such as eating habits and patterns, food intake and those that affect indirectly such as health services, food availability, socioeconomic, education and knowledge (21, 27).

Another factor that influences nutritional status is lifestyle. Unhealthy lifestyles such as smoking can cause various health problems especially for the elderly (28, 29). Some studies also showed smoking to have a close relationship with BMI. The higher a person consumes cigarettes will have the risk of reducing the nutritional status value (30, 31). Weight and height are determinants of nutritional status, as weight in the elderly usually tends to decline due to reduced muscle mass (32).

Decreased nutritional status in smokers is associated with the amount of nicotine in cigarettes, the more cigarettes consumed cause the amount of nicotine that enters the body to increase. This can inhibit the rate of metabolism and suppress hunger which affects the body mass index of a person (33). Other studies also prove that in India a person who smoked had a BMI below the normal by 30% compared to nonsmokers and from 99 studies, there were results that men who smoked every day had a lower BMI of 3% more than men who did not smoke (34, 35).

Conclusion

It was shown that the decrease in appetite does not have a significant relationship to smoking habits

and the elderly with low appetite decrease tended to have less smoking habits. The nutritional variables had a significant relationship with smoking habits, and older people with good nutritional status tended to have less smoking habits.

Acknowledgment

The author would like thank parents and friends who have helped in this research. The authors also thank all participants involved in this study. We are also grateful to Sebelas Maret University for supporting this research.

Conflict of Interest

None declared.

References

- Renowening Y, Suradi S, Probandari A. Correlation of smoking habits, physical activities and fat intake with cognitive ability in Indonesian elderly. *Int J Nutr Sci.* 2019;4:2-7.
- Akbarzadeh M, Almasi-Hashiani A, Farahmand M. The prevalence of risk factors of non-communicable diseases in Fars Province. *Int J Nutr Sci.* 2016;1:23-9.
- Cavallo DA, Smith AE, Schepis TS, et al. Smoking expectancies, weight concerns, and dietary behaviors in adolescence. *Pediatrics.* 2010;126:e66-72. DOI:10.1542/peds.2009-2381. PMID:20547649.
- Soenen S, Chapman IM. Body weight, anorexia, and undernutrition in older people. *J Am Med Dir Assoc.* 2013;14:642-8. DOI:10.1016/j.jamda.2013.02.004. PMID:23522494.
- Maeda K, Ishida Y, Nonogaki T, et al. Reference body mass index values and the prevalence of malnutrition according to the Global Leadership Initiative on Malnutrition criteria. *Clin Nutr.* 2019;S0261-5614(19)30029-9. DOI:10.1016/j.clnu.2019.01.011. PMID:30712782.
- Lycett D, Munafò M, Johnstone E, et al. Associations between weight change over 8 years and baseline body mass index in a cohort of continuing and quitting smokers. *Addiction.* 2011;106:188-96. DOI:10.1111/j.1360-0443.2010.03136.x. PMID:20925685.
- Oktavianis O. Efek pemberian asap rokok terhadap kehamilan tikus putih (*Rattus norvegicus*). Universitas Andalas; 2011.
- Aghasadeghi K, Zarei-Nezhad M, Keshavarzi A, et al. The prevalence of coronary risk factors in Iranian Lor migrating tribe. *Arch Iran Med.* 2008;11:322-5. DOI:08113/AIM.0015. PMID:18426325.
- Sherafatmanesh S, Ekramzadeh M, Akbarzadeh M. The carcinogenicity of alcoholic beverages: A review. *Int J Nutr Sci.* 2017;2:2-9.
- Coqueiro RDS, Barbosa AR, Borgatto AF. Nutritional status, health conditions and socio-demographic factors in the elderly of Havana, Cuba: data from SABE survey. *J Nutr Health Aging.* 2010;14:803-8. DOI:10.1007/s12603-010-0126-6. PMID:21125196.
- Jyrkkä J, Enlund H, Lavikainen P, et al. Association of polypharmacy with nutritional status, functional ability and cognitive capacity over a three-year period in an elderly population. *Pharmacoepidemiol Drug Saf.* 2011;20:514-22. DOI:10.1002/pds.2116. PMID:21308855.
- Morley JE, Silver AJ. Anorexia in the elderly. *Neurobiol Aging.* 1988;9:9-16. DOI:10.1016/s0197-4580(88)80004-6. PMID:2898107.
- Malafarina V, Uriz-Otano F, Gil-Guerrero L, et al. The anorexia of ageing: physiopathology, prevalence, associated comorbidity and mortality. A systematic review. *Maturitas.* 2013;74:293-302. DOI:10.1016/j.maturitas.2013.01.016. PMID:23415063.
- Pilgrim A, Robinson S, Sayer AA, et al. An overview of appetite decline in older people. *Nurs Older People.* 2015;27:29-35. DOI:10.7748/nop.27.5.29.e697. PMID:26018489.
- Sties SW, Gonzáles AI, Viana MDS, et al. Simplified Nutritional Appetite Questionnaire (SNAQ) for cardiopulmonary and metabolic rehabilitation program. *Revista Brasileira de Medicina do Esporte.* 2012;18:313-7. DOI:10.1590/s1517-86922012000500006.
- Sponsiello-Wang Z, de La Bourdonnaye G, David M, et al. Accuracy of the smoking questionnaire. *Beiträge zur Tabakforschung International/Contributions to Tobacco Research.* 2017;27:224-39. DOI:10.1515/cttr-2017-0023.
- Mehrabani G, Aminian S, Mehrabani G, et al. Dietetic Plans within the Multiple Sclerosis Community: A Review. *Int J Nutr Sci.* 2019;4:14-22. DOI:10.30476/IJNS.2019.81531.1007.
- Ahmed T, Haboubi N. Assessment and management of nutrition in older people and its importance to health. *Clin Interv Aging.* 2010;5:207-16. DOI:10.2147/cia.s9664. PMID:20711440.
- Masoumi SJ, Mehrabani D, Moradi F, et al. The prevalence of dyspepsia symptoms and its correlation with the quality of life among Qashqai Turkish migrating nomads in Fars Province, Southern Iran. *Pak J Med Sci.* 2015;31:325-30. DOI:10.12669/pjms.312.6956. PMID:26101484.
- Audrain-McGovern J, Benowitz NL. Cigarette

- smoking, nicotine, and body weight. *Clin Pharmacol Ther.* 2011;90:164-8. DOI:10.1038/clpt.2011.105. PMID:21633341.
- 21 Ilfandari A, Ervina A. Hubungan Perilaku Merokok Dengan Indeks Masa Tubuh Remaja Putra. *E-Jurnal Obstretika.* 2015;3:1-15.
- 22 Young-Hwan J, David AT, Lorna WR. Nicotinic Receptor-Mediated Effects on Appetite and Food Intake. *J Neurobiol.* 2002; 53:618-32. DOI:10.1002/neu.10147. PMID:12436425.
- 23 Khademolhosseini F, Mehrabani D, Zare N, et al. Prevalence of dyspepsia and its correlation with demographic factors and lifestyle in Shiraz, southern Iran. *Middle East J Dig Dis.* 2010;2:24-30. PMID:25197509.
- 24 Yarnell JWG, Patterson CC, Thomas HF, et al. Comparison of weight in middle age, weight at 18 years, and weight change between, in predicting subsequent 14 year mortality and coronary events: Caerphilly Prospective Study. *J Epidemiol Community Health.* 2000;54:344-8. DOI:10.1136/jech.54.5.344. PMID:10814654.
- 25 Saarni SE, Silventoinen K, Rissanen A, et al. Intentional weight loss and smoking in young adults. *Int J Obes Relat Metab Disord.* 2004;28:796-802. DOI:10.1038/sj.ijo.0802627. PMID:15024402.
- 26 Dara AL, Burhanuddin B, Nurhaedar J. Kebiasaan merokok dan asupan makanan terhadap Status gizi manula kelurahan balla Kabupaten enrekang. Thesis. University Hasanudin Makasar; 2011.
- 27 Supariasa IDN, Bakri B, Fajar I. Penilaian status gizi. *Jakarta EGC.* 2002;5.
- 28 Shaker-Hosseini R, Ghodrati N. Dietary patterns defined a posteriori or a priori in relation to obesity indices in iranian women. *Int J Nutr Sci.* 2017;2:209-217.
- 29 Safitri D, Arneliwati, Erwin. Analisis indikator gaya hidup yang berhubungan dengan usia menarche remaja putri. *J Online Mhs Progr Stud Ilmu Keperawatan Univ Riau.* 2014;1:1-10.
- 30 Aginta E, Aginta E. Hubungan antara merokok dan kebiasaan makan dengan Status Gizi pada Remaja Putra (Studi pada Siswa SMAN 2 Ungaran). Diponegoro University; 2012.
- 31 Rochman I, Adriani M. Hubungan Gaya Hidup dengan Status Gizi Remaja. *Media Gizi Indones.* 2013;9:36-41.
- 32 Kusumaratna RK, Hidayat A. Body Mass Index and Quality of Life among the Elderly. *Universa Med.* 2009;28:34-41.
- 33 Chiolero A, Faeh D, Paccaud F, et al. Consequences of smoking for body weight, body fat distribution, and insulin resistance. *Am J Clin Nutr.* 2008;87:801-9. DOI:10.1093/ajcn/87.4.801. PMID:18400700.
- 34 Chhabra P, Chhabra SK. Effect of smoking on body mass index: a community-based study. *Natl J Community Med.* 2011;2:325-30.
- 35 Boscatto EC, Duarte M de F da S, Coqueiro R da S, et al. Nutritional status in the oldest elderly and associated factors. *Rev Assoc Med Bras.* 2013;59:40-7. DOI:10.1590/s0104-42302013000100010. PMID:23440141.