

SOCIAL AND ANTHROPOMETRICS PROFILE OF INDEPENDENT ELDERLY IN EAST JAKARTA, INDONESIA

D. Susilowati¹, G Sevenhuysen², D Karyadi³

STATUS SOSIAL DAN STATUS ANTROPOMETRI DARI PARA USIA LANJUT YANG HIDUP MANDIRI DI JAKARTA TIMUR

Abstrak. Studi dilakukan untuk mendokumentasikan status gizi, berdasar pada Index Masa Tubuh (IMT), keadaan sosio-ekonomi dan lingkungan hidup dari dewasa muda (17 sampai 24 tahun), dewasa (25 sampai 44 tahun), pra-lansia (45 sampai 59 tahun) sampai pada lansia (60 tahun atau lebih). Penelitian potong lintang dengan menggunakan pengambilan sampel secara acak dan bertingkat dilakukan di Jakarta Timur. Pemeriksaan antropometri dan status sosio-ekonomi dilakukan pada responden berusia 17 tahun dan lebih. Berat badan kurang dan berat badan lebih dijumpai pada semua kelompok usia. Pra-lansia mempunyai resiko lebih untuk kegemukan. Para lansia dengan IMT yang lebih rendah mempunyai status sosio-ekonomi yang lebih rendah pula. Sebagian besar dari lansia laki-laki mandiri secara ekonomi dan mereka merupakan kepala keluarga. Para lansia perempuan secara ekonomi tidak mandiri dan berperan sebagai ibu rumah tangga. Para dewasa muda dalam presentase yang cukup besar secara ekonomi belum mandiri dan masih tinggal dalam rumah orang tuanya. Para lansia menunjukkan IMT dan status sosio-ekonomi yang lebih rendah, sedangkan banyak lansia perempuan dan dewasa muda yang secara ekonomi tidak mandiri.

Kata kunci: Status gizi, berat, tinggi, lingkaran lengan, index masa tubuh, dewasa, pra-lansia, lansia, penghasilan, pengeluaran, kebersihan lingkungan.

INTRODUCTION

Most of the world's population lives in the developing world, with 60% of people over 60 years of age, predicted to be 80% by the middle of the next century⁽¹⁾. South East Asia faces the problems of a rapidly aging population faster than any other area of the world; it has been labeled as 'a demographic time bomb'⁽²⁾. In 1999, the elderly population in Indonesia was 15.4 million, or 7.4% of the total population. It is predicted that the number of elderly in Indonesia will increase by 414% during the period from 1990 to 2025⁽³⁾.

The problem is to understand the situation of the elderly in Indonesia given the likely economic and social changes in future. In addition, although life expectancy of Indonesians is increasing⁽⁴⁾, high life expectancy does not necessarily mean a healthy life. This paper presents information about the current status of the elderly in Jakarta that may help guide interventions aimed at maintaining good health, an active social life, productivity and happiness.

-
1. National Institute of Health Research and Development, Ministry of Health, R.I
 2. Manitoba University, Winnipeg, Canada
 3. SEAMEO-TROPMED, University of Indonesia

METHODS

A multistage random sampling was done from the district level to the neighborhood level in East Jakarta, Indonesia, at 1993. At each level sampling was proportional to the population sizes of the areas being sampled, except for the neighborhood level. In each neighborhood, 14 households were randomly chosen regardless of the size of the neighborhood. The respondents before their enrolment in the study provided verbal consent. All members of the selected households were assessed, those aged 17 years and more were analyzed for this paper.

Body weight was measured using SECA Model 770 with 0.1 kg increments. Weight was measured with the respondents wearing light clothes. Scales were validated with known weights before and during the survey. Standing height of respondents aged 17 to 55 years was measured using Microtoise with 0.1 cm increments. The respondents had to stand against the wall accordingly⁽⁵⁾. For respondents over 54 years, arm span was measured from behind by using flexible, unstretchable measuring tape with 0.1 cm increments.

The respondent's perceptions of the social status of different members in their own household were used to identify who in that household was the head, spouse, child, or other. Quality control and extensive training and a pilot survey were done.

Body Mass Index (BMI) was measured from their weight in kilogram divided by their height square in meter. The calculation of BMI of those aged 55 years and above used arm span instead of height⁽⁶⁾.

Chi-square analysis and one-way ANOVA tests were used for this study. This study protocol met the International Guidelines for the Ethical Review of Epi-

demiological Studies, issued by the Council for International Organizations of Medical Sciences⁽⁷⁾ in 1991, and the University of Indonesia ethical review committee accepted the protocol.

RESULTS

A total of 1014 men and 1154 women aged 17 years and older from 676 households participated in the study. The number of women was higher than the number of men (p-value 0.049, chi-square). The age distribution shown in Table 1 shows that more than three-quarters of all respondents were either adults or young adults, while 6.7% were identified as elderly. The percentage of nuclear families that included only father, mother and their own children was 87.8%.

Body Weight Characteristics.

Table 1 shows that both men and women of the pre-elderly group had higher body weights than other age groups. There were significant differences in weight and BMI in both genders (p-values 0.0001, one way ANOVA). Practically the entire 5th percentile of BMI of both genders, among all age groups, was below the conventional cut off point of 18.5 for BMI (Table 1). The elderly group and the young adults group had the lowest 5th percentile of BMI.

Table 2 shows that more than 11% of elderly men and more than 17% of elderly women are overweight. However, these proportions are considerable less than the more than 30% of pre-elderly recorded as overweight.

Economic Status Characteristics.

Table 3 appears to show a positive association between income or food expenditure of elderly men with their BMI cate-

Table 1. Descriptive Statistics for Weight, Height, and BMI by Gender and Age.

	Age years	N	Mean (S.D.)	Percentiles					
				5 th	10 th	25 th	50 th	75 th	90 th
Weight									
Males	17-24	275	52.8 (8.5)	41.7	44.1	47.5	51.9	57.1	63.4
	25-44	464	58.4 (10.3)	45.4	46.9	51.2	56.7	64.5	72.4
	45-59	189	61.9 (10.2)	47.1	48.8	54.3	61.0	68.1	75.3
	60 +	75	54.1 (10.7)	38.0	40.0	47.5	52.9	60.1	68.3
			p-value 0.0001 *						
Females	17-24	358	47.9 (6.6)	38.3	39.9	43.4	47.2	52.2	56.2
	25-44	547	52.6 (9.5)	39.0	41.0	45.7	51.9	58.6	64.5
	45-59	177	55.4 (10.5)	40.1	43.0	47.6	54.5	62.4	69.9
	60 +	68	49.5 (9.9)	32.9	37.0	42.4	49.1	56.3	64.5
			p-value 0.0001 *						
Height **									
Males	17-24	275	163.6 (7.4)	152.6	154.8	159.8	163.7	168.1	172.0
	25-44	464	162.5 (6.7)	152.1	154.3	158.6	163.0	166.8	170.0
	45-59 **	189	162.3 (6.6)	150.8	154.4	158.2	163.0	166.1	170.0
	60 + **	75	163.0 (9.1)	147.9	152.6	158.6	162.0	167.2	173.0
			p-value 0.199 *						
Females	17-24	358	152.3 (6.8)	142.0	144.0	147.7	151.6	155.9	161.5
	25-44	547	151.7 (6.0)	142.6	144.5	147.7	151.2	155.1	159.1
	45-59 **	177	150.5 (5.5)	141.4	143.8	146.8	150.1	154.2	158.0
	60 + **	68	152.1 (7.3)	140.9	143.3	147.1	151.4	157.0	163.0
			p-value 0.023 *						
BMI									
Males	17-24	275	19.7 (2.5)	16.5	16.9	18.0	19.3	20.8	22.8
	25-44	464	22.1 (3.6)	17.2	18.2	19.5	21.5	24.4	26.7
	45-59 **	189	23.5 (3.2)	18.1	19.0	21.2	23.6	25.6	27.5
	60 + **	75	20.4 (3.6)	14.3	15.1	18.0	20.3	22.7	25.0
			p-value 0.0001 *						
Females	17-24	358	20.7 (2.7)	16.8	17.4	18.8	20.4	22.2	24.1
	25-44	547	22.8 (3.9)	17.3	18.3	20.0	22.4	25.2	27.6
	45-59 **	177	24.4 (4.3)	18.0	19.2	21.4	24.3	27.1	30.4
	60 + **	68	21.4 (4.1)	15.0	15.4	18.9	21.4	23.1	25.9
			p-value 0.0001 *						

* One-way ANOVA of differences between age groups within each gender group

** HEIGHT, for those aged > 55 years arm span was used instead of standing height

BMI (Body Mass Index): weight in kg divided with height square in meter.

gory. No such relationship was observed for elderly women.

Among the elderly males, 81.6% had some source of funding (whether they worked or had a retirement funding), while only 25.4% of the elderly females had some source of income. There were 67.3%

males and 70.4% females aged 17 to 24 years who earns no money. There were 7.0% males and 60.4% females aged 25 to 44 years who earns no money. There were 4.8% males and 61.0% females aged 45 to 59 years who earns no money.

Table 2. Underweight and Overweight Adults by Age Group.

	Age Groups									
	Young Adult		Adult		Pre-elderly		Elderly		Total	
	17-24 y		25-44 y		45-59 y **		60y> **			
	M *	F *	M	F	M	F	M	F	M	F
BMI Category:										
- underweight ***										
< 15.9 (%)	4.3	2.5	2.4	0.7	0	1.1	13.2	13.0	3.3	2.1
16-16.9 (%)	7.5	3.9	2.6	2.6	0	1.7	3.9	2.9	3.6	2.9
17-18.4 (%)	21.7	13.0	8.3	7.5	6.3	4.5	13.2	2.9	12.0	8.5
- normal weight										
18.5-24.9 (%)	61.9	72.6	66.2	61.9	60.8	49.7	57.9	63.8	63.4	63.5
- overweight										
25-29.9 (%)	4.6	7.8	17.3	22.5	31.2	31.1	10.5	13.0	15.9	18.6
30 > (%)****	0	0.3	3.2	4.8	1.6	11.9	1.3	4.3	1.9	4.4
Total %	100	100	100	100	100	100	100	100	100	100
Total N	281	361	468	547	189	177	76	69	1014	1154

Note:

* M: male, F: female

** For those aged > 55 years arm span was used instead of standing height

*** Chronic Energy Deficiency Grade III, II and I, BMI: '<16', '16-16.9' and '17-18.5' (Ferro-Luzzi et al 1992).

**** Obesity, BMI '>30' (WHO 1995 p 452).

There were significant difference in BMI and age groups among males (p-value 0.001, chi-square) and females (p-value 0.001, chi-square).

Table 3. Per-Capita Income and Per-Capita Expenditure of Elderly by BMI Category.

(in 1000 rupiah)	BMI Category							
	<18.5		18.5 - 25		25 >		Total	
	Mean ± SD		Mean ± SD		Mean ± SD		Mean ± SD	
	M	F	M	F	M	F	M	F
Per capita income	35.3 ± 19.8	43.2 ± 20.5	51.3 ± 24.7	43.1 ± 20.3	53.2 ± 31.6	28.1 ± 15.3	45.4 ± 24.4	42.4 ± 19.8
Per capita expenditure	35.1 ± 18.4	45.1 ± 22.3	46.3 ± 24.6	43.8 ± 23.0	48.6 ± 20.6	57.2 ± 23.4	42.8 ± 22.7	45.9 ± 23.0
Per capita food expenditure	25.8 ± 14.1	32.6 ± 23.3	36.9 ± 21.5	36.4 ± 24.1	46.9 ± 35.7	41.2 ± 18.8	34.6 ± 21.9	36.5 ± 23.1

Note: M: male, F: female, mean and one-way Anova

There were significant difference in per-capita income and per-capita food expenditure and age groups for males (p-value 0.005, chi-square), but not for females.

There was a significant association between age groups and ownership of luxury goods such as car, motor, bike, phone, radio, television and electricity with meter. The pre-elderly had the highest rate of ownership of luxury items while the elderly had the lowest ownership rate.

The respondents were asked which expenditure (food, clothing, luxury goods, education, housing, health and others) they are going to change if their income changed. More than 30% of all respondents intended to increase their food expenditure if their income increased, and more than a half of all respondents intended to decrease their food expenditure if their income decreased. There were 49.3% elderly males and 35.9% elderly females who intended to increase their food expenditure if their income increased. There were 60.9% elderly males and 56.5% elderly females who intended to decrease their food expenditure if their income decreased. Less than 0.5% of them planned to change their health expenditure if their income changed. Food availability seems to be vulnerable for the elderly need. The chi-square analysis shows that there were significant difference in intention to increase expenditure (food expenditure vs. all other expenditures) and age groups among males (p-value 0.012), but the same analysis shows that there was no significant difference among females. The same analysis also shows that there were significant difference in intention to decrease expenditure (food expenditure vs. all other expenditures) and age groups among males (p-value 0.04), but there was no significant difference among females.

The tap water as a source of drinking water, garbage collected and water sealed private latrine were considered to be the highest standard of domestic needs. The presence of these items show significant

difference among the four age groups (p-value 0.0001, 0.0001 and 0.0001, chi-square). The pre-elderly group generally had the best living condition.

The most crowded house was those belong to the adult group, while the least crowded house was that belong to the elderly group.

Social status characteristics.

Males aged 60 years and more, 86.8% still had the status of husband and only 9.2% had the status of grandpa. Females in the same age group 59.4% still had the status of wife and 28.9% had the status of grandma. According to the perception of the respondents, most elderly men maintained their status as head of household (as shown in their status as husband), while elderly women did not. On the other hand those aged 17 to 24 years, 80.8% males and 60.1% females had the status of children. Even among the adult group, 18.6% men and 12.4% women were still identified as children.

Table 4 shows the relations between household members, the number of bedrooms and crowding among the age groups. There were significant differences among the age groups, using One-way Anova (p-value <0.0001). The highest number of bedrooms and the highest number of household members were found among the young adult group, while the most crowded bedrooms was found among the adult group.

Table 5 shows that 4.7% of men and 10.3% of women had less than three years of education and were therefore considered to be illiterate. The elderly reported the highest percentage of illiteracy, at 21.3% of men and 52.5% of women. The elderly also reported lower than average completion of 11 years of education, 29.3% and 11.5% for men and women respectively.

Table 4. Household Members Bedrooms and Crowding by Age Group.

	Age Groups (Mean \pm SD)				Total
	Young adult 17-24y a	Adult 25-44y b	Pre-elderly 45-59y c	Elderly 60y> d	
Number of Bedrooms *1	3.2 \pm 1.6	2.6 \pm 1.8	3.3 \pm 1.4	3.1 \pm 1.6	2.9 \pm 1.7
differs from:	b	a,c,d	b	b	
Number of Household Members *2	6.3 \pm 1.9	5.5 \pm 1.9	5.9 \pm 1.9	5.4 \pm 2.2	5.8 \pm 2.0
differs from:	b,c,d	a,c	a,b	a	
Crowding *	2.4 \pm 1.5	2.7 \pm 1.5	2.2 \pm 1.4	2.0 \pm 1.1	2.5 \pm 1.5
differs from:	b,d	a,c,d	b	a,b	

Note: *Crowding = number of household members divided by the number of bedrooms.
Differences at p-value <0.0001, One-way Anova.

Table 5. Years of Education Achieved by Age Group.

	Age Group								Total	
	Young adult 17-24y		Adult 25-44y		Pre-elderly 45-59y		Elderly 60y>		M	F
	M	F	M	F	M	F	M	F		
<3 years / illiterate (%)	1.8	4.5	2.6	6.7	7.5	19.2	21.3	52.5	4.7	10.2
3-6 years (%)	7.5	19.1	23.3	31.2	19.1	29.7	29.3	16.4	18.6	26.3
7-11 years (%)	37.9	25.8	24.2	27.9	25.0	24.4	20.0	19.7	27.8	26.3
>11 years (%)	52.9	50.7	49.9	34.2	48.4	26.7	29.3	11.5	48.9	37.1
Total %	100	100	100	100	100	100	100	100	100	100
Total N	280	357	467	541	188	172	75	61	1010	1131

Note: M: males, F: females,
There were significant difference in length of education and age groups among males (p-value 0.00001, chi-square) and females (p-value 0.00001, chi-square).

Approximately half of the adult and young adult respondents had more than 11 years education.

The mean length of stay in Jakarta was 17.9 \pm 11.6 years. The pre-elderly and the elderly had generally spent half of their lives or more in Jakarta, while the young adults spent about two third of their life in Jakarta.

DISCUSSION

The mean height of the elderly for both genders was higher than the mean

height of the pre-elderly. Possibly because the pre-elderly, although experiencing relatively good living conditions today, grew up during a difficult era (1940-1950) where Indonesia faced several wars. The elderly on the other hand grew up prior to this period, when conditions of life were relatively stable. Another possibility is that the use of arm span instead of standing height may have introduced a bias in the recording of height of the elderly.

The majority of elderly men were independent as shown by their source of income and their status as head of the household, while most elderly women were eco-

conomically dependent. Elderly, who are capable of living independently, will have a more respected position in the family and in the community ⁽⁸⁾. The incomes and food expenditures of the elderly were the lowest among the age groups. The condition was reflected in their bodyweight. Most of the young adults were still economically dependent and live in their parent's house.

There was a significant percentage of the elderly, especially the women who were illiterate. This could be explained by the fact that during their youth they lived in a colonial situation where schooling was the privilege of affluent families ⁽⁹⁾. The 30% of elderly who were well educated had the ability to improve their conditions, using their knowledge, experience and wealth, and as a result they were able to create well-functioning social groups.

The ratio of length of stay in Jakarta to age within the young adult group, was higher as compared to the ratio of length of stay in Jakarta to age among the elderly. This information suggests that most of the younger adults were born in Jakarta or migrated as children, while the elderly migrated to Jakarta in their adulthood.

CONCLUSION

The majority of the elderly who participated in this study was economically independent and maintained a meaningful social status. The apparent socio-economic status of these elderly was very variable.

At the same time, a considerable proportion of the elderly were underweight. For men, this status appeared to be associated with income and food expenditure. Although the relationship was not observed for elderly women, this finding warrants attention in future assessments of the status of elderly in Jakarta.

The elderly had the lowest level of education among other age groups, with over half of women being illiterate. In comparison, the pre-elderly had appreciable proportions of respondents with more than eleven years of education, about half for the men and a quarter of the women.

Elderly people were more independent than is commonly acknowledged while on the other hand, young adults tended to be more dependent. The elderly were often considered to be the head of the family. It is important to monitor possible changes in social support that allow the elderly to remain independent.

ACKNOWLEDGMENTS

Contributors: DS, Rainer Gross, Sumilah Sastroamidjojo and Werner Schultink planned the study. Applied Nutrition Diploma Course students from SEAMEO-TROPMED, University of Indonesia and the graduates from Nutrition Academy of Jakarta did the data collection in the field. Dwi Ratna Sarashvati, Husni Thamrin, Achmad Syafic, Nils and DS supervised the data collection. DS did the data analysis and wrote the paper. GS and DK gave inputs for the paper. Richard Aitken edited the first draft of the paper and GS gave inputs and edited the last draft of the paper.

Funding: SEAMEO-TROPMED Regional Center for Community Nutrition, University of Indonesia and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH Technical Cooperation, Germany.

REFERENCES

1. Butler RN, Population aging and health. *BMJ*, 315:1082, 1997

2. Ebrahim S, South East Asia confronts its rapidly aging population. *BMJ*, 315:1037, 1997.
3. Darmono B, Cardiovascular disease epidemiology. In: *Widyakarya Nasional Pangan dan Gizi V 20-22 April 1993*. Ed. Rifai MA, Nortji A, Erwidodo, 1994.
4. Khaw Kay-Tee, Healthy aging. *BMJ*. Vol. 315: 1090, 1997.
5. Gibson RS, *Principles of nutritional assessment*, New York, Oxford, Oxford University Press, 1990.
6. Jelliffe DB and Jelliffe EFP, *Community nutritional assessment with special reference to less technically developed countries*. Oxford University Press; 342-343, 1989.
7. CIOMS, The Council for International Organizations of Medical Sciences. *The international guidelines for ethical review of epidemiological studies*, 1991.
8. Azwar A, *Introducing steps for Healthy Paradigm in increasing the humane source quality for the elderly in one day seminar about Healthy Paradigm for the elderly*, Health Department, Jakarta, 1999.
9. Basuki B, *Programs and institutionalization of the elderly in the national life in increasing the humane source quality for the elderly in one day Seminars about Healthy Paradigm for the elderly*, Health Department, Jakarta, 1999.