IMPACT OF THE DECREASE OF FUNCTIONS IN ORAL DIGESTIVE SYSTEM ON MALNUTRITION IN OLDER PEOPLE

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Abstract
The prevalence of older people experiencing the decrease of functions in oral digestive system was 40%. They need significantly long time chewing food. More than 50% of older people have lost adult teeth. As a result, 62.1% of them have lost some nutrition. There was a study in Jakarta showing older people experiencing malnutrition (32.97%). This study aimed to find out the impact of the decrease of function in oral digestive system on malnutrition in older people in Abiyoso Senior Center of Yogyakarta. This study employed cross-sectional designed observational analysis method. The sampling technic used was purposive sampling, collecting 64 of 126 older people in Abiyoso Senior Center of Yogyakarta. This study also used bivariate analysis with chi-square testing α 0.05. The instruments used to measure the decrease of functions in the oral digestive systems were mini nutritional assessment questionnaires. The respondents showing the decrease of functions in oral digestive system were 64.1%. The results of the chi-square testing showed *p-value* 0.1, meaning that there were no direct relationship between the decrease of function in oral digestive system on the older people's nutritional status. The decrease of functions in oral digestive system in older people did not relate to their nutritional status. Even though the two problems were statistically not related, older people still had to take care of their oral cavity health and digestive system. More researches are needed to find out more on this decrease of oral digestive system. A help from skilled experts in certain respected fields, particularly oral cavity care, is much appreciated.

Keywords: oral digestive system, malnutrition, older people

1. INTRODUCTION

The government has made many positive progresses in developing the nation, such as the economy, the quality improvement of the environment, and the advance of the science and technology. In medical field, there had been an improvement in the health quality of the people, which is reflected in longer life expectancy. This impacted on the fastly increasing number of the older people [1].

The National Survey of Social and Economy in 2000 had gathered 14.4 million older people, making up 7.18% of the total people living in Indonesia. Meanwhile in 2010, the same survey had gathered 19 million older people or 8.5% of the total people in Indonesia. This shows the increase of older people population and the number is expected to keep increasing. In 2010, it is predicted that there will be at least 28.8 million older people live in Indonesia [2].

Life expectancy of older people in Special Region of Yogyakarta was the best in Indonesia. However, it still could not surpass other countries in South-Eastern Asian (take Singapore as an example). Looking back to 1971, there had been a significant increase of number for 30 years. At the time, the highest life expectancy was 45.5 years old. This showed a transition in demography of Yogyakarta. It had been actually started since 1990s. Currently, the life expectancy of people in Yogyakarta was 73 years old [3].

The prevalence of older people suffering oral disfunction was 40%. In general, they had difficulty chewing the food and took a long time finishing their meals. It was found that more than 50% of older people had been edentulous [4].

There was a study, taking place in five senior centers, Jakarta. This study found 32.97% of older people suffering malnutrition [5]. This malnutrition was generally caused by insufficient nutrition from the food. They had only given 62,1% worth nutrition of the ideal number [6].

Employed Mini Nutritional Assessment method to assess the older people living in 32 senior centers he investigated (n=6821). He tried to assess the risk of older people having malnutrition. In his study, Guigoz had mentioned that older people living in senior centers have 51 ± 0,6% (Mean ± SE) risk of suffering malnutrition. That means 21 ± 0,5% (Mean ± SE) older people suffering from malnutrition and 29 ± 0,5% (Mean ± SE) others were well taken care of [7]. The same had happened in the study Rianto did, when he tried to find out the difference of protein consumption and the nutritional status of older people in Pucang Gading Senior Center of Semarang [8]. From the Mini Nutritional Assessment, he had gathered that 74 (43.2%) of older people had suffered from malnutrition. These malnourished older people need better care so their condition improved [9].

2. METHODS

This was a cross-sectional designed observational analytic study. This study took place in Abiyoso Senior Center of Yogyakarta. There were 64 of 126 older people in Abiyoso Senior Center of Yogyakarta. These samples were older people who agreed to be respondents, lived in Abiyoso Senior Center, and were above 60 years old. This study employed purposive sampling technique. The data on the oral dysfunction were gathered by the use of questionnaires. Mini Nutritional Assessment had been used to find the information on malnutrition.

3. RESULTS AND DISCUSSION

Below is the data based on the study in Abiyoso Senior Center of Yogyakarta. There were 64 samples did the questionnaires.

Table 1. The Distribution of Respondents based on Their Oral Function

Oral Digestive Function	n	%
Light	41	64.1
Mild	23	35.9
Total	**64**	**100**

The results of this analysis showed that 41 (64.1%) of the respondents (the older people living in Abiyoso Senior Center of Yogyakarta) had suffered from light oral digestive function disorder. The others suffered from mild oral digestive function disorder. The older people living in Abiyoso Senior Center of Yogyakarta had been used to the condition of their oral digestive. They had their own way dealing with the problems. To deal with some food left in their mouth, they gurgled with water to wash it down or they brushed their teeth. Most of them even did not experience difficulty in swallowing the food. They did not feel any pain when they opened their mouth widely. Some did not wear dental prosthetics out of discomfort. These older people could still differ many tastes.

Darmojo stated that as people aged, their ability in tasting and digesting would be different in a way it would affect their metabolism. Their ability to taste and smell things would decrease. Many older people could no longer smell and taste food. Oral cavity health played an important role in improving the overall health and life quality of the older people. It was because difficulty in accepting food could cause many health cases such as malnutrition, smelly breath, diseases in oral cavity, ulcus pepticum, diseases in airways, cardiovascular problems, and many more [4].

On the other hand, Wahyuni had studied about the relationship between oral health and the nutrition absorpsion in older people in Wana Seraya Senior Center of Denpasar, Bali. Wahyuni had found that 29 (58%) respondents of the study suffered from mild,10 (20%) light, and 11 (22%) severe oral digestive function disorder. Most older people living in the Senior Center had some food left after eating and they were reluctant when they had to clean it up. A small majority wore dental prosthetics that did not fit [10].

The questionnaires using MNA method had gathered a result that 44 (68,8%) older people had suffered from malnutrition. More results of the questionnaire were presented in the following Table 2.

Table 2. The Distribution of the Respondents Based on their Malnutritional Status

Malnutritional Status	**n**	**%**
Malnutrition	44	68.8
Normal	20	31.2
Total	**64**	**100**

Table 2 had shown that there were 20 (31.2%) of the respondents had normal nutritional status, while 44 (68.8%) others were malnourished. There were a number of factors causing malnutrition. These causes could be traced back up to three months prior to the diagnosis of malnutrition. Weight loss, mobility loss, psychological stress, acute diseases, neuropsychological problems and BMI measurement also contributed.

Azizah suggested that malnutrition in older people was cause more of primary rather than secondary factors. Some of these primary factors were the lack of knowledge, social detachment, family detachment, the loss of a partner, physical disorder, sensory disorder, mental disorder, and poverty. Secondary factors included malabsorption, drugs abuse, the increasing needs of more nutritions, and alcohol abuse. Malnutrition in older people could take a form of light, mild or severe chronic protein deficiency. This condition affected their overall physical look, such as having a thin body or under normal weight measurement [11]. Oktariyani had found similar results when she studied malnutrition in older people living in 01 and 03 Budi Mulya Senior Center of East Jakarta. On the Senior Centers, these older people had higher risk of suffering from malnutrition, rather than those who did not live in Senior Centers. There were 53 (37.1%) older people had a risk of malnutrition, 21 (14.7%) others had positive malnutrition, and only 1 (0.7%) older person was well nourished [9].

The following was the results of the analysis done to find out the relationship between the decrease of oral digestive function with the nutritional status of the older people living in Abiyoso Senior Center of Yogyakarta.

Table 3. The Relationship between the Decrease of Oral Digestive Function and the Malnutritional Status

Oral Digestive Function Disorder	**Malnutritional Status**				**Total**		***p-value***
	Malnutrition		**Normal**				
	n	**%**	**n**	**%**	**n**	**%**	
Light	27	65.9	14	34.1	41	100	0.504
Mild	17	73.9	6	26.1	23	100	
Total	**44**	**68.8**	**20**	**31.2**	**64**	**100**	

Table 3 had shown that there were 27 (65.9%) older people had both light oral digestive function disorder and malnutrition. On the other hand, there were 17 (73.9%) of older people had both mild oral digestive function disorder and malnutrition.The result of the chi-square testing was *p-value 0.504*, which meant that there was no significant relationship between the two variables. There was no direct relationship between oral digestive function disorder and malnutrition in older people in Abiyoso Senior Center of Yogyakarta.

This might be because most older people in Abiyoso Senior Center of Yogyakarta did not complain much about their oral digestive function disorder. And there were other factors contributing to their malnutrition, such as nutritional malabsorption, and the history of health that caused them to be cautios around some food, such as beanstalks, cassava leaves, and salted eggs. There was another study presenting the same results. Wahyuni had found that there was no significant relationship between the oral function status and the nutritional status in older people in Wana Seraya Senior Center of Denpasar, Bali. She had used BMI as the measurement method [10].

The changes affected by age and diseases gave a big contribution to nutritional deficiency in geriatric patients. Thalib stated that the first stage of digestion begins in the mouth. The food is chewed into small bites and softened, and the saliva help ease the food when it was swallowed [12]. Food that was not properly digested would caused malabsorption and might affect the overall digestive function in the body [13].

Too much or too little food gave negative impact on older people. Too little energy caused weight loss, and it would further decrease the such functions as weakened immune system and general functionality [14]. In truth, malnutrition was caused by malabsorption and the inability of the body to use the nutrition due to many factors. These two causes would get more and more severe as people age. How younger people absorp nutritions in their time would affect their health and their nutritional status as they became old [15].

Oral cavity health played a big role in other overall health and life quality of older people. Difficulty in digesting food might cause malnutrition, smelly breath, diseases in oral cavity and airways, cardiovascular problems. It would cost a lot to fix dental problems [4].

The food consumed in terms of daily diet directly affected the nutritional status [16]. One who fell ill would have appetite loss and would further cause energy and nutrition deficiency. This might worsen the condition, and would bring the body to a condition namely malnutrition. The little energy absorption in older people in this study was caused by several factors such as appetite loss or difficulty in swallowing the food [13]. Older people lost teeth and their gum softened. The ptyalin enzyme would decrease and cause difficulty in swallowing. This might be the cause of malabsorption, especially energy absoprtion, that contributed to malnutrition in older people [17].

4. CONCLUSION

In conclusion, there were many older people in Abiyoso Senior Center of Yogyakarta suffering from the decrease oral digestive function, making up 41 (64.1%). There were 36 (56.2%) of them having malnutrition. The chi-square testing revealed no direct connection between the decrease of oral digestive function with malnutrition (*p-value* 0.504).

More researches would be crucial to find out more on the decrease of oral digestive function. It is expected for the future researchers to directly assess the oral digestive function with the help of experts.

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