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Nutrient Adequacy of Elderly in Guna Budi Bakti Nursing Home: A Pilot Study in Medan City-Indonesia [Tahap Kecukupan Pengambilan Nutrien di Kalangan Warga Emas di Panti Jompo Guna Budi Bakti di Kota Medan-Indonesia]

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ABSTRACT

Health condition in the elderly is determined by the quality and quantity of food and nutrient being consumed. However, the nutrient adequacy among elderly people at nursing home in Indonesia has rarely been investigated. Therefore, a cross sectional study was conducted to determine nutrient adequacy in Guna Budi Bakti nursing home in the city of Medan. Elderly food intake was assessed by three days food weighing method and compared to the Indonesian Recommended Dietary Allowances (RDA). Energy intake reached >100% of RDA. Although the majority of subject able to meet 70% of RDA for protein and vitamin A, a proportion of subject could not meet the recommendation of protein (26.6%) and vitamin A (28.3%). Calcium and ferum intake were approximately 20% of RDA. Furthermore, there is a need for a balanced food to planned and provided at the nursing home in the study.

Keywords: Nutrient intake; elderly; nursing home; Indonesia

ABSTRAK

Kesihatan di usia tua ditentukan oleh jumlah dan kualiti makanan dan nutrien yang diambil. Tahap kecukupan pengambilan nutrien di kalangan warga tua di Indonesia masih jarang dikaji. Oleh itu suatu kajian hirasian lintang diadakan untuk menentukan tahap pengambilan nutrien di kalangan warga emas di institusi warga tua Guna Budi Bakti di Medan. Tahap pengambilan makanan di kalangan warga emas ditentukan dengan menggunakan kaedah menimbang pengambilan makanan selama 3 hari dan dibandingkan dengan Recommended Dietary Allowances (RDA) Indonesia. Pengambilan tenaga mencapai lebih dari 100% RDA. Walaupun pengambilan protein dan vitamin A mencapai 70% dari RDA, tetapi sebilangan subjek tidak memenuhi RDA bagi protein (26.6% dan vitamin A, 28.3%). Pengambilan kalsium dan zat besi hanya mencapai 20%. Oleh itu, perancangan dan penyediaan menu seimbang disarankan di institusi warga emas yang dikaji. Selain itu, penilaian status penatanan warga emas juga harus dilakukan.

Kata kunci: Pengambilan nutrien; warga emas; institusi warga tua; Indonesia

INTRODUCTION

Based on the projection by the Bureau of the Cencus USA between the year 1990 to 2025, Indonesia will experience rapid increase of elderly population by approximately 414%. In the year 2020, the elderly population in Indonesia will be among the highest in the world after China, India and United States (Sofyan 2009).

Data from the Statistic Centre Office indicated that the number of elderly people in Indonesia was 14.439.967 people or 7.18% of the total population (Sumiyati 2007). The large number of elderly is a result of improvement in health sector, socio economic, education and also life expectancy. However this demographic phenomenon have an impact on health problems related to old age. Elderly people often suffered from nutrient deficiency including iron, calcium, vitamin A, vitamin B12 and vitamin D deficiency (Arisman 2002). A nation wide survey in Indonesia showed that 31% of elderly people were underweight, 67.1% normal and 1.8%

overweight. However, information on nutrient intake among elderly people in nursing home in Indonesia is scarce.

Therefore, a cross sectional study was conducted to determine the nutrient intake and adequacy of elderly people in a nursing home in Medan i.e Guna Budi Bakti nursing home. This nursing home accommodated Chinese elderly who were poor and had no home and family. They lived alone and were found homeless. This nursing home did not have any diet plan. The food was supplied twice in a week by the nursing home staff. The nursing home received financial assistant from donations. This cross sectional study was conducted in June to September 2009. All subjects at the nursing home i.e aged 50 years and above, had no communicable diseases and able to communicating recruited in this study.

Food consumption was obtained using a three day weighing method using a digital Weighing Scale (SECA Germany) to the nearest 0.1 g. A competensed nutrisurvey program was used to analyse the nutrient intake based on

Indonesian Food Composition Table (Indonesia Health Department 2007). Nutrient adequacy was calculated using the following formula:

$$A = \frac{C}{RDA} \times 100\%$$

- A : Level Adequacy
 C : Consumption
 RDA : Recommended Dietary Allowance

Nutrient adequacy was further classified into several categories according to the percentage of intake from RDA (Indonesia Health Department 2007), as shown in Table 1.

TABLE 1. Categories of Nutrient Adequacy

Nutrient	Category	Level of Intake
Energy and Protein	Normal	≥ 100%
	Moderate	80 - 100%
	Severe	70 - 79%
	Deficit	< 70%
Vitamin A	Normal	≥ 100%
	Deficit	< 100%
Calcium	Normal	≥ 100%
	Deficit	< 100%
Iron (Fe)	Normal	≥ 100%
	Deficit	< 100%

A total of 60 subjects (47% men and 53% woman) mostly in the aged of 75 years old participated in this study (Table 2).

At the study location, subjects received three main meals and one snack i.e breakfast (6.00 am), lunch (11.00 am), afternoon (2.00 pm) and dinner (5.00 pm). There were no diet plan or specific menu. The food preparation depends on the availability food in the storage. The diet consists of rice, vegetable (boil or stir fry) and one serving fish or meat. Pork meat was added in the vegetable. Breakfast was often consist of porridge with pork meat. The snacks were biscuits, bread, coffee and tea. Most of the subjects were Buddhist (96.7%) and only 3.3% Christian.

Generally, energy intake met the RDA. Protein consumption ranged from 70% to 99.7% of RDA. Vitamin intake was also above 70% RDA with the exception of men at 79 to 82 years old. However, calcium and ferum intake was not satisfactory, ranged from 6% to 29.6% of RDA (Table 3 and Table 4).

Table 5 showed that calcium and ferum inadequacy were prevalent with all of the subjects did not meet the RDA. Approximately a quarter of subjects had inadequate intake of protein and vitamin A. Energy consumption was high as the subjects were provided with high energy food such as rice, sugar, coconut oil, fried banana, egg and pork meat that were mostly donated to the study centre. Porridge was preferred by the subjects due to the texture. The protein and vitamin A intakes were also satisfactory as nursing home provided high protein and vitamin A foods

TABLE 2. Age and Sex Distribution of Elderly

Age Group (years)	Sex				Total	%
	Men	%	Woman	%		
55-58	1	1.7	0	0	1	1.7
59-62	3	5.0	1	1.7	4	6.7
63-66	2	3.3	4	6.7	6	10
67-70	3	5.0	8	13.3	11	18.3
71-74	2	3.3	1	1.7	3	5
75-78	14	24	16	26	30	50
79-82	3	5.0	2	3.3	5	8.3
Total	28	47	32	53	60	100

TABLE 3. Average Consumption of Energy, Protein, Vitamin A, Calcium, and Ferum

Age Group (years)	Energy		Protein		Vit A		Calcium		Ferum	
	Kkal	%RDA	gr	%RDA	RE	%RDA	mg	%RDA	mg	%RDA
55-58	2493	105	45	78	633	105	167	20	5	38
59-62	3432	167	51	101	569	99	241	29.6	6.3	48.3
63-66	2884.5	130	51.5	88	685.5	114	182.5	22	5.5	42
67-70	3232.6	177	43.6	81.6	476	79	217.6	26.6	7	53.3
71-74	2264	138	41	70	455	75.5	139	17	4.5	34
75-78	3125	154	47.2	86.8	550	91	219.5	28.5	6.7	47.3
79-82	2988	136	43.6	77	410.3	68.3	232.3	31.6	7.3	57.3

TABLE 4. Average Consumption of Energy, Protein, Vitamin A, Calcium and Ferrum

Age Group (years)	Energy		Protein		Vit A		Calcium		Ferum	
	Kkal	%RDA	gr	%RDA	RE	%RDA	mg	%RDA	mg	%RDA
59-62	2262	151	50	116	621	124	211	26	7	58
63-66	2015	135	44	99.7	729	136	162	20.5	5.3	45.5
67-70	2127	143	41.1	97.3	644.7	128.5	153	18.5	5	41.1
71-74	2048	149	41	97	717	143	49	6	5	41
75-78	2163.6	168	43.6	97.8	702	140	157	20.5	5.3	43.8
79-82	2004	169	41	113	652.5	130	135.5	16.5	5	41

TABLE 5. Distribution of Subjects According to Nutrient Adequacy

Nutrient Adequacy	Total	%
Energy		
- Normal	59	98.3
- Moderate	1	1.7
Total	60	100
Protein		
- Normal	20	33.3
- Moderate	24	40
- Severe	14	23.3
- Deficit	2	3.3
Total	60	100
Vitamin A		
- Normal	43	71.7
- Deficit	17	28.3
Total	60	100
Calcium (Ca)		
- Normal	0	0
- Deficit	60	100
Total	60	100
Iron (Ferum)		
- Normal	0	0
- Deficit	60	100
Total	60	100

such as egg, tempe (product of soybean fermented), fish, spinach, carrot, swang spinach and mustard leave. These foods are good sources of protein and vitamin A.

Calcium intake was not satisfactory as the food sources of calcium come from dark green leaf vegetables and sea fish which are considered as moderate calcium source. A glass of low fat milk and one large serving size of soybean curd should be served and consumed to meet the daily calcium recommended (Wirakusumah 2001).

Iron inadequacy was also prevalent as consumption of iron rich foods such as red meat was not often provided to subjects. Geriatric Association (2000) recommended that elderly people should consume food high in iron and less in fat. Unfortunately, the subjects in this study are not provided with a healthy meal.

Although energy intake was satisfactory, calcium and vitamin A inadequacy were prevalent. In addition, there is a concern that a quarter of the subject did not consumed enough protein and vitamin A. There is a need for provision of healthy menu and food to the elderly people in nursing home. Future studies should be conducted on the nutritional assessment including body mass index, body composition and bone health status, and also other factors influencing nutrient intake and nutritional status among elderly people in the institution.

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