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Original Article

Prevalence and Related Factors of Depression among the Elderly in Indonesia

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SUMMARY

Background: Information regarding elderly depression and its related factors in Indonesia, the 4th populated country with 22 million elderly, is scarce. The aim of this research was to provide an overall social, demographic profile of depression among the elderly in Indonesia.
Methods: Data were obtained from the Indonesian Family Life Survey 5 (IFLS 5). Depression was measured using the Center of Epidemiological Studies Depression Scale-10 (CESD-10). A multivariate logistic regression analysis was used to identify significant factors associated with depression.
Results: The prevalence of depression among 2910 elderly was almost one-quarter of total participants at 24.9% with a mean depression score was 7.62. Factors associated with a higher likelihood of depression were low life satisfaction, low economic status, worse self-rated health, worse physical function, low level of exercise, and sleep impairment. Demographic factors such as being female, younger age, and living in certain regions were associated with a higher likelihood of depression, as well.
Conclusions: The prevalence of depression among Indonesian elderly was quite high, and more resources and effort needed to be allocated to prevention within the health care system. The identification of protective and risk factors in this research can be useful in devising preventive programs. The government policy should foremost focus on high-risk groups, such as those with lower economic status, females, living in certain regions, and those with worse physical health.

1. Introduction

Depression was the leading cause of disability in the world in 2015 according to the World Health organization (WHO). In 2015, the WHO estimated that 7% of elderly people suffered from depression.[1] Demographic factors, such as being female, having a lower educational status, and having a low socioeconomic status[2] were associated with a higher likelihood of having depressive symptoms. Other health-related factors, such as low self-rated health,[3] and a greater number of chronic conditions[4] were also associated with depression. In terms of social factors, elderly people with lower community support, fewer social or religious activities were more likely to suffer from depression.[5] Poor sleep quality was also found to be associated with depression and other mental disorders.[6–8]

Indonesia, the 4th most populated country in the world, had 22 million elderly in 2015, an increase of 52.7% from year 2000. As the population ages, the government has placed more resources on elderly care, such as in improving elderly health insurance and welfare.[9] While most research on elderly health was concerned with chronic conditions and functional ability,[10] little information was available regarding elderly depression. Prior researcher have identified poverty status as factors associated with depression.[11] More research and understanding concerning elderly depression in Indonesia and in other developing countries are needed.

2. Methods

2.1. Study design

This was a cross-sectional study, using data obtained from the Indonesian Family Life Survey (IFLS) 5 conducted in 2014 and 2015. The IFLS was first conducted in 1993, and was carried out in 1997, 2000, 2007, and 2014. The sampling scheme was stratified on province and rural or urban location. In total, 13 provinces, representing 83% of the total population, participated in the survey. IFLS has been used in previous research.[11] Detail information about IFLS can be obtained from http://www.rand.org/labor/FLS/IFLS.html. An elderly person was defined as someone who was ≥ 60 years. In total, 4007 elderly people participated in IFLS 5. After excluding proxy respondents and those respondents with missing data, 2910 respondents were included in our analysis.

2.2. Measurements

Depression was measured using the Center of Epidemiological Studies Depression Scale-10 (CESD-10). Questions consist of 10 items about how frequently a participant felt a certain way in the

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past week. Each question was reported using a Likert scale of 0~3, with the total score ranging 0~30, and a cutoff point of ≥ 10 indicating a possible sign of depression.[11,12]

Independent variables in the study included demographics, health status, activities variables, and sleep quality. Demographic variables were age, sex, marital status, educational level, residency, home region, and socioeconomic status. The region indicated the major island on which participants live. The socioeconomic status was assessed based on the total value of household assets. It was divided into quartiles in which the first quartile indicated the poorest. Self-rated health was assessed by the question "In general, how is your health?" The number of chronic conditions included hypertension, diabetes, tuberculosis, asthma, heart attack or other heart problems, liver diseases, stroke, cancer or malignant tumor, arthritis, high cholesterol, kidney diseases, and digestive diseases, were assessed by doctors. Physical function represented the number of activities of daily living (ADLs) and instrumental activities daily living (IADLs). Life satisfaction was assessed with a question "How satisfied are you with it?" It was recoded to satisfied, somewhat satisfied, and unsatisfied. Physical exercise in this study explored whether a respondent did any of the following vigorous activities: heavy lifting, digging, plowing, aerobics, fast bicycling, and cycling with loads. It was categorized as "Yes" if the participants did one or more the list of activities; "No' if the participants did not do one of the activity". The variable of social activities represented the extent of participation in the community.

The quality of sleep was measured using sleep disturbances and sleep-related impairment question from the Patient Reported Outcomes Measurement Information Systems (PROMIS). Previous study has demonstrated the validity of measurements in adult population.[13] Sleep disturbance assessed self-reported perception about quality of sleep such as getting to sleep or staying asleep. Five questions in sleep disturbance were obtained by statement "*I had trouble sleeping"; "My quality of sleep was....."; My sleep was refreshing"; I was satisfied with my sleep'; and " I had difficulty falling asleep"*. Sleep impairment focuses on individual perception about alertness, sleepiness and tiredness during waking hours. The five statements to observe sleep impairment were *"I had a hard time concentrating because of poor sleep"; I had problems during the day because of poor sleep"; I had a hard time getting things done because I was sleepy"; I felt tired"; I felt irritable because of poor sleep'*. Both measurements were reported on a 5-point Likert scale. The total raw score was converted into a T score calculation with a mean of 50 and a standard deviation of 10. Participants with a T score of > 50 were coded as having sleep disturbances or sleep impairment.[14]

2.3. Statistical analysis

A univariate analysis was used to describe the basic characteristic of participants. In the bivariate analysis, a Chi-squared test and Student's *t*-test were used to compare characteristics between depressed and not depressed in elderly people. The multivariate logistic regression analysis was used to identify significant factors associated with depression in the overall sample. The 95% confidence interval (CI) was used to report the percentage of the odds ratio (OR).

2.4. Ethical consideration

The IFLS 5 questionnaires and procedures were reviewed and approved by Institutional Review Board (IRB) at the RAND Corp. in the United States and Universitas Gadjah Mada (UGM) in Indonesia. Written informed consent was obtained from all participant in the first interview. All personal records from participants were anonymous and confidential.

3. Results

Table 1 shows characteristics of the 2910 elderly respondents. The average age was 67.4 years, with 42.3% in the 60~64-year age group, and 13.4% in the ≥ 75-year age group. Most of the elderly had received little or no education, with 26.3% having received more than 6 years of schooling. In terms of the health status, 63.1% rated themselves as healthy, 61.2% were free of chronic conditions, and 81.6% rated themselves as being "satisfied" or "somewhat satisfied" with their lives. Out of the 11 ADL and IADL functions, the average number of functions able to be performed was 10.13, while 67.7% of the elderly were able to perform all of them. Regarding depression, the average CESD-10 score was 7.62, with 24.9% scoring ≥ 10, a possible indication of depression. As for sleep quality, 48.7% reported a sleep disturbance, while 39.3% reported sleep impairment.

Table 2 compares prevalences of depression by its characteristics. In the bivariate analysis, demographic factors that were associated with depression were being female, having a lower level of education, and having a lower economic status. Elderly people with lower self-rated health, more chronic conditions, lower life satisfaction, worse physical function, fewer social activities, not engaging in vigorous activity, or worse sleep quality were also more likely to suffer from depression.

Table 3 shows results of the multivariate logistic regression analysis. Factors that were significantly associated with lower likelihood of having depression were an older age (OR = 0.67; 95% CI = 0.48~0.93), a better economic status (OR = 0.49; 95% CI = 0.36~0.67), better physical function (OR = 0.82; 95% CI = 0.78~0.87), and more exercise (OR = 0.68; 95% CI = 0.53~0.87). The home region was also significantly associated with depression. Compared to elderly in Sumatra, those in Sulawesi (OR = 2.35; 95% CI = 1.46~3.78), West Nusa Tenggara (OR = 1.73; 95% CI = 1.12~2.68), Kalimantan (OR = 1.67; 95% CI = 1.02~2.75), and Java (OR = 1.39; 95% CI = 1.06~1.84) were more likely to have depression. Being female (OR = 1.29; 95% CI = 1.02~1.61), having lower life satisfaction (OR = 1.82; 95% CI = 1.39~2.37), and having worse self-rated health (OR = 1.73; 95% CI = 1.41~2.11) were also associated with depression. In the overall sample, sleep impairment remained a significant predictor (OR = 4.77; 95% CI = 3.90~5.82), while sleep disturbances were not significantly associated with depression.

4. Discussion

In this study, the prevalence of depression among elderly in Indonesia was 24.9%, similar to that of a study in Taiwan (24.4%) in 2007.[12] Both studies used the CESD to assess the prevalence of depression. The prevalence of depression in Indonesia was slightly higher than those in Malaysia (16.5%)[15] and India (11.4%).[6] However, those studies used the Geriatric Depression Scale (GDS) instead of the CESD. Differences of measurements and methodologies possibly influenced the prevalence of depression.

Consistent with previous studies, self-rated health, life satisfaction, physical function, and physical exercise were also significantly associated with depression.[3,16] Age was inversely associated with the likelihood of depression. Elderly people more than 75 years old in Indonesia were less likely to suffer from depression compared

Table 1
Participant characteristics (*N* = 2910).

Variable	Frequency (*n*)	Percent (%)
Age (mean: 67.4 and SD ± 6.134) years		
60~64	1231	42.3
65~69	721	24.8
70~74	568	19.5
≥ 75	390	13.4
Sex		
Male	1408	48.4
Female	1502	51.6
Marital status		
Married	1886	64.8
Widow/widower	920	31.6
Other	104	3.6
Educational background		
No education	551	18.9
Elementary school	1596	54.8
Junior high school or above	763	26.3
Religion		
Moslem	2542	87.4
Non-Moslem	368	12.6
Socioeconomic status (SES)		
1st (lowest SES)	729	25.1
2nd	727	25.0
3rd	726	24.9
4th (richest SES)	728	25.0
Residency		
Urban	1581	54.3
Rural	1329	45.7
Region		
Sumatra	567	19.5
Java	1754	60.3
Kalimantan	124	4.3
Sulawesi	133	4.6
Bali	137	4.7
Nusa Tenggara Barat	195	6.7
Self-rated health status		
Healthy	1835	63.1
Unhealthy	1075	36.9
Number of chronic conditions		
0	1782	61.2
1	633	21.8
≥ 2	495	17.0
Life satisfaction		
Satisfied	1150	39.5
Somewhat satisfied	1226	42.1
Dissatisfied	534	18.4
Physical function		
(mean: 10.13; SD ± 1.74; min: 0; max: 11)		
Depression status		
Not depressed	2185	75.1
Depressed	725	24.9
Physical exercise		
Vigorous activity		
No	2437	83.7
Yes	473	16.3
Number of social activities		
0	664	22.8
1	1036	35.6
2	593	20.4
≥ 3	617	21.2
Sleep quality		
Sleep disturbances		
No	1492	51.3
Yes	1418	48.7
Sleep impairment		
No	1766	60.7
Yes	1144	39.3

Table 2
Comparison of characteristics by the depression status.

Variable	Depressed (%)	Not depressed (%)	*p* value
Age (years)			0.182
60~64	26.6	73.4	
65~69	23.4	76.6	
70~74	25.2	74.8	
≥ 75	21.8	78.2	
Sex			0.017**
Male	22.9	77.1	
Female	26.8	73.2	
Marital status			0.614
Married	24.6	75.4	
Widow/widower	25.1	74.9	
Other	28.8	71.2	
Educational background			0.006**
No education	26.5	73.5	
Elementary school	26.4	73.6	
Junior high school or above	20.6	79.4	
Religion			0.065
Moslem	24.4	75.6	
Non-Moslem	28.8	71.2	
Socioeconomic status (SES)			0.001***
1st (lowest SES)	28.1	71.9	
2nd	28.3	71.7	
3rd	26.7	73.3	
4th (richest SES)	16.5	83.5	
Residency			0.444
Urban	24.4	75.6	
Rural	25.6	74.4	
Region			0.001***
Sumatra	19.6	80.4	
Java	24.3	75.7	
Kalimantan	28.2	71.8	
Sulawesi	40.6	59.4	
Bali	33.6	66.4	
West Nusa Tenggara	26.7	73.3	
Self-rated health status			0.001***
Healthy	18.3	81.7	
Unhealthy	36.2	63.8	
Number of chronic conditions			0.001***
0	22.3	77.7	
1	28.0	72.0	
2	30.5	69.5	
Life satisfaction			0.001***
Satisfied	19.3	80.7	
Somewhat satisfied	24.6	75.4	
Dissatisfied	37.6	62.4	
Physical function	9.5 (± 2.3)	10.1 (± 1.7)	0.001***[a]
Physical exercise			
Vigorous activities			0.001***
No	23.4	76.6	
Yes	32.6	67.4	
Number of social activities			0.047*
0	28.1	71.9	
1	22.7	77.3	
≥ 2	25.0	75.0	
Sleep disturbances			0.001***
No	20.2	79.8	
Yes	29.8	70.2	
Sleep impairment			0.001***
No	11.6	88.4	
Yes	45.5	54.5	

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; [a] Student's *t*-test.

Table 3
Multivariate analysis of factors associated with depression.

Variable	Total OR (95% CI)
Age (years)	
60~64	1.00
65~69	0.84 (0.65~1.07)
70~74	0.86 (0.66~1.12)
≥ 75	0.67 (0.48~0.93)*
Sex	
Male	1.00
Female	1.29 (1.02~1.61)*
Marital status	
Married	1.00
Widow/widower	0.94 (0.74~1.19)
Other	0.96 (0.57~1.60)
Educational background	
No education	1.00
Elementary school	1.01 (0.77~1.33)
Junior high school or above	1.08 (0.76~1.54)
Religion	
Moslem	1.00
Non-Moslem	1.02 (0.72~1.45)
Socioeconomic status (SES)	
1st (lowest SES)	1.00
2nd	0.96 (0.74~1.24)
3rd	0.93 (0.71~0.21)
4th (richest SES)	0.49 (0.36~0.67)***
Residency	
Urban	1.00
Rural	0.95 (0.77~1.17)
Region	
Sumatra	1.00
Java	1.39 (1.06~1.84)*
Kalimantan	1.67 (1.02~2.75)*
Sulawesi	2.35 (1.46~3.78)***
Bali	1.72 (0.99~2.98)
West Nusa Tenggara	1.73 (1.12~2.68)*
Self-rated health status	
Healthy	1.00
Unhealthy	1.73 (1.41~2.11)***
Number of chronic conditions	
0	1.00
1	1.19 (0.94~1.52)
≥ 2	1.26 (0.96~1.65)
Life satisfaction	
Satisfied	1.00
Somewhat satisfied	1.24 (0.99~1.55)
Dissatisfied	1.82 (1.39~2.37)***
Physical function	0.82 (0.78~0.87)***
Physical exercise	
Vigorous exercise	
No	1.00
Yes	0.68 (0.53~0.87)**
Number of social activities	
0	1.00
1	0.95 (0.72~0.24)
2	1.15 (0.88~1.49)
Sleep disturbances	
No	1.00
Yes	1.18 (0.97~1.43)
Sleep Impairment	
No	1.00
Yes	4.77 (3.90~5.82)***
Nagelkerke R^2	0.29
Hosmer and Lemeshow test of goodness of fit	0.27

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
OR, odds ratio; CI, confidence interval.

to those under 75 years old". This finding is consistent with a report by the WHO, in which the prevalence of depression was highest for those 60~64 years old, and began to decrease for those 65~69 years old and was the lowest for those ≥ 80 years old,[17] but was contrary to the other finding.[2] The relationship between age and depression requires further inquiry, since cultural values, such as respect and piety, as well as the social welfare system could also influence the relationship between age and depression.

This study also found that elderly people with a better economic status were less likely to suffer from depression in Indonesia, consistent with previous studies.[2] In 2015, the Indonesian Bureau of Statistics reported that the percentage of low-income elderly was 45.14%. Even though the Indonesian government has some social programs for low-income elderly such as cash transfers and food security (RASKIN = beras miskin) in recent years, the coverage is limited. The cash transfer covers only 23.54% of all low-income elderly, and the food security program covers only about 50% of the elderly. Eligibility for both social assistance programs varies among regions, and assistance is not equally distributed to all elderly in need. It is consistent with this result that, socioeconomic status was significantly different in each region. Where government resources are insufficient, the culture of *gotong royong*, a traditional form of cooperation practiced in rural villages, may supplement government programs in providing financial assistance to the elderly in communities. However, all of these aforementioned programs, whether formal or informal, are still unable to provide a sufficient financial safety net for the elderly.

Consistent with previous studies, elderly women in this study also had a higher risk of depression compared to men.[2,18] Elderly women in many developing countries tend to have a lower educational status, be economically dependent, and have to provide care for other members in the family. A prior study indicated that depression among female elderly could be related to their economic dependency and loneliness.[19] In some regions, as many as 60.0% of elderly women are financially dependent on their children or children-in-law.[20]

Regional variations in the prevalence of depression were observed, even after controlling for other factors. Elderly who lived in Sulawesi were two times more likely to suffer from depression compared with elderly who live in Sumatra. We speculated that cultural factors could have contributed to the differences because the traditional matrilineal social structure had a role in protecting elderly people from depression in West Sumatra.[21] In Sulawesi, the culture of *siri*, or the ability to uphold one's honor, self-esteem, and pride is highly valued and is embedded in the way of life. Prior anthropological research pointed out that under the culture of *siri*, one has to do everything to uphold one's honor or pride, even to the degree of killing or being killed.[22] For an elderly person whose social importance, health, and financial well-being are deteriorating, while increasingly being dependent on others to provide for basic life necessities, the culture of *siri* may cause additional psychological stress, and may possibly lead to lower self-esteem, and hence that person is more likely to suffer from depression, as reported in another study in Malaysia.[23] Moreover, socioeconomic status among elderly in each region also varied. This probably influence to depression among elderly in each region. National Elderly Statistic in 2017 shows that 41.19% of elderly in Sulawesi and 55.94% of elderly in West Nusa Tenggara lived in poverty. For the other regions, the number is lower than that of Sulawesi and West Nusa Tenggara.[24]

Elderly with sleeping impairments are more likely to suffer from depression. Prior study suggested that it could be explained by increasing markers of inflammation such as C-reactive protein and

interleukin-6 in the blood of people who suffer depression.[7] Another study pointed out that depression is associated with sleep disturbances but with not sleep impairment[25] while another study found that sleep impairment had an indirect effect on depression.[8] In the case of Indonesian elderly, it appeared that depression had a stronger association with sleeping impairment, which measured the outcome of poor sleeping quality (tiredness and sleepiness during the day, etc.), than with sleeping disturbance, which measured the context or process of poor sleeping quality (time or duration of sleep). One speculation is that elderly may somehow be accustomed to sleeping disturbances due to the close-knit relationship among Indonesian families, shared bedrooms, and small living quarters. The mechanisms that may lead to depression among those with poor sleep quality are complex and needed to be fully studied.

This study provides an overall profile of and factors related to elderly depression in Indonesia. However, limited by the availability of data, we were unable to include all variables that might be associated with depression, such as social support and family relationship variables. In terms of generalizability, this research excluded those who were not able to express themselves for health reasons, as well as those who were not included in the sampling frame due to geographical remoteness. Hence, the finding may have underestimated the prevalence of depression, since depression was associated with worse physical health. Finally, the cross-sectional study design cannot explicitly imply causality, and the results should not be over-interpreted.

5. Conclusions

The prevalence of depression among elderly people in Indonesia was 24.9%. This study provides evidence that being female, having a poor socioeconomic status, the home region, and sleep impairment were associated with depression symptoms. The identification of protective and risk factors in this research can be useful in devising preventive programs. The government policy should foremost focus on high-risk groups, such as those with lower economic status, females, living in certain regions, and those with worse physical health.

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References

1. WHO. *Mental Health and Older Adults*. Geneva, Switzerland: WHO; 2016. Available at http://www.who.int/mediacentre/factsheets/fs381/en/. Accessed September 5, 2017.
2. Abhishek G, Uday M, Singh Shivendra K, et al. Screening depression among elderly in a city of Southeast Asia. *J Clin Diagn Res.* 2015;9(9):1–5.
3. Mechakra-Tahiri S, Zunzunegui MV, Preville M, et al. Social relationships and depression among people 65 years and over living in rural and urban areas of Quebec. *Int J Geriatr Psychiatry.* 2009;24(11):1226–1236.
4. Kim MT, Kim KB, Han HR, et al. Prevalence and predictors of depression in Korean American elderly: Findings from the memory and aging study of Koreans (MASK). *Am J Geriatr Psychiatry.* 2015;23(7):671–683.
5. Jang Y, Park NS, Chiriboga DA, et al. Social capital in ethnic communities and mental health: A study of older Korean immigrants. *J Cross Cult Gerontol.* 2015;30(2):131–141.
6. Behera P, Sharan P, Mishra AK, et al. Prevalence and determinants of depression among elderly persons in a rural community from northern India. *Natl Med J India.* 2016;29(3):129–135.
7. Irwin MR. Why sleep is important for health: A psychoneuroimmunology perspective. *Annu Rev Psychol.* 2015;66:143–172.
8. Liu Y, Li T, Guo L, et al. The mediating role of sleep quality on the relationship between perceived stress and depression among the elderly in urban communities: A cross-sectional study. *Public Health.* 2017;149: 21–27.
9. Priebe J, Howell F. *Old Age Poverty in Indonesia: Empirical Evidence and Policy Options A Role for Social Pensions*. Jakarta, Indonesia: Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K); 2014. Available at http://www.tnp2k.go.id/images/uploads/downloads/Old%20Age%20Poverty%20April%201%20Approved%20for%20Publication.pdf. Accessed March 13, 2018.
10. Ng N, Hakimi M, Santosa A, et al. Is self-rated health an independent index for mortality among older people in Indonesia? *PloS One.* 2012; 7(4):e35308.
11. Tampubolon G, Hanandita W. Poverty and mental health in indonesia. *Soc Sci Med.* 2014;106:20–27.
12. Chang YC, Lu MC, Hu IH, et al. Effects of different amounts of exercise on preventing depressive symptoms in community-dwelling older adults: A prospective cohort study in Taiwan. *BMJ Open.* 2017;7(4). Available at http://bmjopen.bmj.com/content/bmjopen/7/4/e014256.full.pdf. Accessed September 16, 2017.
13. Yu L, Buysse DJ, Germain A, et al. Development of short forms from the PROMIS sleep disturbance and sleep-related impairment item banks. *Behav Sleep Med.* 2011;10(1):6–24.
14. Luyster FS, Choi J, Yeh CH, et al. Screening and evaluation tools for sleep disorders in older adults. *Appl Nurs Res.* 2015;28(4):334–340.
15. Vanoh D, Shahar S, Yahya HM, et al. Prevalence and determinants of depressive disorders among community-dwelling older adults: Findings from the towards useful aging study. *Int J Gerontol.* 2016;10(2):81–85.
16. Peltzer K, Phaswana-Mafuya N. Depression and associated factors in older adults in South Africa. *Glob Health Action.* 2013;6:1–9.
17. WHO. *Depression and Other Common Mental Disorders Global Health Estimates*. Geneva, Switzerland: WHO; 2017. Available at http://apps.who.int/iris/bitstream/10665/254610/1/WHO-MSD-MER-2017.2-eng.pdf. Accessed January 15, 2018.
18. Wu CS, Yu SH, Lee CY, et al. Prevalence of and risk factors for minor and major depression among community-dwelling older adults in Taiwan. *Int Psychogeriatr.* 2017;29(7):1113–1121.
19. Domenech-Abella J, Lara E, Rubio-Valera M, et al. Loneliness and depression in the elderly: The role of social network. *Soc Psychiatry Psychiatr Epidemiol.* 2017;52(4):381–390.
20. Arifin EN, Braun KL, Hogervorst E. Three pillars of active ageing in Indonesia. *Asian Popul Stud.* 2012;8(2):207–230.
21. Fanany R, Fanany I, Tasady R. The experience of old age in West Sumatra, Indonesia: Culture shift and cultural consonance in the modern era. *Aging and Society.* 2014;3(1):51–59.
22. West BA. *Encyclopedia of the Peoples of Asia and Oceania.* New York, NY: Infobase Publishing; 2010.
23. Kader Maideen SF, Sidik SM, Rampal L, et al. Prevalence, associated factors and predictors of depression among adults in the community of Selangor, Malaysia. *PloS One.* 2014;9(4). Available at http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0095395&type=printable. Accessed December 12, 2017.
24. Maylasari I, Sulistyowati R, Ramadani K, et al. *Statistik Penduduk Lansia 2017.* Jakarta, Indonesia: Badan Pusat Statistik; 2017. Available at https://www.bps.go.id/publication/2018/04/13/7a130a22aa29cc8219c5d153/statistik-penduduk-lanjut-usia-2017.html.
25. Chang KJ, Son SJ, Lee Y, et al. Perceived sleep quality is associated with depression in a Korean elderly population. *Arch Gerontol Geriatr.* 2014;59(2):468–473.