Social Capital and Mental Health among Older Adults in Indonesia: A Multilevel Approach

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Abstract

In the social epidemiology field, social capital plays an important role as a determinant of a population's mental health. Despite the vast number of studies on this issue, few have been conducted among the aging Indonesian population. This study is intended to investigate this association using a multilevel approach on a sample of 2,496 older adults. The data come from the 5th wave of the Indonesian Family Life Survey. The results revealed that taking into account cluster-specific random effects, social trust at the individual level predicted decreased depression among older adults only before adjusting for control variables. Neighborhood safety emerged as the only indicator of social capital that predicted reduced depression of elders after adjusting for control variables. In addition, high levels of poverty at the community level were associated with increased depression, and having completed senior high school, being healthy, and doing physical activity frequently were consistently associated with reduced depression across all models. In conclusion, living in a safe community with reduced levels of poverty might be protective factors against depression for older adults.

Keywords

Depression; Indonesia; mental health; multilevel analysis; older adults; social capital

Introduction

Globally, there is a recognized relationship between old age and mental health problems (Burns, Dening, & Baldwin, 2001). Among mental health problems, depression is leading in later life (Chang & Weng, 2013; World Health Organization, 2016). Depression is a major problem in old age because it is often under-reported. In fact, depression is taken for a normal aging process due to its comorbidity with a range of physical illnesses observed in later life (Mitchell, Rao, & Vaze, 2010). The symptoms of depression in old age include but are not limited to a rumination of problems including a considerable loss of interest in life, loss of interest in enjoyable activities, loss of memory, thoughts of death, unexplained pain, sleep disturbance, and poor concentration (Kivelä & Pahkala, 1988). Primary health care practitioners often attribute these symptoms to old age, and depression goes undertreated (Rodda, Walker, & Carter, 2011) as it is usually accompanied by peripheral body changes and cognitive impairment (Alexopoulos, 2005). Older adults themselves minimize depressive symptoms (Mui & Yang, 2005) which results in an increased number of older adults living with undiagnosed depression. For instance, 2-4% of the geriatric population suffers from mood disorders (Loue & Sajatovic, 2008), and the World Health Organization (2016) reports that 7% of the geriatric population suffers from depression. In Indonesia, the prevalence of depressive symptoms, as suggested by data from the Indonesian Family Life Survey, was 7.2% among older individuals (Mahwati, 2017).

Over the past two decades, there has been growing empirical evidence of the positive benefits of social capital for mental health in the literature. Scholars reported that high levels of social capital reduce the likelihood of experiencing depression (Lofors & Sundquist, 2007; Mitchell & LaGory, 2002; Ramlagan, Peltzer, & Phaswana-Mafuya, 2013). The idea is that social capital allows diverse interactions between people, which results in mutual help and cooperation among members of a community. This way, social capital might behave as a protective and enhancing factor for mental health (Yip et al., 2007). Social capital is thought of as having two components: cognitive and structural. Cognitive social capital refers to attitudinal beliefs, including feelings of trust, reciprocity, and safety, and structural social capital relates to participation and networks (Harpham, Grant, & Thomas, 2002). Researchers have argued that social capital is not only a property of individuals (i.e., individual social capital), but also a property of groups of people (i.e., ecological social capital), and have found that both types of social capital are associated with mental health (De Silva, McKenzie, Harpham, & Huttly, 2005; Ziersch, Baum, Darmawan, Kavanagh, & Bentley, 2009).

Although a great number of studies have been conducted globally on the association between social capital and mental health, few have been conducted among the aging Indonesian population, let alone using a multilevel approach. This study is intended to investigate this association at the individual level (i.e., older individuals) and the ecological level (communities) using national representative data from the 5th wave of the Indonesian Family Life Survey (IFLS).

Indonesia offers an interesting context to investigate the association between social capital and mental health among older adults. Indonesia is one among the fastest aging populations in the world. It is estimated that by the year 2050, Indonesia will have 74 million older adults (Kadar, Francis, & Sellick, 2013). Indonesia has undergone major economic and social transformations and has less developed social protection programs compared to developed countries (Cao & Rammohan, 2016). Developing policies and caring for older people are to be the priority of the government (Kadar et al., 2013) to face the challenges, especially health challenges, met in old age. Moreover, there is limited research on social capital and mental

health among older adults in Indonesia (Cao & Rammohan, 2016). Those who conducted studies on old age in Indonesia focused on active aging (Arifin, Braun, & Hogervorst, 2012), successful aging (Cao & Rammohan, 2016), and old-age vulnerability (Van Eeuwijk, 2015). Finally, Indonesia shares these characteristics with many other countries; therefore, the results of this study might be significant for these countries as well.

Methods

Data

The data came from Indonesian Family Life Survey (IFLS), which is an ongoing sociodemographic and health survey conducted by Rand Corporation (California, US) in collaboration with the Survey-Measurement-Training-Research (Survey METER Yogyakarta, Indonesia) since 1993 and has until now completed five waves. The community survey used multistage stratified sampling to collect data on the individual level, household level, and the community level (Strauss, Witoelar, & Sikoki, 2016). At the beginning, the survey was based on households from 321 enumeration areas (EAs), from 13 out of 27 provinces in Indonesia. Twenty households were randomly selected from each urban EA, and thirty households were selected from each rural EA. In this study, we used the 5th wave of IFLS as it is the most recent wave of the survey. The 5th wave of IFLS, in late 2014 and early 2015, collected information on 16,204 households and 50,148 individuals aged 15 and older from 311 communities that correspond to the 321 EAs, excluding 9 twin EAs (Strauss et al., 2016). In this study, the sample was restricted to individuals between 60 and 90 years old. After correcting missing data for depression, a sample of 2,496 old individuals were yielded.

Measures

Mental health served as the outcome variable and was measured using the Center for Epidemiologic Studies Depression Scale (CES-D), a short version with 10 items (Andresen, Malmgren, Carter, & Patrick, 1994). Many other studies have used the absence of depression to measure mental health (Das et al., 2007; Halliday, Kern & Turnbull, 2019; Tampubolon & Hanandita, 2014; Wu, Lu, & Kang, 2014). The results of the study by Mackinnon, McCallum, Andrews, and Anderson (1998) confirmed that the responses on CES-D are comparable across cultures, including Indonesia. In previous studies that assessed the internal consistency of the CES-D-10, Cronbach's α was found to be 0.86. Moreover, previous studies that examined the test-retest reliability for the CES-D-10 = (ICC=0.85), Convergent validity = .91; Divergent validity = .89 (Miller, Anton, & Townson, 2008).

Social capital served as the explanatory variable. Social capital consists of 2 components: cognitive and structural social capital (Yip et al., 2007). Cognitive social capital was operationalized through social trust, reciprocity, and neighborhood safety. For social trust, the respondents were asked the following question: “say you lost your wallet or a pursue [sic] that contained 200,000 rupiahs and your identity card, think about how is it likely to be returned with the money if it was found by someone who lives close to you” (Strauss et al., 2016). The answers are ordinal and were coded “1” for very unlikely, “2” for somewhat unlikely, “3” for somewhat likely, and “4” for very likely. Reciprocity was measured by the following statement: “I am willing to help people in this village if they need it” (Strauss et al., 2016). The answers were coded “1” for strongly disagree, “2” for disagree, “3” for agree, and

"4" for strongly agree. Neighborhood safety was measured by this question: "in most parts of the village, is it safe for you to walk alone at night?" (Strauss et al., 2016). Possible answers were coded "1" for very unsafe, "2" for unsafe, "3" for safe, and "4" for very safe. The structural social capital was measured by community participation. Respondents were asked if they participated in the following community activities in the past 12 months: "community meetings, cooperatives, voluntary labor, programs to improve the neighborhood, and religious activities" (Strauss et al., 2016). The answers were then aggregated into one score, making a range of 0-5. High values indicated high community participation.

Contextual social capital variables were made by aggregating individual responses to the community level. That is, the mean scores of individual responses on cognitive and structural questions were calculated at the community level. As Indonesia is a developing country (Tambunan, 2005), a measure of subjective poverty was aggregated at the community level (level 2) as well. The survey asked the following question: "Please imagine a six-step ladder where on the bottom (the first step), stand the poorest people, and on the highest step (the sixth step), stand the richest people. On which step are you today?" (Strauss et al., 2016). The scores were reversed "1" for the richest and "6" for the poorest. High scores indicated high levels of subjective poverty.

There has been evidence of the relationships between gender, marital status, age, level of education, personality traits, religiosity, physical activity, subjective poverty and mental health (Elavsky & Mcauley, 2007; GhorbaniAmir, AhmadiGatab, & Shayan, 2011; Halliday et al., 2019; Mehrtash & Ince, 2018). Therefore, we intended to control for these potential confounders of the relationship between social capital and mental health.

For the physical activity variable, the survey asked the following question: "think about the time you spent walking in the last seven days. This includes walking at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure. Did you do that for at least 10 minutes continuously?" (Strauss et al., 2016). Those who answered yes to this question were asked a subsequent question: "during the 7 days, how many days did you do that exercise?" Possible answers range from 1 to 7. High scores indicated a high frequency of physical activity. The extroversion was measured using the short version of the Big Five Inventory (Rammstedt & John, 2007).

Statistical analysis

A multilevel analysis (linear mixed-effect regression) using a random intercept model was performed with data from 2,496 individuals nested within 311 communities of Indonesia. The multilevel approach allows us to examine how much of the differences in mental health can be explained by individual characteristics and how much can be explained by community characteristics. Moreover, the multilevel approach helps to avoid the underestimation of regression coefficients standard errors found in typical multivariate analyses (Hibino et al., 2012). In this analysis, the multilevel analysis approach allows us to investigate (1) the relationship between individual factors and mental health (i.e., "fixed effects"), (2) the effects of community factors (i.e., community cognitive and structural social capital and community poverty) on mental health (i.e., "fixed effects"), and (3) the variations in mental health between communities (i.e., "random effects"). Both data management and statistical analysis were conducted using R statistical software (Fox & Leanage, 2016). The multilevel analysis was performed using the 'lmerTest' package (Kuznetsova, Brockhoff, & Christensen, 2017), and all variables were grand mean centered to avoid multicollinearity.

Strategy

Four random intercepts models were computed:

Model 1: this is a null model (i.e., empty) of individuals nested within communities with only the intercept term in the fixed and random parts. Variation in mental health was subdivided across individuals within communities and between communities. The intraclass correlation was 0.07.

Model 2: in this model, individual variables were included in the fixed parts of the model 1 to assess the effect of individual factors on mental health.

Model 3: here, individual social capital variables were added to model 1 to estimate the effect of individual social capital on mental health.

Model 4: individual variables were included in the model 3 to estimate the effect of individual social capital on mental health after adjusting for individual factors.

Model 5: in this model, community social capital variables were added to model 1 to estimate the effect of social capital at the ecological level on mental health.

Model 6: here, individual variables and individual social capital variables were added to the model 5 to estimate the effect of contextual social capital on mental health after adjusting for individual social capital variables.

Results

Table 1 provides a summary of the main descriptive statistics by province, where the 311 communities belong to, while Table 2 provides a summary of the study variables as well as the depression prevalence per each variable category. The mean score for depression was 5.71, with a standard deviation of 4.60, ranging between 0 and 30. The mean age of the 2,496 participants was 67.02, with a standard deviation of 6.0,1 ranging between 60 and 90. Around 50.6% of the respondents were females. Over 65% were married, and about 30% were retired individuals.

Table 1: Summary of sample characteristics by province

Province	Depression				Age		
	n	Mean	SD	Range	Mean	SD	Range
North Sumatra	161	5.91	4.28	0-30	65.87	5.05	60-90
West Sumatra	134	5.02	3.63	0-30	66.03	4.94	60-90
South Sumatra	109	5.40	5.43	0-30	66.53	5.73	60-90
Lampung	114	5.04	4.59	0-30	67.34	5.56	60-90
Jakarta	135	5.50	4.28	0-30	66.19	5.44	60-90
West Java	317	7.20	5.10	0-30	66.04	5.73	60-90
Central Java	370	5.79	4.65	0-30	67.56	6.33	60-90
Yogyakarta	219	4.50	3.62	0-30	68.88	6.47	60-90
East Java	361	4.55	3.93	0-30	66.57	6.01	60-90
Bali	140	6.72	4.50	0-30	66.65	5.51	60-90
West Nusa Tenggara	195	5.71	4.98	0-30	67.80	6.31	60-90
South Kalimantan	135	6.74	5.04	0-30	68.52	7.19	60-90

South Sulawesi	107	7.47	5.13	0-30	66.59	5.14	60-90

SD = Standard Deviation

Around 69% of the respondents completed primary school, 13.58% junior high school, 12.37% senior high school, and approximately 4% completed higher education. Over 63% reported to be healthy, and over 89% reported to be religious. The mean score for extroversion was 7.01 with a standard deviation of 1.33; for the frequency of physical activity, the mean was 5.33 with a standard deviation of 2.23; for subjective poverty, it was 4.06 with a standard deviation of 1.11; for social trust, it was 2.90 with a standard deviation of 1.18; for reciprocity, it was 3.15 with a standard deviation of 0.45; for safety, it was 2.98 with a standard deviation of 0.16; and for community participation, the mean was 1.66 with a standard deviation of 0.61.

Table 2: Summary of study variables and the prevalence of depression **(**n **=** 2,496**)**

Study variables	**n**	%	**Mean (SD)**	**Mean of depression (SD)**	**Range**
Level 1 variables					
Depression	2,496		5.71 (4.60)		0-30
Age	2,496		67.02 (6.01)		60-90
60-69	1,255	69.56		5.75 (4.72)	0-30
70-79	483	26.77		5.69 (4.33)	0-30
80-90	75	3.67		5.42 (4.45)	0-30
Gender					0-30
Female	1,263	50.6		5.97 (4.75)	0-30
Male	1,233	49.4		5.46 (4.44)	0-30
Marital status					0-30
Married	1,652	66.19		5.52 (4.54)	0-30
Unmarried	844	33.81		6.12 (4.71)	0-30
Education					0-30
Primary	1,328	69.89		6.00 (4.85)	0-30
Junior high school	258	13.58		5.60 (4.25)	0-30
Senior high school	235	12.37		5.00 (3.92)	0-30
High education	79	4.16		4.26 (3.19)	0-30
Retired					0-30
Yes	722	32.6		5.79 (4.49)	0-30
No	1,493	67.4		5.71 (4.66)	0-30
Self-rated health					0-30
Healthy	1,587	63.58		4.92 (4.20)	0-30
Unhealthy	909	36.42		7.16 (4.95)	0-30
Religious					0-30
Yes	1,762	89.9		5.60 (4.58)	0-30
No	198	10.1		6.86 (4.56)	0-30
Extroversion	2,496		7.01 (1.33)		2-10
Physical activity frequency	2,278		5.34 (2.23)		1-7
Subjective poverty	2,471		4.06 (1.11)		1-6
Individual social capital					
Social trust	2,496		2.9 (1.18)		1-4
Reciprocity	2,496		3.15 (0.45)		1-4
Safety	2,496		2.98 (0.16)		1-4

Community participation	2,496	1.66 (0.61)	1-5
Level 2 variables			
Neighborhood poverty	311	4.12 (0.41)	1-6
Contextual social capital			1-4
Neighborhood social trust	311	2.62 (0.17)	1-4
Neighborhood reciprocity	311	3.19 (0.15)	1-4
Neighborhood safety	311	2.96 (0.19)	1-4
Community participation	311	1.66 (0.57)	1-5

SD = Standard Deviation

The descriptive statistics of level 2 variables are as follows. The mean score for the contextual social trust was 2.62 with a standard deviation of 0.17; the mean score of neighborhood reciprocity was 3.19 with a standard deviation of 0.15; for neighborhood safety, the mean score was 2.96 with a standard deviation of 0.19; for community participation, it was 1.66 with a standard deviation of 0.57; and for neighborhood poverty, the mean was 4.12 with a standard deviation of 0.41.

Table 3: Results of multilevel regression analysis for depression with fixed and random parts

Variables	**Model 1**		**Model 2**		**Model 3**	
	Coefficient	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Level 1 variables (n = 2,496)						
Intercept	5.73***	0.13	8.54***	0.64	6.34***	0.96
Gender (ref. female)						
Male			-0.35	0.34		
Age (ref. 60-69)						
70-79			0.03	0.37		
80-90			-1.02	1.19		
Marital status (ref. unmarried)						
Married			-0.04	0.39		
Education (ref. primary)						
Junior high school			-0.27	0.47		
Senior high school			-1.43**	0.52		
High education			-1.13	0.77		
Retirement (ref. not retired)						
Retired			0.05	0.37		
Religious (ref. non-religious)						
Religious			-0.93	0.51		
Self-Rated Health (ref. unhealthy)						
Healthy			-2.31***	0.33		
Extroversion			-0.15	0.12		
Physical activity frequency			-0.15*	0.07		
Subjective poverty			0.13	0.15		
Individual cognitive social capital						
Social trust					-0.22*	0.09

Reciprocity					-0.12	0.23
Safety					0.15	0.23
Individual structural social capital						
Community Participation					-0.05	0.09
Level 2 variables (n=311)						
Neighborhood poverty						
Contextual cognitive social capital						
Neighborhood social trust						
Neighborhood reciprocity						
Neighborhood safety						
Contextual structural social capital						
Community Participation						
Random parameters						
Between communities	1.76 (1.33)		2.05 (1.43)		1.78 (1.33)	

Table 3: Results of multilevel regression analysis for depression with fixed and random parts (continued)

Variables	**Model 4**		**Model 5**		**Model 6**	
	Coefficient	**SE**	**Coefficient**	**SE**	**Coefficient**	**SE**
Level 1 variables (n = 2,496)						
Intercept	7.43***	1.74	5.72***	0.13	8.2***	
Gender (ref. female)						
Male	-0.52	0.36			-0.45	0.36
Age (ref. 60-69)						
70-79	0.06	0.37			-0.04	0.37
80-90	-0.96	1.20			-1.01	1.20
Marital status (ref. unmarried)						
Married	-0.04	0.39			-0.02	0.39
Education (ref. primary)						
Junior high school	-0.28	0.47			-0.21	
Senior high school	-1.57**	0.53			-1.48**	0.53
High education	-1.33	0.79			-1.20	0.79
Retirement (ref. not retired)						
Retired	0.13	0.38			0.22	0.38
Religious (ref. non-religious)						
Religious	-0.90	0.52			-0.92	0.52
Self-Rated Health (ref.						
Healthy	-2.35***	0.33			-2.29***	
Extroversion	-0.16	0.12			-0.92	0.52
Physical activity frequency	-0.16*	0.07			-0.15*	0.07
Subjective poverty	0.12	0.15			0.02	0.16
Individual cognitive social capital						
Social trust	-0.17	0.13			-0.20	0.14
Reciprocity	0.33	0.36			0.30	0.36
Safety	-0.07	0.38			-0.16	0.39

Individual structural social capital						
Community Participation	0.24	0.13			0.23	0.14
Level 2 variables (n=311)						
Neighborhood poverty			1.69***	0.33	1.14*	0.52
Contextual cognitive social capital						
Neighborhood social trust			-0.31	0.30	0.05	0.45
Neighborhood reciprocity			0.42	0.34	0.15	0.21
Neighborhood safety			-1.78*	0.77	-2.33*	1.12
Contextual structural social capital						
Community Participation			-0.11	0.21	0.09	0.33
Random parameters						
Between communities	2.03 (1.42)		1.35 (1.16)		1.84 (1.35)	

*Notes: * a<5%, ** a<1%, *** a<0.1%. SE= Standard Errors*

Table 3 provides the results of the multilevel analysis. The null model without predictors (model 1) indicated a significant variation in depression among the communities (σ2u0 = 1.76). This result did not take into account individual characteristics. Model 2 included individual variables. Self-rated health, physical activity frequency, and having completed senior high school were inversely associated with depression (β=-2.31, p<0.001; β=-0.15, p<0.05; and β=-1.43, p<0.01 respectively).

In model 3, individual cognitive and structural social capital variables were included in the analysis. After controlling for random effects, only social trust exhibited significant values before controlling for individual variables (β=-0.22, p<0.05). Model 4 included individual control variables to model 3, and none of the social capital variables was significant, while individual variables remained significant.

Model 5 included contextual variables. Neighborhood safety at the community level reached statistical significance and was inversely associated with depression (β=-1.78, p<0.05). Community poverty exhibited significant values and was positively related to individual levels of depression (β=1.69, p<0.001). In model 6, control variables and individual social capital were included into the model 5 to see whether these contextual variables remained significant. What was observed is that individual variables remained significant, neighborhood safety at the community level (β=-2.33, p<0.05), and poverty at the community level (β=1.14, p<0.01) remained significant as well.

Discussion

Although a considerable number of studies have been conducted on the association between social capital and mental health globally, few have been conducted among the aging Indonesian population. In this analysis, we sought to investigate the links between individual social capital and community social capital, and mental health measured by depression among older adults, after controlling for individual factors and cluster-specific random effects. The idea behind this is that the mental health of elders is affected by individual characteristics and by individual and community social capital. The null model exhibited unexplained variance, indicating the need to investigate the factors that contribute to this variance. There

is empirical evidence stating the role of individual characteristics and sociodemographic factors in shaping mental health (Elovainio, Kivimäki, Steen, & Kalliomäki-Levanto, 2000). We also found that having completed senior high school, being healthy, and frequently doing physical activity were associated with reduced depression among older adults. This relationship was consistent in all models, even after including social capital variables. These findings are consistent with previous studies that have reported the positive association between education (Hibino et al., 2012), physical activity (Steinmo, Hagger-Johnson, & Shahab, 2014), and self-rated health with mental health.

On the other hand, we observed that social capital does not follow a consistent pattern across all the models. That is, individual and community social capital behaved differently with and without control variables in the analysis, after adjusting for cluster-specific random effects. Specifically, we found that social trust at the individual level and neighborhood safety at the community level exhibited significant values before taking into account individual variables. One study from England found no association between trust and membership in organizations and mental health based on multilevel analysis (Stafford, De Silva, Stansfeld, & Marmot, 2008). Previous studies, relying on fixed effects only, found a positive relationship between social capital, as measured by neighborhood trust, and participation, and good physical and mental health (Miller, Scheffler, Lam, Rosenberg, & Rupp, 2006), and healthy aging in Indonesia (Cao & Rammohan, 2016). The model 6 showed that taking into account individual and compositional factors, only neighborhood safety predicted decreased levels of depression among older adults in Indonesia. It seems that living in a safe neighborhood matters most for older adults in Indonesia.

Prior researches have reported that reduced levels of perceived neighborhood safety were associated with high levels of depression among older adults (Wilson-Genderson & Pruchno, 2013), and high levels of perceived neighborhood safety were associated with better physical and mental health (Parra et al., 2020). In China, an association between perceived neighborhood safety and mental health was found among urban residents (Chen & Chen, 2014). Likewise, the results of this study are comparable to those found in the West. In a systematic review of 32articles in the United States, Won, Lee, Forjuoh, and Ory (2016) reported that general neighborhood safety was associated with mental health in old age. Similarly, Roh et al. (2011) found that perceived neighborhood safety was associated with depression among Korean American older adults. Using a large sample of community-dwelling older adults, it was revealed that lower levels of perceived neighborhood safety were predictive of higher levels of depressive symptoms (Cromley, Wilson-Genderson, & Pruchno, 2012; Wilson-Genderson, & Pruchno, 2013).

Several mechanisms may explain the influence of community cognitive social capital as measured by neighborhood safety on the mental health of older adults. Perceptions of safety in a neighborhood may increase a sense of security, social bonds, and social inclusion on the one hand. On the other hand, perceptions of unsafety and danger may lead to more isolation, which might bring about psychological distress, feelings of anxiety, and depression (Hill, Ross, & Angel, 2005). Others have argued that the unsafety of neighborhoods leads to a decrease in physical activity, which in turn might lead to a reduction in mental health and physical health (Meyer, Castro-Schilo, & Aguilar-Gaxiola, 2014). Moreover, perceptions of danger in a neighborhood decrease one's perceived control over one's environment (Downey & Willigen, 2005), and undermines mental and physical health (Baum, Ziersch, Zhang, & Osborne, 2009). Finally, these findings support the social stress theory, which posits that stressors that occur outside individuals are internalized into feelings of distress within individuals (Aneshensel, 1992).

Unlike social capital variables, subjective poverty variables at the community level exhibited a consistent and positive association with depression across the models. This indicates that poverty exerts a significant influence on the mental health of elders in Indonesia. These findings are consistent with previous studies that found a deleterious effect of poverty on mental health in Indonesia (Tampubolon & Hanandita, 2014; Hanandita & Tampubolon, 2014). Prior studies have revealed that poverty is a risk factor for the development of mental illness (Dohrenwend, 1990; Saraceno & Barbui, 1997).

Our study has several limitations and strengths. First, because only one round of the Indonesian Family Life Survey dataset is used, the results cannot reveal causal relationships. Second, the lack of standardized measurement of social capital poses a problem; even though the study used questions that are used in the literature, their validity is still questionable. The strengths of this study reside in that it is the first to examine the association between social capital and mental health among Indonesian older adults using a multilevel approach, and that it has a national scope. This study encourages more studies in low-and middle-income countries to use similar approaches. Moreover, the study controlled for a wide range of confounding variables at both individual and community levels, reducing the likelihood of omitted variables.

Conclusion

This study found evidence that taking into account the hierarchical structure of the data, individual and compositional factors, higher perceptions of neighborhood safety are associated with better mental health, and higher levels of community poverty are related to the poor mental health of older adults. One of the benefits of the social determinants of mental health is that we can have control over the determining factors and, without doubt, change and improve them. Therefore, policymakers can target programs that can enhance the safety of neighborhoods and programs that can reduce poverty. Won et al. (2016) suggested that these policies might include programs to reduce crime and violence, programs to improve transportation for elders, programs to improve street conditions to avoid fall injuries for older individuals, and programs to improve the livability of neighborhoods in general. In addition, the study found that having completed senior high school, being healthy, and frequently doing physical activity are associated with better mental health in old age; therefore, mental health professionals should take into account these characteristics when designing preventions and interventions.

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