



Eating Habits of Elderly in Aceh-Indonesia and the Associated Demographic Factors

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Authors' contributions

This work was carried out in collaboration among all authors. Author SA conceived the initial idea and wrote the first draft of the manuscript. Authors SA, MZ, M managed the analyses of the study and the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The study aims to prove the correlation between demographic factors and the eating habits of the elderly in Aceh, Indonesia.

Study Design: A cross-sectional study.

Place and Duration of Study: The study was conducted in Aceh Barat district, Aceh province-Indonesia between June and October 2019.

Methodology: This cross-sectional study was carried out by involving the elderly (age of 60 years or above) in 483 participants. Bivariate analysis was conducted through a chi-square test using SPSS version 21 to answer the research hypothesis.

Results: Four hundred and eighty three (483) elderly people with mean age of 69.76 years were enrolled, of these, 68.9% were women and 58.2% were unemployed. Fifty-nine percent of respondents live in rural areas and 64.39% had good eating habits. Finding unveiled that age had a significant correlation with eating habits ($P=0,05$), gender did not correlate with eating habits ($P>0,05$). Occupation correlated with eating habits ($P=0,05$), and area of residence correlated with eating habits ($P=0,05$).

Conclusion: The study concluded that younger age (60-69 years old), employed, and living in urban areas positively contribute to establishing healthy eating habits in the elderly in Aceh. Furthermore, it is necessary to conduct intervention studies in the occupation variable as a modifiable variable.

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1. INTRODUCTION

A lifestyle that can adversely impact someone's health is unhealthy eating habits. Conversely, healthy eating habits are associated with the decline of negative risk and better control on the number of chronic diseases, and several studies have proved this [1,2]. Numerous risks due to unhealthy eating habits, including not limiting sugar consumption, can increase blood sugar levels. Irreduction of fat-contained and salty foods consumption can raise cholesterol levels and blood pressure. Furthermore, this condition can lead to obesity and numerous non-communicable diseases such as diabetes and cardiovascular disease (hypertension and stroke) in the elderly [3,4]. Besides, it is also considered a significant predictor of mortality [1,5].

In lower-middle-income countries, the habit of consuming unhealthy foods has significantly increased since the 1980s [6], including in Indonesia. The available data show that population proportion with eating sweet foods habit 1-6 times per week in the age group of 60-64 years is 48.8% and in the age group of 65 years or above is 47.9%. Population proportion with eating salty foods habit 1-6 times per week in the age group of 60-64 years is 41.1% and in the age group of 65 years or above is 39.2%. Meanwhile, the population proportion with eating fatty foods habit 1-6 times per week in the age group of 60-64 years is 42.7% and in the age group of 65 years or above is 42.0% [7].

Among many factors that play an essential role in the eating habits of the elderly, one of which is demographic factors. Those demographic factors are age, sex, occupational status [2,8] and area of residence [9]. Moreover, this study was carried out to prove the correlation between demographic factors and eating habits in the elderly in Aceh, Indonesia. The research hypothesis was as follows 1) there is a correlation between age and eating habits, 2) there is a correlation between gender and eating habits, 3) there is a correlation between occupational status and eating habits, and 4) there is a correlation between the area of residence and eating habits.

2. METHODOLOGY

2.1 Study Design and Population

This study employed a cross-sectional design where the research population is elderly (people

aged 60 years) in Aceh Barat District. The study sample size was calculated by applying the rule of thumb formula, where the sample size was calculated based on the observed variables (43) times 5-10. The minimum sample size obtained was 215-430. Thus, the sample size in this study was 483.

2.2 Measurement

Age was measured by an open question, question about sex followed with two options, "males"; dan "females." Question about occupation was categorized into "employed" and "unemployed". While the residential area is categorized into "rural" dan "urban".

Moreover, the measurement of eating habits used five questions. All questions had been tested for their validity and reliability by involving 30 participants. The questions were as follow, "Currently, I eat less rice compared to when I was young"; "I eat fibrous foods like vegetables"; "I eat fruit during/before/after eating"; "I consume side dishes/fish at mealtime"; "I reduce foods that contain a lot of sugar, salt, and fat". Besides, four options used the Likert Scale, namely "Hardly Ever"; "Rarely"; "Often"; "Always". Equally important, the hypothesis testing about the correlation between some demographics variables and eating habits was performed by chi-square test. A 95% confidence level was used, and level of significance was set at $p < 0.05$. The software used for data analysis including univariate (eg frequency, percentage, mean and standard deviation) and bivariate (chi square test) analysis was SPSS version 21.

3. RESULTS

The Table 1 denotes that the average age of the 483 respondents is 69.76 years old, and most respondents were aged 60-69 years (56.5%). The female respondents (68.9%) were higher than male respondents, most of the respondents were unemployed (56.5%), and most respondents live in rural areas (59%). Finally, 64.39% of the elderly had good eating habits.

The Table 2 obviously disclosed that the elderly in the age group of 60-69 years had healthier eating habits (68.9%) than the elderly in the age group of 70 years or above (58.6%). The female group had healthier eating habits (67%) compared to the male group (58.7%). Likewise,

the employed group had healthier eating habits (69.8%) than the unemployed group (60.5%). Elderly groups living in urban areas had healthier eating habits (70.7%) than those living in rural areas (60%).

The chi-square test results showed that three demographic variables had a significant correlation with eating habits, while one variable had no significant correlation. Specifically, those three variables were age of respondents ($P=0.05$), occupational status ($P=0.05$), and area of residence ($P=0.05$). In contrast, a variable that was not significantly correlated with eating habits was gender ($P=0.097$) (Table 3).

4. DISCUSSION

The Nutrition is an essential element for the elderly to maintain good health conditions and maintain their functional abilities [2]. To achieve these two things through nutrition, elderly people must have a healthy lifestyle in living their daily lives by consuming foods that are good for health. Healthy eating habits can be

characterized in the form of always consuming fruits, vegetables, seafood, nuts [1,10]. Additionally, it is also characterized by consuming sweet, salty, and lower-fat foods. Healthy eating habits play an important role in cognitive function, quality of life, and survival of the elderly [5,11,12].

4.1 Age and Eating Habits

Findings disclose that length of life or age significantly correlates with the eating habits of the elderly in Aceh. The elderly aged 60-69 years has healthier eating habits, while people aged over 70 years have lower healthy eating habits. It is because the elderly in Aceh mostly spent the rest of their lives with their families, especially their children. They rarely do outdoor activities and spend more time at home. These conditions perhaps impact the food they consume, where they are eating food provided by children or family members. They may have no choice to consume food according to their condition, except having to eat what is served which suits their children's tastes. Due to aging, they are

Table 1. Demographic characteristics of respondents

Respondents' characteristics (n=483)		n	%	Mean ± SD
Age	60-69 years	273	56.5	69.76 ± 8.41
	≥ 70 years)	210	43.5	
Gender	Male	150	31.1	
	Female	333	68.9	
Occupational Status	Unemployed	281	58.2	
	Employed	202	41.8	
Area of Residence	Rural	285	59.0	
	Urban	198	41.0	
Eating Habits	Low	172	35.61	
	Good	311	64.39	

Table 2. Results of cross-tabulation of demographic characteristics and eating habits of the elderly

Demographic Characteristics		Eating Habits					
		Low		Good		Total	
		n	%	n	%	n	%
Age	60-69 years	85	31.1	188	68.9	273	100
	≥ 70 years	87	41.4	123	58.6	210	100
Gender	Male	62	41.3	88	58.7	150	100
	Female	110	33.0	223	67.0	333	100
Occupational Status	Unemployed	111	39.5	170	60.5	281	100
	Employed	61	30.2	141	69.8	202	100
Area of Residence	Rural	114	40.0	171	60.0	285	100
	Urban	59	29.3	140	70.7	198	100

Table 3. The result of the chi-square test for demographic characteristics and eating habits of elderly

Variables	p-value	OR	95%CI	
			Lower	Upper
Age	0.025*	.639	.439	.931
Gender	0.097	1.428	.960	2.125
Occupational Status	0.044*	1.509	1.028	2.216
Residential Area	0.020*	1.609	1.093	2.370

Abbreviations: OR= odd ratio, * = significant p-value.

limited to be able to buy and prepare their food, so that they are vulnerable to malnutrition [13,14]. On the contrary, people under 70 years old can carry out outdoor activities and work. It allows them to choose and consume healthier foods, including in terms of choosing and buying food ingredients to consume.

Several previous studies have proven the link between age and eating habits. It is a result of aging. The need for energy decreases as age increases, causing changes in food choices and a decrease in food intake [2,15,16]. For instance, a study conducted by Andreeva *et al.* proved that healthy eating habits are negatively related to people 75 years of age or older. They prefer to consume sweet and high-fat foods, while consumption of fish, vegetables, and nuts is less.

4.2 Gender and Eating Habits

Many researchers convey the relationship between gender and eating habits [8,15,17]. Fernandes *et al.* proved the relationship between gender and eating habits, where the female elderly group had a better quality of eating habits than the male elderly group. Similarly, other studies conducted on the elderly in Brazil [18] and four countries in Europe (Finland, Sweden, UK, and Italy) [19] showed consistent results, where healthy eating habits were higher in females. It is because females pay more attention to health, causing their eating habits to be healthier [2].

This study showed different results, where statistically using the chi-square test, there was no significant relationship between gender and eating habits. It may be related to the culture of Aceh society. Payette *et al.* stated that culture is one of the determinants of eating habits [15]. The majority of the population inhabiting Aceh Province are indigenous Acehnese, especially those living in rural areas. It indicates that the population is very homogeneous and causing its culture to be homogenous as well. It

may have an impact on the eating habits of both male and female elderly groups. For instance, there is no belief in cultural norms in the Aceh community about certain foods that may or may not be consumed by certain elderly groups (male and female). In addition, the Acehnese have a habit of preparing the same menu for all family members living in the same house, including the elderly. This condition may have contributed to the study results, especially regarding the insignificant relationship between gender and eating habits of the elderly.

4.3 Occupational Status and Eating Habits

Working can provide a broader space for a person to interact socially with others at work and outdoor. The outcome of these interactions may impact the person's knowledge and actions, including eating habits. In addition, it is recognized that occupational status is generally inseparable from income. Therefore, it is considered as the primary determinant of eating habits in people before and after retirement [8]. This study proved that occupational status was significantly related to eating habits ($p < 0.05$). The elderly who are in employment are found to have higher healthy eating habits than the unemployed elderly. Our study is in line with the findings of the Govindaraju team, which showed that there was poor food consumption (poor quality) in several groups of elderly, including unemployed people [1]. Occupation plays an important role on the quality of the diet [20]. It may be related to income [21], where the consequences for the retired elderly are: there is a decrease in income or even incomeless. In the next stage, they cannot access certain food products [22], including healthy foods according to their needs, physical condition, and age. It is due to the considerable contribution of income to the quality and amount of food purchased by the elderly [23]. Elderly with financial independence showed a significant association with stronger consumption [1,24].

4.4 Area of Residence and Eating Habits

It is undeniable that people's behavior is shaped and influenced by the environment in which they reside. People spend a lot of time in their lives in the neighborhood where they live. Social interactions with neighbors and the community can shape the patterns of thought and action and their social environment. It is also the case with the eating habits of the elderly. For those who live in a social environment or community with healthy eating habits, the elderly who live in the area are likely to have healthy eating habits. The study results showed a significant relationship between the elderly's area of residence and the elderly's eating habits ($p < 0.05$). In more detail, it can be explained that the elderly living in urban areas have healthier eating habits. In contrast, it was found that healthy eating habits were lower in those living in rural areas. A previous study also conducted in Indonesia (Yogyakarta Province) found that elderly living in rural areas consumed less food with protein than those living in urban areas [9].

The elderly who live in urban areas have easier access to various types of information, especially information related to health. The availability of various facilities and infrastructures in urban areas, such as easy access to health facilities and information media (printed media such as newspapers, magazines, books, and electronic media such as radio, television, and the internet) has an impact on the development of knowledge and insight of the elderly, including knowledge and insight on health. Those things can affect the paradigm of the elderly, which is the basis for consideration in acting, such as their eating habits. In addition, meeting and gathering while discussing and exchanging information with the community or fellow elderly can also affect eating habits. It may be different from the elderly who live in rural areas. The limited availability of facilities and infrastructure causes limited health information accessible by the elderly living in rural areas. The exchange of information between the elderly or the elderly and the community is also slightly limited due to limited access to health facilities and infrastructures. This condition may have an impact on unhealthy eating habits in the elderly in rural areas.

Furthermore, the elderly in rural areas have a lower level of education, lower level of income, and unemployed [9]. In addition, the level of education also contributes to the eating habits of the elderly. It is reinforced by a report which

states that higher education determines the quality of eating habits [20]. Thus, more attention needs to be paid to the elderly group with low education levels to improve eating habits quality [2].

Among several demographic factors related to eating habits (age, occupational status, and area of residence), occupational status is a variable that is very likely to be modified. It can be conducted through the empowerment of the elderly, especially those who are retired. Empowerment Programs can be implemented in the form of providing job opportunities according to their hobbies and physical conditions, for instance, gardening, livestock farming, handicrafts, and other productive activities. Besides being able to increase physical activity that is beneficial for physical health, empowerment through work also makes the elderly more independent. This program does not only involve professionals and policymakers in the health sector. It also requires cross-sectoral collaboration such as experts and policymakers in agriculture, animal husbandry, economics, social affairs, and others. Meanwhile, it is essential to provide several information facilities and infrastructures related to health, especially healthy eating habits for the elderly living in rural areas. Further studies are needed with a longitudinal approach and intervention, especially on the occupational variable.

5. CONCLUSION

The results conclude that age, occupation, and area of residence as demographic factors have a role in determining the eating habits of the elderly. Employment programs for those who are unemployed may positively impact the healthy eating habits of the elderly. For this reason, there is a need for longitudinal studies and interventions related to these variable.

CONSENT

All participants included in this study were given an explanation of the study and they gave their consent to the interviews and data collection. Patient's written consent has been preserved by the authors.

ETHICAL APPROVAL

Ethical approval was obtained from the health research ethics committee in the Faculty of Nursing, Universitas Airlangga.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

- Govindaraju T, Sahle BW, McCaffrey TA, McNeil JJ, Owen AJ. Dietary Patterns and Quality of Life in Older Adults: A Systematic Review. *Nutrients*. 2018;10(8):971. DOI:10.3390/nu10080971
- Pinto de Souza FD, Duarte MSL, Pessoa MC, Franceschini SDCC, Ribeiro AQ. Evaluation of diet quality of the elderly and associated factors. *Arch Gerontol Geriatr*. 2017;72:174-180. DOI:10.1016/j.archger.2017.05.006
- Ferreira MPN, Previdelli AN, de Freitas TI, Marques KM, Goulart RMM, de Aquino RC. Dietary patterns and associated factors among the elderly. *Rev. Bras. Geriatr*. 2017;20(4):534-544.
- Friday LC, Widyandana D, Wilastonegoro NN, Fitriana, Hosianna DC, Zain H, et al. Exploration of unhealthy food consumption patterns in Sleman region by interprofessional undergraduate health students. *Journal of Community Empowerment for Health*. 2020;3(3):147-156. DOI:10.22146/jcoemph.57717
- Andreeva VA, Allès B, Feron G, Gonzalez R, Sulmont-Rossé C, Galan P, et al. Sex-Specific Sociodemographic Correlates of Dietary Patterns in a Large Sample of French Elderly Individuals. *Nutrients*. 2016;8(8):484. DOI:10.3390/nu8080484
- World Health Organization. Global status report on noncommunicable diseases 2010. World Health Organization;2011.
- Kementerian Kesehatan RI. Badan Penelitian dan Pengembangan Kesehatan. Laporan Nasional Rischesdas 2018. Jakarta: Balitbangkes;2019. Available: <https://www.litbang.kemkes.go.id/laporan-riset-kesehatan-dasar-rischesdas/>
- Dunneram Y, Ramasawmy D, Pugo-Gunsam P, Jeewon R. Determinants of eating habits among pre-retired and post-retired Mauritian. *International Journal of Nutrition and Food Sciences*. 2013;2(3):109-115. DOI:10.11648/j.ijnfs.20130203.13
- Arjuna T, Soenen S, Hasnawati RA, Lange K, Chapman I, Luscombe-Marsh ND. A Cross-Sectional Study of Nutrient Intake and Health Status among Older Adults in Yogyakarta Indonesia. *Nutrients*. 2017;13;9(11):1240. DOI:10.3390/nu9111240
- Adriano LS, Sampaio HA, Arruda SP, Portela CL, Melo ML, Carioca AA, et al. Healthy dietary pattern is inversely associated with non-alcoholic fatty liver disease in elderly. *Br. J. Nutr*. 2016;115:2189-2195.
- Anderson AL, Harris TB, Tylavsky FA, Perry SE, Houston DK, Hue TF, et al. Health ABC Study. Dietary patterns and survival of older adults. *J. Am. Diet. Assoc*. 2011;111:84-91.
- Ashby-Mitchell K, Peeters A, Anstey KJ. Role of dietary pattern analysis in determining cognitive status in elderly Australian adults. *Nutrients*. 2015;7:1052-1067.
- Irawati D, Ekawanti A, Josafat A. Nutritional profile in Indonesian elderly subpopulation. *Jurnal Kedokteran dan Kesehatan Indonesia*. 2020;11(2):121-129.
- Agarwal E, Miller M, Yaxley A, Isenring E. Malnutrition in the elderly: A narrative review. *Maturitas*. 2013;76(4):296-302.
- Payette H, Shatenstein B. Determinants of Healthy Eating in Community-dwelling Elderly People. *Canadian Journal of Public Health*. 2005;96:S27-S31.
- Rappaport L, Peters GR. Aging and psychosocial problematics of food. *Am Behav Sci*. 1988;32:31-40.
- Mumme K, Conlon C, von Hurst P, Jones B, Stonehouse W, Heath AM, et al. Dietary Patterns, Their Nutrients, and Associations with Socio-Demographic and Lifestyle Factors in Older New Zealand Adults. *Nutrients*. 2020;12(11):3425. DOI:10.3390/nu12113425
- Da Costa LML, Chagas DP, De Marchi RJ, Neves HF, Balbinot HJ, Pereira PDM, et al. Healthy eating index in southern Brazilian older adults and its association with socioeconomic, behavioral and health characteristics. *J Nutr Health Aging*. 2012;16(1):3-7. DOI:10.1007/s12603-011-0082-9
- Irz X, Fratiglioni L, Kuosmanen N, Mazzocchi M, Modugno L, Nocella G, et al. Sociodemographic determinants of diet quality of the EU elderly: a comparative

- analysis in four countries. *Public Health Nutr.* 2014;17(5):1177-89.
DOI:10.1017/S1368980013001146
20. Granic A, Davies K, Adamson A, Kirkwood T, Hill TR, Siervo M, et al. Dietary Patterns and Socioeconomic Status in the Very Old: The Newcastle 85+ Study. *PLoS One.* 2015;10(10):e0139713.
DOI: 10.1371/journal.pone.0139713.
21. Bishop NJ, Zuniga KE, Ramirez CM. Latent profile analysis of dietary intake in a community-dwelling sample of older Americans. *Public Health Nutr.* 2020;23(2):243-253.
DOI: 10.1017/S1368980019001496.
22. Steyn NP, Labadarios D, Nel JH. Factors which influence the consumption of street foods and fast foods in South Africa-a national survey. *Nutrition Journal.* 2011;10(104): 1-10.
23. Darmon N, Drewnowski A. Does social class predict diet quality? *Am J Clin Nutr.* 2008; 8795:1107-1117.
24. Mokhber N, Majdi MR, Ali-Abadi M, Shakeri MT, Kimiagar M, Salek R, et al. Association between malnutrition and depression in elderly people in Razavi Khorasan: A population based-study in Iran. *J. Public Health.* 2011;40:67-74.

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