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Prevalence and risk factors of depression among Indonesian elderly: A nursing home-based cross-sectional study

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ABSTRACT

Background: The burden of depressive elderly is high globally. However, nursing home-based studies on prevalence and risk factors of depression are scarce due to feasibility and difficulties in data collection.
Methods: This cross sectional study was conducted at three nursing homes (NHs) in three districts in Yogyakarta province, Indonesia. A total of 181 elderly NH residents aged ≥60 were recruited purposively. Information regarding socio-demographics, health-related characteristics and social support among respondents were collected by a modified questionnaire through face-to-face interviews. A short form Geriatric Depression Scale (GDS) Indonesian version was employed to assess levels of depression. Multivariate logistic regression was used to analyze the data.
Results: Overall, the prevalence of geriatric depression was assessed to be at 42.5% (31.5% in women and 11% in men). Risk factors that were found to be significantly associated with depression in the univariate analysis were female, none or lack of social support, had ≥3 chronic diseases, and perceived inadequacy of care. In the multivariate analysis, perceived inadequacy of care remained significant risk factor for depression amongst the elderly NH residents.
Limitations: Besides a number of important variables were determined by self-report, the used sampling technique was purposive. In addition, the elderly who had severe cognitive impairment or dementia and were not able to communicate meaningfully were excluded from this study.
Conclusions: The prevalence rates of depression were relatively high among elderly NH residents in our study area. Adequate health services are needed in order to reduce the risk of depression among elderly NH residents.

1. Introduction

The ageing population is increasing rapidly. Between 2015 to 2050 the total population of the ageing society aged above 60 is predicted to increase from 12% to 22% globally (World Health Organization (WHO) (2016b)). This growing number of older adults is considered to be a major problem because it leads to an increase in the old age dependency ratio (United Nations Department of Economic & Social Affairs, 2013). The World Health Organization (WHO) decided and campaigned that depression should be the topic for the 2017 World Health Day (World Health Organization (WHO) (2017)). Depression is one of the most common mental health disorders in older people (World Health Organization (WHO) (2016b)) which is delineated by a drop in mood, decrease in motivation, lapse of physical power, failure to feel enjoyment, sleep disturbance, hopelessness, helplessness and worthlessness, and lack of concentration (National Institute of Mental Health, 2016; World Health Organization (WHO) (2016a)). Furthermore, it impacts on increasing morbidity and mortality (Mitchell & Subramaniam, 2005). In 2020, depression is predicted to be the second leading cause of disability globally (Murray & Lopez, 1997). It can also increase dependency on relatives, social, and healthcare services utilization (Cronin-Stubbs et al., 2000; Penninx et al., 2000), increased risk of hospitalization, and result in prolonged length of stay in hospital (Huang et al., 2000; Ingold et al., 2000). Another resulting impact is a decrease in quality of life, and even suicide (Greenberg, 2012). Prevalence of depression among elderly varies worldwide depending on different settings of the study sites. Studies found that it was rated as 8%–16% in community-dwellings, 5%–10% in outpatients of primary care settings, 10%–12% in hospitalized settings, 0.9%–9.4% in private households, and 14%–67% in nursing homes (NHs) (Al-Jawad, Rashid, & Narayan, 2007; Blazer, 2009; Djernes, 2006).

Some risk factors of geriatric depression included female gender,

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somatic illness, cognitive and functional impairment, lack of close social contacts, and a history of depression (Djernes, 2006). In addition, the other identified factors such as laxity due to mental health or physical illness, mobility impairment, long-term care, retirement, and the other disabilities led to loss of independence, loneliness, being isolated and distress amongst older society (BPS - Statistics Indonesia, 2010; World Health Organization (WHO) (2016b)).

Severe under-recognition and under-treatment of depression still occurred, even in developed countries (Lebowitz et al., 1997; Nierenberg, 2001). In Netherlands, the prevalence of depression in the NH was three to four times higher compared to the prevalence of depressive elderly in community-dwellings (Jongenelisa, Pota, Eissesc, Kluiterc, & Ribbe, 2004). The greatest problem is the difficulty in diagnosing depression amongst the elderly. Multi-medical complaints led to unrecognized and untreated depressive symptoms amongst this frail population (Susman, Crabtree, & Essink, 1995). As a result, this particular problem affects the health status of older adult, the ability to treat the disease, and is finally related to a poor clinical condition (Kohn & Epstein-Lubow, 2006; Lyness et al., 2006).

As the eighth largest elderly population worldwide (United Nations Department of Economic & Social Affairs, 2015) and ranked third amongst 25 Asia-Pacific countries in 2015 (Bussarawan & John, 2015), Indonesia had 7.2%–33.8% of geriatric depression prevalence in community-dwelling settings (Mahwati, 2017; Wada et al., 2005). Besides having the highest percentage of elderly population, Yogyakarta province is also considered to have the highest of old dependency ratios compared to all provinces in Indonesia (BPS - Statistics Indonesia, 2016). However, nursing home-based studies on prevalence and risk factors of depression are scarce due to feasibility and difficulties in data collection. Hence, understanding the prevalence rate and risk factors of geriatric depression in NH settings, would be beneficial for developing adequate prevention and future treatment strategies. This study aimed to investigate the prevalence and risk factors of depression among Indonesian elderly in NH settings.

2. Method

2.1. Sample and procedure

This cross-sectional study was conducted at three NHs in three districts in Yogyakarta province, Indonesia. Data collection was conducted from February to March 2017 through face-to-face interviews, lasting between 30–45 min for each respondent. All 273 NH residents were asked to participate. To be an eligible respondent, residents had to be aged 60 years or above, had or had no chronic diseases, and had to be living in a NH for at least one month. The eligible elderly consisted of 218 residents. Thirty-seven of 218 elderly NH residents who were diagnosed by a physician as having severe cognitive impairment or dementia, were not able to communicate their opinions meaningfully, were experiencing psychotic disorders, experiencing alcohol/drug misuse, and/or refused to participate were excluded in our study. Therefore, the final sample amount of 181 elderly NH residents was recruited purposively. Both informed verbally and written consent was obtained from all final respondents. The ethical clearance was approved by the Medical and Health Research Ethics Committee (MHREC), Faculty of Medicine, Universitas Gadjah Mada, Indonesia.

Data regarding chronic diseases and cognitive impairment status or dementia were also derived from medical records or information from physicians, nurses, or NH staff.

2.2. Measurements

2.2.1. Depression

A short-form Geriatric Depression Scale (GDS) questionnaire which composed of 15 questions was used to measure the geriatric depression. Given a 92% sensitivity and a 89% specificity (Sheikh & Yesavage, 1986), this GDS questionnaire has been tested and widely used in various study sites both in the community, clinical, or NH settings (Lesher, 1986; McGivney, Mulvihill, & Taylor, 1994; Sheikh & Yesavage, 1986). After translating the English version of the GDS questionnaire into Indonesian version, forward and panel back-translation from three experts were applied. Pearson's correlation items-total score was significant at 0.05 level, with Content Validity Index for Items (I-CVI) computation was 1.00. In terms of internal consistency, it was found that the Cronbach's alpha for the GDS questionnaire Indonesian version was 0.80. All eligible respondents were required to respond the 15 questions by answering yes or no, on how they felt over the past one week. Of the 15 items, 10 indicated the presence of depression when answered positively, while the rest (questionnumbers1,5,7,11,13) indicated depression when answered negatively. The depression level was classified into normal (scores of 0–4); mild depression (scores was 5-8); moderate depression (scores was 9-11); and severe depression (scores was 12-15) (Sheikh & Yesavage, 1986). A 5 to 7 min to complete the questionnaire.

2.2.2. Socio-demographic variables

Self-reported socio-demographic characteristics were gathered from respondents such as age, gender, marital status, education level, length of stay in NH, social support resources, type of support, chronic diseases, reason for living in NH, and perceived adequacy of care.

Chronic disease is operationalized as a disease that persists for a long time, has lasted or was expected to last twelve or more months and resulted in functional limitations and/or the need for ongoing medical care (Perrin et al., 1993). Some chronic diseases were captured such as cardiovascular diseases (hypertension, stroke, cardiac disease), cancers, chronic respiratory diseases (chronic obstructed pulmonary disease, asthma), diabetes, obesity, and arthritis (Centers for Disease Control and Prevention (CDC), 2017; World Health Organization, 2018).

Social support refers to access to and use of individuals, groups, or organizations in dealing with life's vicissitudes (Whelan, 1993). Social support resource is operationalized as the source of received social support by elderly during their stay at NH. It could be either from a spouse (husband/wife), family (relatives/children), NH staff (nurses/doctors/social workers), others (neighbors/friends/visitors), or no one.

The type of support is operationalized as the kind of care and support which was received by elderly from their spouse, family, NH staff, or others during their stay in NH. The type of support is classified into psychological (mental health concern of elderly and respond appropriately as needed), financial, and no support. Perceived adequacy of care was defined as the elderly perceptions of the adequacy of care which was provided by NH staff to them during their stay in NH.

2.3. Analysis

Descriptive statistics including frequency, percentage, mean, and standard deviation (SD) were used to describe the sociodemographic characteristics and depression (score, level, presence, and absence) of respondents. A Chi-square test was used to compare sociodemographic characteristics correlate in elderly with and without depression symptoms according to screening by a short form GDS questionnaire. The odds ratios (OR) with 95% confidence interval (CI) were assessed to determine the significance of correlated factors. Multivariate logistic regression was employed to identify the final significant factors of geriatric depression. Variables were included in the multivariate analysis have to meet the following criteria: 1) show a statistically significant association in the univariate analysis, 2) a cut-off the P-value was ≤ 0.2 (type of support and reason for living in NH variables), and/or 3) based on literature is widely known as the associated factor for depression albeit the P-value was > 0.2 (education level variable).

Table 1
Sociodemographic characteristics of elderly nursing home residents (n = 181).

Sociodemographic characteristic		n	%
Age (mean 74.4 S.D.[a] 7.6)	60-69	51	28.2
	70-79	79	43.6
	≥80	51	28.2
Gender	Female	119	65.7
	Male	62	34.3
Marital status	Single	42	23.2
	Married	22	12.2
	Widowed	102	56.3
	Divorce	15	8.3
Education level	No formal education	71	39.2
	Elementary school	57	31.5
	Junior high school	23	12.7
	Senior high school	19	10.5
	University and above	11	6.1
Length of stay in nursing home	≤2 years	58	32.0
	3-5 years	60	33.2
	6-9 years	40	22.1
	≥10 years	23	12.7
Social support resource	Spouse	4	2.2
	Family	93	51.4
	Healthcare workers	16	8.8
	None	6	3.3
	Others	62	34.3
Type of support	Psychological	99	54.7
	Financial	20	11.0
	No support	62	34.3
Chronic disease	None	44	24.3
	1-2	106	58.6
	3-4	29	16.0
	≥5	2	1.1
Reason for living in nursing home	Lonely	52	28.7
	Less family care	48	26.5
	No support income	55	30.4
	Own willingness	20	11.1
	Others	6	3.3
Perceived adequacy of care	Yes	84	46.4
	No	97	53.6
Depression (mean 3.6 S.D. 3.5)	Yes	77	42.5
	Mild depression	55	30.3
	Moderate depression	19	10.5
	Severe depression	3	1.7
	No	104	57.5

[a] S.D., standard deviation.

3. Results

The entire population of this study consisted of 273 elderly NH residents whereas only 181 elderly were finally included as eligible respondents for this study. Overall, the prevalence of geriatric depression was assessed to be 42.5%, of which 31.5% were women and 11% men. According to the sociodemographic characteristics, the mean age for the NH residents was 74.4 (SD = 7.6) years, with 43.6% aged between 70–79 years. The majority were female (65.7%) with many (39.2%) having no formal education background and more than half (56.3%) were widowed. A large proportion of respondents (58.6%) had one to two chronic diseases with 33.2% residents having stayed in the NH for three to five years, and 30.4% reported had no support income as the reason for living in a NH. More than half of NH residents (51.4%) still received social support from their family with the type of support being mainly psychological (54.7%). Remarkably, more than half of the NH residents (53.6%) had perceived inadequacy of care (Table 1).

Further sociodemographic factors of depression among the elderly NH residents were summarized in the univariate (Table 2), and multivariate analysis in Table 3. In the univariate analysis, some variables i.e. age, marital status, education level, length of stay in NH, type of support, and reason for living in NH were not significantly associated with depression in elderly NH residents. Risk factors that were found to be significantly associated with depression in the univariate analysis were female (OR = 1.93, 95% CI = 1.01–3.67); none or lack of social support (OR = 2.11, 95% CI = 1.15-3.87); had ≥3 chronic diseases (OR = 2.26, 95% CI = 1.16–4.40); and perceived inadequacy of care (OR = 2.47, 95% CI = 1.34–4.55) (Table 2). Finally, in the multivariate analysis, perceived inadequacy of care (OR = 2.07, 95% CI = 1.09–3.92) only remained as a significant risk factor for depression in the elderly NH residents (Table 3).

Table 2
Univariate risk factors analysis of depression in elderly nursing home residents (n = 181).

Risk factors	Depression		Odds Ratio (95% CI*)	P-value
	Yes (%)	No (%)		
Age				
≥80	21 (11.6)	30 (16.6)	0.93 (0.48-1.78)	.816
< 80	56 (30.9)	74 (40.9)	1	
Gender				
Female	57 (31.5)	62 (34.3)	1.93 (1.01-3.67)	.043**
Male	20 (11.0)	42 (23.2)	1	
Marital status				
No partner	68 (37.6)	91 (50.3)	1.08 (0.44-2.67)	.869
With partner	9 (4.9)	13 (7.2)	1	
Education level				
No or low education	67 (37.0)	84 (46.4)	1.59 (0.70-3.64)	.264
Higher education	10 (5.5)	20 (11.1)	1	
Length of stay in nursing home				
≥4 years	30 (16.6)	48 (26.5)	0.75 (0.41-1.36)	.334
< 4 years	47 (26.0)	56 (30.9)	1	
Social support resource				
No or lack of social support	39 (21.5)	34 (18.8)	2.11 (1.15-3.87)	.015**
From family or others	38 (21.0)	70 (38.7)	1	
Type of support				
No support	32 (17.7)	30 (16.5)	1.75 (0.94-3.26)	.075
Psychological or financial support	45 (24.9)	74 (40.9)	1	
Chronic diseases				
≥3	28 (15.4)	21 (11.6)	2.26 (1.16-4.40)	.015**
< 3	49 (27.1)	83 (45.9)	1	
Reason for living in nursing home				
Compulsion	72 (39.8)	89 (49.2)	2.43 (0.84-6.99)	.092
Own willingness	5 (2.8)	15 (8.2)	1	
Perceived adequacy of care				
No	51 (28.2)	46 (25.4)	2.47 (1.34-4.55)	.003**
Yes	26 (14.4)	58 (32.0)	1	

* CI, confidence interval.
** Significant at $p < 0.05$.

4. Discussion

This study aimed at investigating the prevalence rate and risk factors of depression in elderly NH residents in Yogyakarta province, Indonesia. The prevalence rate of depression was found to be 42.5% among elderly NH residents, respectively. Remarkably, little was known of the true rates of depression among the Indonesian elderly NH residents so far. Our prevalence rate finding was higher compared to earlier community (25.8%–33.8%) (Indawati, Kuntoro, Qomaruddin, Mahajudin, & Asiyah, 2016; Wada et al., 2005) or clinical-based (2.8%) studies both in Indonesia (Wahyudi, Setiati, Harimurti, Dewiasty, & Istanti, 2012) and other Asian countries such as Vietnam (17.2%),

Table 3
Multivariate risk factors of depression in elderly nursing home residents (n = 181).

Sociodemographic factors	Odds Ratio (95% CI)	P-value
Gender		
Female	1.85 (0.90-3.78)	.093
Male	1	
Education level		
No or low education	1.03 (0.41-2.64)	.944
Higher education	1	
Social support resource		
No or lack of social support	2.11 (0.48-9.32)	.325
From family or others	1	
Type of support		
No support	0.73 (0.17-3.15)	.670
Psychological or financial	1	
Chronic diseases		
≥3	1.66 (0.76-3.60)	.204
< 3	1	
Reason for living in nursing home		
Compulsion	1.77 (0.58-5.44)	.317
Own willingness	1	
Perceived adequacy of care		
No	2.07 (1.09-3.92)	.026*
Yes	1	

* Significant at p < 0.05.

Japan (30.3%) (Wada et al., 2005), Malaysia (13.9%) (Imran, Azidah, Asrenee, & Rosediani, 2009), and India (31.7%) (Sundru, Goru, & Krishnaveni, 2013). This particular result indicates that depression was more prevalent among the elderly in NH settings compared to those in other study settings. Interestingly, when comparing the prevalence rate of geriatric depression in the similar study setting in some countries, our finding also still had a higher rate (21.1% in Singapore, 26% in USA, and 28.4% in Norway) (Iden, Engedal, Hjorleifsson, & Ruths, 2014; Tiong, Yap, Koh, Fong, & Luo, 2013; Ulbricht, Rothschild, Hunnicutt, & Lapane, 2017). The different methodology and instrument tools in order to screen or diagnose the depression among the community, clinical, or institutionalized elderly population needed to be considered. The variations of sensitivity and specificity among those instrument tools may lead to a systematic difference in determining the prevalence rates of geriatric depression.

In the multivariate analysis, the only risk factor that maintained a significant association with depression was perceived inadequacy of care. This finding was consistent with a previous study which found that perceived inadequacy of care has been significantly associated to both major and sub-clinical depression in elderly NH residents (Jongenelisa et al., 2004). In our study, the majority of respondents had perceived inadequacy of care from NH staff. Limited interactions with family members or surrounding people might have happened when the elderly were admitted to hospitals or NHs (Hung, Ross, Boockvar, & Siu, 2011). This social and environmental alteration might have led to stressful conditions during their stay in NH. Therefore, both healthcare professions and social workers should have assisted the elderly in activities as well as provide health education and emotional support when they were not able to take care of themselves (Theofanidis, Kapadohos, & Kampisiouli, 2007). Providing the adequate care should be given equal importance as providing adequate social support toward elderly NH residents so the risk for suffering from depression amongst the elderly could be diminished.

There was no association between depression as the dependent variable and the following independent variables such as gender, education level, social support resources, type of support, chronic diseases, and reason for living in NH in the multivariate analysis in this present study. Our findings were in contrast with previous nursing home-based studies which revealed that similar risk factors were associated with depression in elderly NH residents (Jongenelisa et al., 2004; Tiong et al., 2013). This different significant finding might be due to a genuine difference and an insufficient sample size in this present study. In addition, it should be underlined that more than half (51.4%) of elderly still received social support from their family, with the majority (58.6%) having only one to two chronic diseases (Table 1). These particular factors might be considered as the possible reasons for inability to find the association for depression in the multivariate analysis. So, even though the majority of the elderly perceived inadequacy of care from NH staff, however they still received social support from their family and were still relatively capable of maintaining their health conditions. A Supporting study revealed a lower risk of having depression amongst elderly who had children or son/daughter-in-law who take care of them when they are sick (Imran et al., 2009). Although social support might not obliterate the stressful situation, it might lead the elderly to be more optimistic and eventually could help them to overcome their hardships, making solutions, and lessening their despondence (Erdem & Apay, 2014; Tsai & Tsai, 2011). A literature review shows numerous interventions which have been applied in order to reduce geriatric depression in NH settings such as Behavioral Activity Intervention, Group Psychotherapy, Cognitive Behavioral Therapy, Exercise Therapy, Reminiscence Therapy, Telehealth Education and Activation of Mood, Self-Worth Therapy, Dance Therapy, Wheelchair Therapy, Pet Therapy, Cognitive Stimulation Therapy, Group Music vs Group Singing Therapy, and Trained Gero-psychiatric Nurse plus volunteer contact (McCarthy-Zelaya, 2016). The current study also reported that religious-based intervention has a greater impact on relieving depressive symptoms amongst elderly NH residents (Pramesona & Taneepanichskul, 2018).

The strength of the our study is the widely validated and reliable, with a high percentage of sensitivity and specificity of the GDS questionnaire used to screen the geriatric depression in various subjects such as in the community dwellers, patients, and NH residents (Indawati et al., 2016; Lesher, 1986; McGivney et al., 1994; Sheikh & Yesavage, 1986). However, the study also has several limitations. Firstly, the sampling technique was purposive because only government NHs were selected as the study sites. Hence, the findings may not be generalized to the private NHs due to elderly NH residents being different for background, facilities, and service availability. Second, the elderly who had severe cognitive impairment or dementia and were not be able to communicate meaningfully were excluded from this study. Dementia patients were excluded due to their inability to answer the questionnaire meaningfully. However, previous studies identified cognitive impairment i.e. dementia was a risk factor for depression (Chang-Quan, Ji-Rong, Xue-Mei, & Qing-Xiu, 2010; Huang, Wang, Li, Xie, & Liu, 2011). Therefore, the true prevalence rates of geriatric depression could probably be higher in this present study. Future studies should include in the sample the not severely demented elderly NH residents who can with assistance meaningfully answer the questionnaire and assess the correlation between dementia and depression. The Cornell Scale could be used in order to detect depression among demented elderly (Brown, Raue, Halpert, Adams, & Titler, 2009). Third, a number of other risk factors including past adverse events such as experiencing sexual abuse, recent stress due to interpersonal difficulties, lifetime trauma, lifestyle and behavior, and frequency of family visits were not investigated in the current study. Future research should include those possible important variables as investigated risk factors for depression in elderly NH residents. Last but not least, a number of important variables like social support resources and type of support were determined by self-report rather than using triangulation data. It is difficult to judge whether the value of the measured variables is real/valid, or reflect the biases of the self-report measurement. Future studies should use the triangulation data to reduce the bias. However, self-report is one of the most widely used methods of collecting information regarding individuals' health status and utilization of healthcare services (Bhandari & Wagner, 2006). Numerous studies revealed no consistent relationship between demographic factors, such as education, gender, health status, socioeconomic status, and self-report accuracy

(Marshall et al., 2003; Reijneveld & Stronks, 2001; Reijneveld, 2000; Ritter et al., 2001).

Depression is not only a major public health problem among the general population globally, but it also has become a concerning issue in particular in the elderly population, especially for those who live in NHs. Moreover, this unrecognized and under-diagnosed mental health disorder commonly occurs in this population group. Given the rapidly growing number of the elderly population in Indonesia, the increase of NH facilities and services demand should be appropriately considered in order to anticipate the projected problems related with elderly population growth in the years ahead. This study found a high prevalence of depression, and determined the perceived inadequacy of care as a risk factor for depression among elderly NH residents. Adequate health services are strongly needed in order to reduce the risk of depression among elderly NH residents. Policymakers and NH staff should review the existing policies related to geriatric depression screening and address depression with appropriate medical and general care standards. Further research would be needed to identify alternative appropriate interventions, assess their effectiveness and recommend management strategies in order to reduce depression among elderly NH residents.

Author disclosure

Author Contributions: Bayu Anggileo Pramesona (BAP); Surasak Taneepanichskul (ST)

Conceptualization: BAP ST
Data curation: BAP
Formal analysis: BAP ST
Funding acquisition: BAP
Investigation: BAP
Methodology: BAP ST
Project administration: BAP ST
Resources: BAP ST
Supervision: ST
Validation: BAP ST
Visualization: BAP
Writing – original draft: BAP
Writing – review & editing: BAP ST

Role of the funding source

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Limitations

The sampling technique was purposive. In addition, the elderly who had severe cognitive impairment or dementia and were not be able to communicate meaningfully were excluded from this study.

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