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1698 [Indian Journal of Forensic Medicine & Toxicology, October-December 2019](#), DVOol.I1N3u,mNbo.e4r:10.5958/0973-9130.2019.00552.8 Energy Adequacy and Portion Standards to Achieve Good Nutritional Status for Elderly in Nursing Home Nuning Marina Pengge1, Nur Hatijah1, Taufiqurrahman1 1Department of Nutrition, Health Polytechnic of Surabaya Abstract Erderly food intake must be appropriate with daily requirements intake, nutritional adequacy, [nutritional status of the elderly](#). [The nutritional](#) adequacy [of the](#) residents of nursing home depends on the implementation of food delivery in that place. One of the process of organizing food is food portioning. If a financing tool that has not been standardized in accordance with the predetermined, this can lead to incompatibility with existing standards, so it cannot meet the needs. This study aims to determine the relationship of energy adequacy and standards with the nutritional status of the elderly at Surabaya nursing home. This study uses a cross-sectional approach conducted to 37 elderly respondents. As many as 56.8% respondent has inadequate energy and 13.5% respondents were thin nutritional status and 10.8% respondents were fat nutritional status. [The study](#) showed [that there is](#) no [significant relationship between](#) energy adequacy and nutritional status of elderly and there is a significant correlation between food portioning and nutritional status of elderly. The portion standard is adjusted to the age group so that the right elderly intake and energy adequacy are met. Keywords:

nutritional requirements, portion standards, nutritional status Introduction Background: The Indonesian Central Statistics Agency (BPS) notes that the [number of elderly people in Indonesia](#) is around [20.24 million people \(8.03% of the total population of Indonesia\)](#). The number of elderly people in Indonesia is increasing from year to year and spread in almost all provinces in Indonesia. BPS also noted that the morbidity rate of Indonesian elderly people from year to year tends to increase so that special attention from various parties is needed. If not immediately addressed, this condition will become a burden for families, communities, even the government. Morbidity at the age of 60 years is 25.05%, which affects the nutritional status.(1) Some factors cause some elderly to spend the rest of their lives in elderly shelters both government and private organizations. The nutritional adequacy of the residents

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of the nursing home depends on the implementation of food delivery in the institution. Portion standards can be interpreted as the amount of food served and portion sizes for each individual. Standard supervision of portions is needed to maintain the quality of a food produced. This will certainly affect the fulfillment of one's nutritional needs. Standard portions will also greatly affect the nutritional value of each dish.(2) Research conducted by Oktariyani 2012 on elderly people in social institutions nursing home of Tresna Wredha Budi Mulya 01 and 03 Jakarta of 143 respondents 33.6% lacking nutritional status, 16.1% over nutrition. Research conducted by Ketut Sudiantara, et al. Factors that affect nutritional status in the elderly from 37 respondents obtained over nutritional status 18.9%, underweight status 10.8%.(3) There are elderly shelter in Surabaya that are managed by both the private sector and the government. One of them is nursing home which managed by the government. Based on a preliminary study on one of the private elderly homes, it is known that there is no standard setting cost for meals for elderly people per person per day. Whereas for government-owned elderly institutions there is a stipulation on the cost of eating per person per day. Nursing home [Indian Journal of Forensic Medicine & Toxicology, October-December 2019, Vol. 13, No. 4](#) 1699 is [the](#) only government-owned elderly institution in the city of Surabaya. The residents of Surabaya nursing home are 77 people served by 2 cooks. There is no calculation of nutritional needs, especially in serving the residents, although there are guidelines posted on the wall, but there is a board that records the names of [elderly people who suffer from](#) certain [diseases](#) such as DM, gout and hypertension. so that food is given according to the condition of the disease. Purpose [The purpose of this study was to](#) determine [the](#) relationship between energy [needs and](#) standard portions [of the](#) nutritional status [of the](#) elderly at Surabaya nursing home. [Method This study](#) used [a](#) crosssectional [design](#) located at [the](#) Surabaya nursing home was conducted from April to October 2017. The population were all elderly residents of Surabaya nursing home. Criteria for sample were age=60-80 years, can be invited to communicate and not in a state of illness. Samples size was 37. Primary data included name, age, sex, activity factors and anthropometric measurements (height and weight). Secondary data included the profile of the Surabaya nursing home. Data that had been edited, tabulated and then analyzed analytically using Spearman Rank tests. Findings [Based on the results of data](#) collection, [most of](#) respondents were female (51.4%) and 83.8% were aged 65-80 years.

Energy Adequacy	Frequency	Percentage
Adequate	16	43.2
Inadequate	21	56.8
Total	37	100.0

Nutritional needs in the elderly are specific, due to changes in physiological and psychosocial processes as a result of the aging process. Based on table 1, as many as 56.8% respondent had inadequate energy. It's mean was not accordance with the daily energy needs according to nutrition adequacy rate. From the results of the calculation of food energy

consumed for 2 days, an average consumption of 1896.5 kcal was obtained. While the daily energy requirement for women was between 1550-1900 kcal, while male sex requires 1900 kcal-2325 kcal in a day.

Table 2. Food Portioning based on the Types of Food Food Portioning Portion of Food Suites to Standard Unsuites to Standard Total n % n % n % Staple Food 37 100 0 0 37 100 Animal side dish 37 100 0 0 37 100 Nabati side dish 0 0 37 100 37 100 Vegetable 37 100 0 0 37 100 Fruit 0 0 37 100 37 100 The portion standard is a breakdown of the type and amount of food in clean and raw for each type of dish, according to individual / consumer needs). Based on table 2, the distribution of staple food, animal and vegetable side dishes didn't match the standard. This study showed that 13.5% respondents were thin nutritional status 10.8% respondents were fat nutritional status. 1700 Indian Journal of Forensic Medicine & Toxicology, October-December 2019, Vol. 13, No. 4 Tabel 3. Correlation between Energy Adequacy and Nutritional Status of Elderly No Nutritional Status Energy adequacy Adequate n % In-Adequate n % P-Value 1. Thin 3 16.7 2 10.5 2. Normal 12 66.6 16 84.2 0.304 3. Fat 3 16.7 1 5.3 Total 18 100,0 19 100.0 Based on table 3, it was known that respondents with inappropriate energy sufficiency amounted to 84.2% or 16 people with normal nutritional status while the appropriate energy sufficiency was 66.6% or 12 people with normal nutritional status. The results of the Spearman correlation test with p-value 0.304 (p > 0.05), could be concluded that there was no significant relationship between energy adequacy with the nutritional status of elderly. Table 4. Correlation between Food Portioning and Nutritional Status of Elderly No Nutritional Status n Adequate % Food Portioning n In-dequate % P-Value 1. Thin 0 0 5 13.5 2. Normal 0 0 28 75.7 0.000 3. Fat 0 0 4 10.8 Total 0 0 37 100.0 Based on table 4, it was known that respondents with inappropriate food consumption amounted to 75.7% or 28 people with normal nutritional status while inappropriate food consumption was 10.8% or 4 people with fat nutritional status. Based on the results of the Spearman correlation test with p-value 0.000 (p < 0.05) it could be concluded that there was a significant relationship between food consumption and the nutritional status of elderly Surabaya nursing home. Based on the results of research at Surabaya nursing home it is known that the standard portion is treated equally for all respondents regardless of age, gender and activity. Financing is carried out based on the estimation of the cooking staff so that the results of all samples are not suitable. Discussion Based on the results of data collection, most of respondents were female (51.4%) and 83.8% were aged 65-80 years. Nutritional needs in the elderly are specific, due to changes in physiological and psychosocial processes as a result of the aging process. In the elderly the energy and fat requirements decrease. The energy needs of the elderly are also influenced by physical activity and work, the elderly experience a decrease in physical ability which results in reduced physical activity so that their energy needs are also reduced. Elderly with heavy physical work requires more nutrients. Based on table 1, as many as 56.8% respondent has inadequate energy. It's mean is not accordance with Indian Journal of Forensic Medicine & Toxicology, October-December 2019, Vol. 13, No. 4 1701 the daily energy needs according to nutrition adequacy rate. From the results of the calculation of food energy consumed for 2 days, an average consumption of 1896.5 kcal was obtained. While the daily energy requirement for women is between 1550-1900 kcal, while male sex requires 1900 kcal-2325 kcal in a day. Many factors can affect the energy adequacy of residents of Surabaya nursing home, including the portion of food taken by the orphanage is little or still less than the need, the diversity of menu makes the residents of the institution quickly bored, and the acceptance of the residents of the institution for taste, texture, the color of the food served . Food color plays a major role in the appearance of food because it is the first stimulus to the senses. Attractive and natural-looking food colors can enhance one's taste and desire to consume them. The aroma

that is spread by food is a very strong attraction and can stimulate the sense of smell, so that it arouses appetite. Health history also affects food intake. Some elderly people limit their food intake to certain foods related to the illness, such as reducing nuts and spinach in the elderly with gout. The portion standard is a breakdown of the type and amount of food in clean and raw for each type of dish, according to individual / consumer needs). Based on table 2, the distribution of staple food, animal and vegetable side dishes is doesn't match the standard. The portion standard is a breakdown of the type and amount of food in clean and raw for each type of dish, according to individual / consumer needs). Food delivery at the Surabaya nursing home institution is in accordance with the principles of organizing food institutions. But the standard portion is still not implemented properly. The portion of food served to nursing residents did not use standardized tools. Standard portions at the Surabaya nursing home institution are equated with each other and use estimates of nursing staff. Every day the officers distribute food to the elderly with the same menu regardless of age, gender, and nutritional status. Biological conditions and the ability of different elderly people to consume nutritional intake will gives a different effect for each elderly, this will also affect the energy adequacy of each elderly. Food delivery at the Surabaya nursing home is in accordance with the principles of organizing food institutions. But the standard portion is still not implemented properly. This study showed that 13.5% respondents were thin nutritional status 10.8% respondents were fat nutritional status. Nutritional status in the elderly is influenced by many factors. Reduction in muscle mass and increased fat mass can reduce the amount of body fluids so that the skin looks wrinkled and dry, the face wrinkles with settled lines. Elderly looks thin. In addition the process of biological change in the elderly is characterized by a decreased disturbance of the sense of taste, smell, hearing, vision and palpability. Decreased sensory function associated with zinc deficiency causes reduced appetite in the elderly.(4) It is known that respondents with inappropriate energy sufficiency amounted to 84.2% or 16 people with normal nutritional status while the appropriate energy sufficiency was 66.6% or 12 people with normal nutritional status. The results of the Spearman correlation test with p-value 0.304 (p > 0.05) can be concluded that there is no significant relationship between energy adequacy with the nutritional status of elderly Surabaya nursing home. Nutritional status in the elderly is influenced by several risk factors in meeting nutritional needs. These risk factors are inadequate oral care, functional disorders and disease processes, treatment effects, lifestyle, psychological, social, economic and cultural factors.(5) Meanwhile, the factors that influence the fulfillment of nutritional needs in the elderly are aging, changes in the sense of taste and smell, changes in the digestive system, regulation of appetite, eating habits, socialization, transportation, shelter, tooth growth, living in a hospital or institution such as a social institution.(6) Psychosocial factors can affect appetite in the elderly. Stress and anxiety can affect the process of the digestive system through the autonomic nervous system. Depression, memory problems and other cognitive impairments can also affect diet and ability to prepare food.(5) Nutritional needs are a minimum amount of nutrients that must be met from food consumption. The lack or excess of food consumption from needs, especially if it lasts for a long time in a sustainable period can endanger health, even in the later stages it can cause death.(7) The body's need for nutrients is determined by many factors, including basal metabolic rate, growth rate, physical activity and relative factors, namely digestive disorders, differences in absorption, level of use, differences in expenditure and destruction of 1702 Indian Journal of Forensic Medicine & Toxicology, October-December 2019, Vol. 13, No. 4 these nutrients in the body.(8) Energy is the result of metabolism of proteins, fats and carbohydrates. Energy needs generally decrease with age due to changes in body composition, decreased basal metabolic rate, and reduced physical

activity. Energy is needed by the body for growth, metabolism, utilization of food ingredients and activities. Energy entering through food must be balanced with the needs. An imbalance of energy input with long-term needs can cause nutritional problems. The way to get a balanced nutrient is by eating a variety of daily foods so that the lack of nutrients in the type of food that one will be supplemented by the composition of nutrients in other types of food. (9) Psychological factors such as depression, anxiety, and dementia have a major contribution to food intake in the elderly. It is known that respondents with inappropriate food consumption amounted to 75.7% or 28 people with normal nutritional status while inappropriate food consumption was 10.8% or 4 people with fat nutritional status. Based on the results of the Spearman test, there is a significant relationship between food consumption and the nutritional status of elderly Surabaya nursing home. Based on the results of research at Surabaya it is known that the standard portion (pemorsian) is treated equally for all respondents regardless of age, gender and activity. Financing is carried out based on the estimation of the cooking staff so that the results of all samples are not suits tha standard. The right portion and according to the standard will meet the needs of nutritional intake for the elderly, if the nutritional intake of the elderly is done well, the nutritional status of the elderly will also be good too. Many factors can influence food intake in the elderly, namely appetite disorders, physiological changes, cognitive changes, psychosocial changes, use of medications and factors of food such as food portions. Although the food portion is only one of many factors that influence food intake in the elderly, serving the right portion of food is important, because most of the elderly depend on the food provided by the institution. The purpose of organizing meals at the nursing home is to provide nutritious food that can meet the nutritional needs of the elderly. The implementation of eating is an intensive resource. If the organization of meals at the institution is not properly regulated, then the resources available for the elderly cannot be utilized optimally. Therefore, the implementation of meals should be carried out efficiently, in order to achieve the goals realized in the presentation of the right portion of food that is right for the elderly. Conclusion Most of the respondent still has inadequate sufficiency of energy. All respondents has inadequate consume due to the portioning food. There is a significant correlation between food portioning and nutritional status of respondents. The portion standard is adjusted to the age group so that the right elderly intake and energy adequacy are met. Conflict of Interest- No Source of Funding- Author Ethical Clearance- Yes References 1. BPS. Elderly Population Statistics. Jakarta: BPS; 2014. 2. Pucket RP. Food Service Manual For Health Institutions. Chicago: Amerika Chicago Press; 2004. 3. Oktariyani. Description of Elderly Nutritional Status at Nursing Home of Budi Mulya 01 and 03 East Jakarta. Undergraduate Thesis. Jakarta: FIK; 2012. 4. MoH-RI. Guidelines for Elderly Nutrition Servants. Jakarta: MoH-RI; 2012. 5. Miller CA. Nursing for Wellness in Older Adults: Theory dan Parctice. Philadelphia: Lippincott William & Wilkin; 2004. 6. Touhy TA, Jett KF. Ebersole & Hess' Gerontological Nursing & Healthy Aging. St. Louis Missouri: Mosby Elseiver; 2010. 7. Hardinsyah MD. Estimating the Sufficiency of Energy and Proteins and the Assessment of the Quality of Food Consumption. Jakarta: Wirasari; 1992. 8. Supariasa IDN, et al. Assessment of Nutritional Status. Jakarta: EGC; 2002. 9. Emilia E. Nutrition Education as One Means of Changing Nutritional Behavior in Adolescents. Jurnal Tabularasa PPS Unimed. 2009;6(2).