

## Determinant Factor That Influenced Anxiety Level And Energy Intake Among Elderly

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**Abstract** - Demographic changes structure was caused by elderly population increase through decrease number of morbidity and mortality. Indonesia has already turned to a country with aging population since the percentage of elderly population has already reached more than 7%. Specialized of Yogyakarta province with highest percentage of elderly in Indonesia, which was 14.02% in 2009. Choosing of food is a multidimensional behavior, affected by many factors, including psychological measures. Psychological factors such as anxiety, depression, and dementia have significant contributions in determining energy intake. In Indonesia, prevalence of anxiety in elderly was 34.92%. This research was aim to determine determinant factor that influenced anxiety level and energy intake among elderly in Yogyakarta municipality. This research was an analytic observational by using cross sectional study design. Total sample were 214 respondents. Technique of sample using multistage random sampling. Data were analyzed with chi square test and multiple logistic regression. Result showed that most dominant factor that influenced anxiety level was sex. Female elderly had 3.37 times higher risk to experience moderate anxiety level as compare to male elderly. A percentage of 67% female elderly experienced moderate anxiety level consumed fat and oils, and a 83% of them consumed cereals, tubers, and their manufactured products. A percentage of 26.2% subjects had moderate anxiety level. In groups of subjects with moderate anxiety level, intake of energy was mostly excessive. Most dominant factor that influenced anxiety level was sex. In groups of subjects with moderate anxiety level, intake of energy was mostly excessive.

**Keywords:** sex, anxiety level, energy intake, elderly.

### INTRODUCTION

Demographic changes structure was caused by elderly population increase through decrease number of morbidity and mortality [1]. Increasing the number of elderly become one of indicators development success as well as a challenge development. If these problems not anticipated, so it is possible that the development process will obstructed [2]. Indonesia has already turned to a country with aging population since the percentage of elderly population has already reached more than 7%. Specialized province of Yogyakarta (Daerah Istimewa Yogyakarta, DIY) is a province with highest percentage of elderly in Indonesia, which was 14.02% [3]. Population growth rate in DIY is one of the lowest in Indonesia. This can be interpreted as success in demographic programs and the shift of principle from the problem of quantity to quality. Age of life expectance in DIY Province is the highest in Indonesia [4]. Morbidity number of elderly in city population (27.2%) was lower as compared to elderly in rural area (32.96%). This showed that elderly population in city area was more likely to have better degree of health as compared to elderly population in rural area [3]. Currently, the number of population aged 60-74 years old in Yogyakarta is 33,466 people (7.3% of all population) and the number of population aged  $\geq 60$  years old was 42,102 people (9.1% of total population) [5].

Increased number of elderly affect aspects in their lives, such as physical biological, psychological, social changes, and the occurrence of degenerative diseases caused by the process of aging [6]. Along with increased number of elderly population in Indonesia, there will be increase in elderly-related health problems and morbidity [7]. Statistical data from World Health Organization (WHO), showed that anxiety is increasing each year. Prevalence of anxiety in elderly was 34.92% [8]. General prevalence of anxiety in patients aged above 65 years old in community was 4% [9]. The condition of anxiety in elderly can be caused by changes in social economic aspect (starting the retirement phase), decreased income, post power syndrome, conflict of roles, and the feeling of being inadequate or no longer needed, decreased health condition, and they often experienced physical disturbances and diseases started to arises.

The existence of psychological factors such as depression, anxiety, and dementia were significant contributors in determining dietary and nutritional intake [10]. Choosing of food is a multidimensional behavior, affected by many factors, including psychological measures [11]. High level of anxiety caused increase energy intake and saturated fatty acid [12]. Based on description, the author was interested in determining determinant factor that

influenced anxiety level and energy intake among elderly in Yogyakarta municipality.

### METHOD

This research was observational with cross sectional design. Research was conducted in Yogyakarta in a period that lasted from November 2011 to January 2012. Research population was all elderly in Yogyakarta. Based on sample calculation, a minimal sample number that should be obtained was 214 people. Calculation of sample number was conducted by hypothetic testing formula for two proportions of population [13] with 95% confidence interval, 80% power of the test, proportion of inadequate intake in depressed elderly of 0.47, and proportion of inadequate intake in non-depressed elderly of 0.32. Sampling was conducted by multistage random sampling method. Inclusion criteria were age of  $\geq 60$  years old, intact communication ability, listed or registered as inhabitant in research area. Exclusion criteria were elderly who experienced memory impairment (cognitive decline disorders as assessed by MMSE), elderly with chronic disease which require specific diet, inability to span the arms perfectly, elderly which were consuming antianxiety medicine. Independent variable was anxiety level, dependent variable was energy intake.

Anxiety level was measured with trait-manifest anxiety scale (T-MAS). Energy intake was measured with semi quantitative food frequency questionnaire (SQFFQ) consumed for the last 3 months. Results of estimation of energy intake was compared with average Indonesian recommended dietary allowance (RDA) which had been adjusted for certain age groups [6]. Data were then analyzed statistically with 95% confidence interval and  $p < 0.05$  using chi square.

### RESULTS AND DISCUSSIONS

Number of research subjects was 214, and they lived in sub districts of Mantrijeron, Umbulharjo, Gondomanan, Wirobrajan, and Jetis. Most subjects aged 60–74 years old (85.1%). A percentage of 81.3% subjects were female while 47.2% finished junior/senior high school. Most subjects (74.3%) were unemployed (in retirement/housewives). Mean income of subjects was mostly <Rp.808,000.00 per months, which occurred in 120 subjects (56.1%). Most subjects lived with family (91.6%), and most subjects (59.4%) had regular physical exercise. Measurement of anxiety level showed that most subjects (73.8%) had low anxiety level, and a number of 26.2% had moderate anxiety level (Table 1). Results of multiple logistic regression analysis demonstrated that sex was a dominant factor in related with anxiety level (OR=3.37) (Table 2).

Table 1. Measurement of anxiety level

Anxiety Level	n	%
Low (skor T-MAS < 20)	158	73,8
Moderate (skor T-MAS 20 – 40)	56	26,2

Table 2. Multiple logistic regression analysis (dependent variable: anxiety level)

Variables	OR	p	95% CI	
			Lower	Upper
Sex				
Female	3.37	0.030	1.125	10.117
Male				
Education				
Completing higher education				
Completing elementary school /junior high school/senior high school	1.39	0.538	0.487	3.971
Status of dwelling				
Living with family	1.67	0.322	0.602	4.683
Living alone				
Physical exercise activity				
Irregular	1.75	0.082	0.932	3.287
Regular				
Log likelihood	-116.821			
R <sup>2</sup>	0.0503			

TABLE 3. CORRELATION BETWEEN ANXIETY LEVEL WITH ENERGY INTAKE

Anxiety level	Energy intake			p	OR (CI)
	Excessive n (%)	Lacking n (%)	Adequate n (%)		
Moderate	42(75,0)	6 (10,7)	8 (14,3)	0.000 <sup>a</sup>	6,22 (3,82-10,1) <sup>a</sup>
Low	15(9,5)	47(29,7)	96(60,8)	0,451 <sup>b</sup>	1,31 (0,68-2,49) <sup>b</sup>

<sup>a</sup> moderate and low anxiety level with excessive and adequate energy intake

<sup>b</sup> moderate and low anxiety level with lacking and adequate energy intake (reference: low anxiety level and adequate energy intake)

Result of chi square analysis between anxiety level with energy intake showed statistically significant correlation between moderate anxiety level with excessive energy intake ( $p < 0.001$ ), but no significant correlation was found between moderate anxiety level with inadequate (lacking) energy intake ( $p > 0.05$ ) (Table 3). In groups of subjects with moderate anxiety level, intake of energy was mostly excessive.

Based on research results, from 214 elderly who became research subjects, 56 people (26,2%) experienced moderate anxiety level. Prevalence of anxiety level was similar with anxiety level of elderly in Finland with 29,133 male subjects aged 50–69 years old, which revealed a prevalence of 24% [14]. Research in 6 countries in Europe in 21,425 subjects showed prevalence of anxiety disorders of 13.6%, with 9.5% occurred in males and 17.5% occurred in females (OR=2.43) [15].

Prevalence of anxiety level of elderly in Yogyakarta was lower as compared to prevalence of anxiety level in elderly in Purworejo municipality, which was 34.92% [8], and the percentage was also lower as compared to prevalence of anxiety in adult women and elderly as reported by data from American Association of retired Persons. The analysis Images Aging Survey which took place in 1994 via telephone in 1200 people in America showed that prevalence of anxiety in elderly woman was 45.06% [16].

The condition of anxiety in elderly can be caused by changes in social economic aspect (starting the retirement phase), decreased income, post power syndrome, conflict of roles, and the feeling of being inadequate or no longer needed, decreased health condition, and they often experienced physical disturbances and diseases started to arise. The difference in prevalence of anxiety level could be caused by the existence of differences in environmental characteristics around subject, which include cultural or socio-economic factors, other than of course differences in parameter of measurement of anxiety level used. In

additional, different research subjects might showed differences in anxiety experienced, the attitude that could accept situation at any kind, and cultural factors between research subjects in Yogyakarta with the ones in Purworejo municipality, or America.

Result of multivariate analysis showed that most dominant factor that influenced anxiety level was sex. Female elderly had 3.37 times higher risk to experience moderate anxiety level as compare to male elderly. A percentage of 67% female elderly experienced moderate anxiety level consumed fat and oils, and a 83% of them consumed cereals, tubers, and their manufactured products.

This was in concordance with research which stated that in the state of stress, eating pattern tended to be significantly difference in females and males. Females tended to increase food consumption, in certain sweet foods or fat consumption, in response to stress, as compared to males [17]. A woman tended to more often experienced the symptoms of anxiety as compared to males [18]. Furthermore, research in 4,320 respondents in South London also showed that more females were stressed as compared to males ( $p < 0.01$ ) [19].

In this research, correlation between moderate anxiety level with excessive energy intake was statistically significant ( $p < 0.001$ ), but no statistically significant correlation was found between moderate anxiety level with low energy intake ( $p > 0.05$ ). This showed that in this research subjects with moderate anxiety level tended to experience excessive energy intake, proved by OR value in subjects with moderate anxiety level who experienced excessive energy intake, is higher as compared to subjects with moderate anxiety level who experienced low energy intake. Psychological factors such as depression, anxiety, and dementia played significant contribution in determining dietary intake and nutrition in elderly [10]. Stress had also been known as causing eating disorders, both in the form of decreased or increased appetite [20]. In certain states, stress, and high workload led to increased in intake of energy, fat, carbohydrate, and protein, which was showed by mean difference in energy intake [21]. High level of anxiety also led to increased energy consumption and increased saturated fat ( $p < 0.05$ ) [22]. Anxiety had also been correlated with increased intake of alcohol and fat, including saturated fat, omega-6 and omega-3 [14]. Subjects with high level of anxiety tended to eat sweet and salty snacks with high energy and fat ( $p < 0.01$ ), while subjects with low level of anxiety tended to chose for fruits and vegetables, meat and fish [22].

## CONCLUSIONS

Result showed that most dominant factor that influenced anxiety level was sex. Female elderly had 3.37 times higher risk to experience moderate anxiety level as compare to male elderly. A percentage of 67% female elderly experienced moderate anxiety level consumed fat and oils, and a 83% of them consumed cereals, tubers, and their manufactured products. A percentage of 26.2% subjects had moderate anxiety level. Significant correlation was found between moderate anxiety level with excessive energy intake in elderly in Yogyakarta ( $p < 0.001$ ; OR=6,22), but no statistically significant correlation was found between moderate anxiety level with inadequate (lacking) energy intake ( $p > 0.05$ ). Based on the conclusion, integrated service center for elderly should also improve promotion and preventive efforts in form of delivery of information and education about the importance of correlation between anxiety level and energy intake. Elderly should manage their energy intake to keep it in concordance with need as an effort to obtain and maintain ideal body weight; and elderly are recommended to reduce moderate anxiety.

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