

Nutritional status of hyperlipidemics elderly in Indonesia according to body mass Index (study in four Indonesian big cities)

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Abstrak

Tujuan penelitian ini adalah untuk mengetahui status gizi kelompok lanjut usia yang menderita hiperlipidemia. Suatu studi dengan rancangan 'cross sectional' dilakukan di 4 kota besar di Indonesia dengan menggunakan metoda 'multistage random sampling'. Jumlah responden 656 orang lanjut usia hiperlipidemia dan non- hiperlipidemia, yang merupakan sub-sampel dari 1261 responden pada penelitian yang lebih besar. Pengumpulan data dilakukan dengan pengukuran antropometri dan analisa biokimia darah. Penentuan status gizi menggunakan indeks massa tubuh (IMT) dengan kriteria, berat badan kurang $IMT \leq 18.5 \text{ kg/m}^2$, berat badan normal $IMT 18.5 - 24.9 \text{ kg/m}^2$, berat badan lebih $IMT 25 - 29.9 \text{ kg/m}^2$, dan obesitas $IMT \geq 30 \text{ kg/m}^2$. Untuk menentukan status lemak darah, kriteria yang digunakan, hiperlipidemia adalah yang kadar total kolesterolnya $\geq 240 \text{ mg/dl}$ dan atau kadar trigliseridanya $\geq 200 \text{ mg/dl}$. Prevalensi hiperlipidemia pada lanjut usia wanita lebih tinggi dari pria. Status gizi lanjut usia dengan hiperlipidemia pada umumnya adalah berat badan lebih (60.4%) dan obesitas (57.1%) pada lanjut usia pria; dan terutama dengan berat badan normal (59.1%) dan berat badan lebih (59.5%) pada lanjut usia wanita. Prevalensi hiperlipidemia diantara lanjut usia pria dan wanita dengan berat badan kurang didapatkan cukup tinggi, masing-masing 38.7% dan 31.6%. (*Med J Indones 2005; 14: 97-100*)

Abstract

The objective of this study was to assess the nutritional status of hyperlipidemics elderly. A cross sectional study was undertaken in 4 big cities in Indonesia using multistage random sampling. The respondents were 656 hyperlipidemics and non hyperlipidemics elderly who were the subsample of 1261 sample of a larger population study. Data were collected through anthropometric measurements and biochemical blood analysis. To determine the nutritional status by Body Mass Index (BMI) the criteria used for elderly men and women are as follows, underweight $BMI \leq 18.5 \text{ kg/m}^2$, normoweight $BMI 18.5 - 24.9 \text{ kg/m}^2$, overweight $BMI 25 - 29.9 \text{ kg/m}^2$, and obese $BMI \geq 30 \text{ kg/m}^2$. To determine lipid status, the criteria used are as follows, hyperlipidemics elderly, those who had plasma total cholesterol $\geq 240 \text{ mg/dl}$ and or triglycerides $\geq 200 \text{ mg/dl}$. Prevalence of hyperlipidemics in elderly women is higher than elderly men, 56.2% vs 47.0%. The BMI of hyperlipidemics is mostly overweight (60.4%) and obese (57.1%) for elderly men; and mostly normoweight (59.1%) and overweight (59.5%) for elderly women. The prevalence of hyperlipidemics among undernourished elderly men and women were also quite high, 38.7% and 31.6% respectively. (*Med J Indones 2005; 14: 97-100*)

Keywords: BMI, hyperlipidemics, elderly

Nowadays, Indonesia is facing up two major nutritional problems altogether, that also known as double burdens problems. In one side undernourished is considered as one major problem while on the other hand, overnourished problems appear as an implication of increasing social and economic factor which is followed by changing of life style within society.¹

Undernourished increasing risk of infectious diseases, while overnourished increase the risk of degenerative diseases. Coronary heart disease is considered as one of the degenerative disease that is suffered by many adults and elderly people, mostly in urban area.

Data collected from hospitals and communities showed that cardiovascular disease that consist of coronary heart disease, hypertension, and stroke are the major causes of mortality among the elderly. According to Household Health Survey or SKRT in 1992, the mortality rate due to cardiovascular diseases had become one of the highest rank that put around 16.5% among all mortality causes.^{2,7}

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Hyperlipidemic is one of the risk factors causes coronary heart disease besides so many others such as hypertension, smoking habits, obesity, stress and diabetes melitus. Hyperlipidemic is the situation that shows plasma blood lipid increase, either cholesterol or triglycerides or both. Severe hyperlipidemic is described as level of blood total cholesterol > 240 mg/dl, and or level of triglycerides > 200 mg/dl.^{3,4} Hyperlipidemic is influenced by obesity, genetic, other diseases such diabetes melitus, age and also nutrition intake that mostly contain of high amount of saturated fatty acid.^{5,6}

Obesity could directly become a major cause of hiperlipidemic occurrence, due to it produces endogen cholesterol more than normal people. Obesity is caused by over consumption of nutritional intake and as well as genetic factor. Overweight and obesity can be occurred because there was lack of controlling eating habit that may result in a serious risk of people's health. This circumstance has close relationship with increasing blood pressure, blood sugar level and cholesterol level.^{6,8}

Adult and elderly nutritional status can be monitored by employing anthropometric indicator called Body Mass Index. Risk of health problems as a result of obesity could be emerged by body mass index level ≥ 25 kg/m².⁹ Today, the body mass index (BMI) indicator has been employed widely to state the nutritional status of the adults and elderly people, but there were not many studies deal with nutritional status of hyperlipidemic elderly, has been conducted.

This research had been conducted to study nutritional status of hyperlipidemics among elderly according to body mass index, to find out whether hyperlipidemics is suffered only by the elderly who had overweight problem or also suffered by normoweight and even underweight elderly, in urban area setting.

METHODS

This study was conducted by using cross sectional method. Population of this study were elderly between 55-85 y.o. that were spreading in four big cities around Indonesia; namely Jakarta, Padang, Bandung and Yogyakarta. The subjects' criterias were; look healthy and still able to walk. Respondents were taken from group of elderly who lives among community, those who live independently or live together with their family members.

This study employed multistage random sampling procedure. The number of samples were 656 subjects who were subsamples of larger population study which consist of 1261 samples. Fasting blood sample were taken from the subjects and biochemistry analysis was conducted in Regional Health Laboratory. Anthropometric assessment was conducted according to standard procedure.

RESULTS

Severe hyperlipidemics cases among elderly in Indonesia were apparently high, especially in total cholesterol level, and this situation may need quite a serious attention. Prevalence of hyperlipidemics in this study with 656 subjects, is figured in Table 1, which shows that severe hyperlipidemics (who had total cholesterol ≥ 240 /mg/dl) in the elderly were found in Padang and Jakarta which were $>56\%$, followed by those who live in Bandung (52.2%) and Jogjakarta (27.7%). Prevalence of hyperlipidemics in the Indonesian elderly by ages group and gender were shows in Table 2. This table shows that elderly women suffered from hyperlipidemics was higher than men, 56.2% vs 47.0% respectively. In addition, hyperlipidemics ederly women, mostly suffered by the younger group of ages (55-59 y.o.) that is 62.1%.

Table 1. Prevalence of hyperlipidemics in the Indonesian elderly by study area, in the year 2000

City	n	%
Jakarta	234	58.4
Padang	46	56.1
Bandung	47	52.2
Yogyakarta	23	27.7
Total	350	53.4

Table 2. Prevalence of hyperlipidemics in the Indonesian elderly by ages group and gender in four big cities, in the year 2000

Group of Ages (y.o)	Gender			
	Men		Women	
	n	%	n	%
55-59	25	52.1	110	62.1
60-69	52	47.7	115	52.3
/70	18	40.0	30	52.6
Total	95	47.0	255	56.2

BMI or Body Mass Index is the most accurate indicator of nutritional status in adult and elderly and can be assessed very easily as follow:

$$\text{BMI} = \text{Body Weight (kg)} / \text{Height}^2 \text{ (m)}$$

According to WHO, BMI is classified as follow¹⁰: underweight: BMI < 18.5 kg/m², normal BMI 18.5 – 24.9 kg/m², overweight BMI 25.0 – 29.9 kg/m², obese BMI /30.0 kg/m². Nutritional status of the hyperlipidemics elderly according to BMI can be seen in the Table 3. It appears in this table that hyperlipidemics mostly suffered by overweight and obese elderly men (more than 57%), while quite number of them (38.7%) was put in undernourished criteria (<18.5 kg/m²), and 43.3% for normoweight category. On the other hand, more than 59% of elderly women with normal and overweight category had hyperlipidemics, while prevalence of hyperlipidemics among obese and undernourished category were 48.4% and 31.6% respectively.

Table 3. Nutritional status of the hyperlipidemics elderly by BMI and gender in four big cities in Indonesia, in the year 2000

BMI (kg/m ²)	Gender			
	Men		Women	
	n	%	n	%
< 18.5	12	38.7	12	31.6
18.5-24.9	50	43.3	137	59.1
25.0-29.9	29	60.4	91	59.5
/30.0	4	57.1	15	48.4
Total	95	47.0	255	56.2

DISCUSSION

The increase number of cholesterol and triglycerides are often related to overweight problem. Body weight decrease could be achieved by reducing number of calori intake and by increase physical activity i.e. exercise. Over decrease number of calori intake and body weight decrease usually will result fast decreasing of plasma triglycerides. Dietary program, for the hyperlipidemics and overweight people is regarded very important of preventing from cardiovascular diseases risk factors.

An individual with overweight problem or obesity has 1.7 times higher risk to suffer of hyperlipidemics compare to normal one.⁵

Blood lipid disorder which is mostly happened simultaneously with obesity is important to predict future health and the therapy. An individual with this kind of disorder (combined hyperlipidemics and obesity) has greater risk to have cardiovascular disease (stroke and coronary heart disease).¹¹

Hyperlipidemics medication should be started by conducting dietary program. The objective of this medication is to prevent cardiovascular disease by decreasing total cholestrol to less than 200mg/dl. If it is only taking diet (along 6 months) could not be succeeded, then it should consider to give a medicine to make blood lipid reduce. Role of doctor and nutritician always become significant to give such motivation and encouragement and also to give clear explanation about the goal and principal of the medication.¹²

It is suggested that lipid intake should be minimized as few as possible, except lipid from fish which is suggested to be consumed in everyday basis. Mostly, lipid from fish is better than meat lipid (beef or chicken). It is due to the higher ratio of unsaturated fatty acid to saturated fatty acid. The higher the ratio, it will raised the potential of decreasing cholesterol in blood. Those higher ratio of unsaturated fatty acid to saturated fatty acid could be achieved as well by consuming lipid acid from plantation such as soya oil or corn oil, instead of animal lipid. It is also suggested not to consume too much high cholesterol food and high saturated fatty acid such as from coconut, palm oil, egg yolk, crab and innards. High prevalence of hyperlipidemics among elderly who have normoweight and undernourished, were probably due to a high consumption of saturated fatty acid, that resulting in high level of blood lipid.¹³

Though the impact of low cholesterol diet could be apparent within 63 weeks, but practically, it needs much time longer to get maximum response within a few more months. It is due to diet program is a kind of process which involve things like changing of habit such as changing food consumption, meal portion, cooking method, shopping behaviour and also when to order food in a restaurant.

Researches showed that lower total cholestrol was found among vegetarian people. It is due to fibres that

contain in fresh fruits, beans, nuts, seeds, cereals and vegetables usually have features to reduce blood lipid level.

A routine physical activities were apparently improving risk factors relates to overweight. An obese individual who has physically active, has lower risk of death and to have disease compare to someone who has normal weight but less physical activities. Physical exercise such as routine aerobic for 30-45 minutes, minimum 4 times a week has a significant implication to reduce total cholesterol, and most likely do when it is followed by reducing body weight.

CONCLUSION

1. Elderly women suffered more hyperlipidemics compare to elderly men. Hyperlipidemics elderly women mostly found in group of ages 55-59 y.o., while hyperlipidemics elderly men mostly found in group of 55-59 y.o. and 60-69 y.o.
2. Nutritional status of hyperlipidemics among elderly men according to body mass index measurement, were mostly found in overweight and obese group of elderly, while women were apparent in the normal and overweight elderly group.
3. Among the undernourished group, hyperlipidemics prevalence were found quite high, it was more than 30% for both elderly men and women group.
4. To reduce saturated fatty acid consumption that is high in meat, animal lipid, coconut and palm grease, meanwhile it is better to increase consumption of unsaturated fatty acid, substance in canola oil, soya oil, sesame oil and sea fish.
5. To increase fiber consumption from vegetables and fresh fruit, because it can reduce cholesterol in blood.
6. Routine medical check up of blood lipid for the elderly people. Community Health Centre (PUSKESMAS) should be equipped with proper laboratory facility to boost early detection program of hyperlipidemics.
7. Weight control and maintain adequate physical activities.
8. High prevalence of hyperlipidemics elderly need a serious attention from the authority and those whom responsible with.
9. This study was conducted in several big cities; to understand more about hyperlipidemics in the elderly and its determinant factors, may require future study in rural areas in Indonesia, in order to view more comprehensive picture.
10. Adequate providing information concerning hyperlipidemics and possible risk that may occur among the elderly is urgently needed.

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