

ORIGINAL CONTRIBUTION

Predictors of Depressive Symptoms Based on the Human Capital Model Approach: Findings From the Indonesia Family Life Survey

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Depression is the leading factor of disability and the overall global burden of diseases. The human capital model provides an appropriate conceptual model for managing human health. This study aimed to determine the association between human capital (including social, emotional, physical, financial, and intellectual capital) and depressive symptoms among productive age groups in Indonesia. A cross-sectional study was conducted by analyzing data of 9,858 respondents aged 15-59 years that were obtained from the Indonesia Family Life Survey 5 (IFLS 5). Multivariate logistic regression was used to assess the association between human capital components and depressive symptoms. Among respondents, 23.65% had higher depressive symptoms. Social trust and social networks (part of social capital) were significantly related to depressive symptoms. Self-reported satisfaction (part of emotional capital) were also related to depressive symptoms, as well as self-rated health, sleep quality, a number of chronic disease, body mass index (BMI), and physical functioning (part of physical capital). Log income (part of financial capital) and education level (part of intellectual capital) were related to depressive symptoms after controlling for other variables. Of all the components of human capital, physical capital has the most attributes associated with the risk of depressive symptoms. Therefore, depression prevention programs can be prioritized on attributes related to physical capital.

INTRODUCTION

Depression is still a public health problem in the world. As the leading factor of disability and the overall global burden of disease, the magnitude of depression

cases is rising globally. Depression is a mental disorder that attacks 264 million people of all ages [1]. Depression caused loss of productivity, increased the risk of disease, and increased the risk of suicide. Globally, nearly 800,000 people die from suicide each year and suicide is

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Abbreviations: AOR, Adjusted Odds Ratio; BMI, Body Mass Index; CES-D, Center for Epidemiologic Studies Depression Scale; EA, Enumeration areas; IFLS, Indonesian Family Life Survey; YLD, years lived with disability.

Keywords: Depressive symptoms, Human capital, IFLS, Indonesia, Productive age group, Mental health

Author Contributions: TDT: Conception and design; writing, review, and editing. EA: Conception and design; data analysis; writing, review, and editing. JOR: Review and editing.

the second leading cause of death in people aged 15-29 years [1].

As we know, there are effective treatments for depressive disorders, but 76-85% of people who experience depression disorders do not get effective treatment, especially in middle-low income countries [2]. In Indonesia, only 9% of depressed sufferers get medical treatment whereas there are around 3.7% of the population experiencing depressive disorders [3,4]. A depressive disorder is one of the five main causes of years lived with disability (YLD) in Indonesia with a percentage of 6.6% [3].

The human capital paradigm provides an appropriate conceptual model for managing human health. This human capital model assumes that humans are a form of capital like machines, technology, land, money, and materials that can be used to invest all their abilities and what they have to produce extraordinary performance [5]. Human capital can be valued at various levels and includes social capital, emotional capital, physical capital, financial capital, and intellectual capital [6]. Optimal performance can be achieved if all components in human capital are optimized, including achieving the highest degree of health [7]. Prior studies found an association of several components of human capital with depression. One measure that has been extensively studied in relation to mental health such as depression is social capital. Social capital dimensions (trust, social networks, and reciprocity) are significantly associated with depressive symptoms [8,9]. A greater social capital is associated with less depressive symptoms [9]. A study in China also found that financial capital can predict increased depressive symptoms [10]. Self-efficacy, hope, resilience, and optimism, which are components of emotional capital, are considered as positive assets to prevent depression [11].

This study applies a human capital theory framework [6,10] to understand the social determinants of depressive symptoms in Indonesia. The study about the effect of human capital on depression is still growing. It is rarely carried out in developing countries, including Indonesia. Notably, it places a test of the effects of human capital in an integrative framework that investigates how components of human capital embedded in families and communities influence the symptoms of depression in Indonesia. The Indonesian Family Life Survey 5 (IFLS 5) data will be used to explain the purpose of this study. This study aims to determine the association between human capital factors and depressive symptoms among age productive groups in Indonesia.

MATERIALS AND METHODS

Design Study

This cross-sectional study used IFLS 5 data that were obtained from the RAND Corporation. The IFLS is a longitudinal and sustainable survey of socio-economic and health status. The survey was conducted at the end of 2014 and completed in 2015 [12].

Population and Sampling

The sample of IFLS is representative of about 83% of the Indonesian population and contains over 30,000 individuals living in 13 of the 27 provinces in the country [13].

The IFLS 5 interviewed 50,148 individuals face to face. Enumeration areas (EA) were randomly selected from the sample framework used in SUSENAS 1993 (<https://www.rand.org/well-being/social-and-behavioral-policy/data/bps/susenast/1993.html>). The sample of this study was 9,858 individuals aged 15-59 years who were successfully interviewed.

Variables

Status of depressive symptoms was the dependent variable. The independent variable of this study was human capital. Human capital consisted of social capital, emotional capital, physical capital, financial capital, and intellectual capital. The components of social capital consisted of social trust, cooperativeness, and social networks. Emotional capital was described by perception of life satisfaction. Physical capital was explained by self-rated health, sleep quality, the number of chronic diseases, BMI, physical function, and smoking status. Financial capital was measured by income and occupation variables. Intellectual capital was defined by cognitive level and education level variables [6]. The demographic variables included age, sex, and marital status.

DATA MANAGEMENT

Measurement of Depressive Symptoms

Depressive symptoms were measured using a 10-item Center for Epidemiologic Studies Depression Scale (CES-D). Depressive symptoms were categorized into higher and lower depressive symptoms. Respondents were asked to state how they felt in the past week. The response options were rarely or none, some days, occasionally, and most of the time. Respondents who had score of 10 or more would be considered to have higher depressive symptoms and respondents who had score less than 10 would be considered to have lower depressive symptoms [14,15].

Measurement of Social Capital

Social trust was measured by asking 10 questions of

respondents about their trust in neighbors. Four responses could be chosen with a score of 1 to 4. Social trust was categorized into poor and good social trust. Individuals with a score ≥ 24 were considered to have poor social trust and < 24 were considered to have good social trust [12].

Cooperativeness was assessed by how willing respondents were to help people in their village and was categorized into poor and high cooperation. Respondents who answered strongly agree and agree were categorized into high cooperation. Respondents who answered disagree and strongly disagree were categorized into poor cooperation [12].

Social networks were calculated as number of the participation in community activities during the last year. Community activities included community meetings, cooperatives, voluntary labor, village/neighborhood improvement programs, youth group activities, religious activities, and other similar activities [12,16].

Measurements of Emotional Capital

Self-rated life satisfaction was measured by asking how respondents satisfied with their life [17] and was categorized into satisfied and unsatisfied. Respondents were determined to be satisfied if they answered completely satisfied and very satisfied. Respondents were classified as unsatisfied if they answered somewhat satisfied, not very satisfied, and not at all satisfied.

Measurement of Physical Capital

Self-rated health was measured by asking respondents about their current health condition in general [17] and was categorized into poor and good self-rated health. Respondents were considered to have good health if they answered sometimes healthy and very healthy. Poor health category was defined when they responded sometimes unhealthy and very unhealthy.

Sleep quality was measured by asking 10 questions about how respondents sleep in the past week. Each response had score 1 to 5 [12]. Sleep quality was categorized into poor and good sleep quality. Individuals with a score ≥ 20 were considered to have poor sleep quality and a score of < 20 were considered to have good sleep quality.

The number of chronic diseases were measured by asking the respondents whether the doctor/paramedic/nurse/midwife has said that the respondent has a condition/disease from a list of diseases [12].

Body mass index (BMI) was calculated by dividing weight (in kg) by height (in m²). BMI was used to determine whether respondents were in a healthy weight range for their height. We categorized BMI into four groups using the cutoff for Asian and Pacific populations, namely

underweight (< 18.5 kg/m²), normal (18.5-22.9 kg/m²), overweight (23-24.9 kg/m²), and obesity (≥ 25 kg/m²) [18,19].

Physical functioning was measured using a statement of physical functioning which consisted of 11 statement items. Each statement item had score 1 to 3. Physical functioning was categorized into poor and good physical function [15]. Poor physical function was determined if respondents had a score of physical functioning ≥ 13 and good physical function if respondents had a score of physical functioning < 13 .

Smoking status was measured by asking whether respondents have ever had chewed tobacco, smoked tobacco (used pipes or self-rolled), or smoked cigarettes/cigars and whether the habit continues today. Smoking status was categorized into yes and no. Respondents who answered "it was still going on," would be coded "Yes," and respondents answered "no or had stopped," would be coded "No" [17].

Measurement of Financial Capital

Occupation was measured by asking "What was your primary activity during the past week?" Occupation was categorized as currently working (working/helping to earn income) or not (job searching, attending school, housekeeping, retired, sick/disabled, other). Family income was measured by a log of family income over the past year in rupiah [15].

Measurement of Intellectual Capital

The level of education consisted of lower education (no schooling, no primary school, primary school), middle-level education (junior and senior high school graduate), and higher education (college graduate). The cognitive level score was calculated by totaling attention and orientation scores. Respondents had a good cognitive level if they had score ≥ 6 . Respondents had a poor cognitive level if they had a score < 6 .

Measurement of Covariates Variables

Age was defined as the respondent's last birthday from the time of the study. The age variable was categorized into 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59 years [20]. Sex included males and females. Marriage status consisted of married and not married (not married, separated, widowed, and living together).

Statistical Analysis

The data were analyzed using univariate and multivariate techniques. Univariate analysis was performed to determine the frequency and distribution of the variables.

Table 1. Characteristics of Respondents and Distributions of Depressive Symptoms, Social Capital, Emotional Capital, Physical Capital, Financial Capital, and Intellectual Capital

No	Variables		n=9,858	%	Mean	SD
1	Age (years)	15-19	159	1.61	37.48	9.47
		20-24	570	5.78		
		25-29	1,327	13.46		
		30-34	2,084	21.14		
		35-39	1,871	18.98		
		40-44	1,461	14.82		
		45-49	1,106	11.22		
		50-54	784	7.95		
		55-59	496	5.03		
2	Sex	Female	949	9.63		
		Male	8,909	90.37		
3	Married	Married	6,122	62.10		
		Otherwise	3,736	37.90		
Outcome Variables						
4	Depressive symptoms	Lower	7,527	76.35		
		Higher	2,331	23.65		
Social Capital						
5	Social trust	Good	3,954	40.11		
		Poor	5,904	59.89		
6	Cooperativeness	Yes	9,799	99.40		
		No	59	0.60		
7	Social network				2.33	1.98
Emotional capital						
8	Perception of life satisfied	Satisfied	4,121	41.80		
		Not satisfied	5,737	58.20		
Physical Capital						
9	Perception of health status	Healthy	8,002	81.17		
		Unhealthy	1,856	18.83		
10	Quality of sleep	Good	4,657	47.24		
		Poor	5,201	52.76		
11	Number of chronic conditions				0.46	0.77
12	BMI	Malnutrition	797	8.08		
		Normal	4,002	40.60		
		Overweight	1,659	16.83		
		Obesity	3,400	34.49		
13	Physical functioning	Good	4,362	44.25		
		Poor	5,496	55.75		
14	Status of smoking	No	5,520	56.00		
		Yes	4,338	44.00		
Financial Capital						

15	Income (IDR)				21,945,560	38,584,500
16	Occupation	Working	8,512	86.35		
		Not working	1,346	13.65		
	Intellectual Capital					
17	Level of cognition	Good	5,851	59.35		
		Poor	4,007	40.65		
18	Level of education	Lower	2,905	29.47		
		Middle	5,298	53.74		
		Higher	1,655	16.79		

IDR: Indonesian Rupiah

Multivariate analysis was performed using multivariate logistic regression. Data were analyzed using STATA 14 (StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP.).

Ethical Approval

The IFLS has been approved by the ethics review boards of RAND and the Universitas Gajah Mada, Indonesia [12].

RESULTS

Data from 9,858 respondents were included for analysis. In total, 23.65% of respondents had higher depressive symptoms in the past. There are 21.14% and 18.98% respondents aged 30-34 and 35-39 years old respectively and the mean age of respondents was 37.48 ± 9.47 years, 90.37% of respondents were male, and 62.10% of respondents were married (Table 1).

Based on social capital factors, 59.89% of respondents had poor social trust. Only 0.06% of respondents were designated uncooperative. Respondents who had no social network during the last year was 18.47% and the mean social network result was 2.33 ± 1.98 . Based on emotional capital, 58.20% of respondents felt unsatisfied in their life (Table 1).

Based on physical capital factors, 18.83% of respondents had an unhealthy self-rated health, 52.76% of respondents had poor sleep quality, 33.05% of respondents had chronic diseases, 34.49% of respondents had overweight and obesity status with a mean BMI of 23.72 ± 4.31 (kg/m^2); 40.60% respondents had normal nutritional status, 55.75% of respondents had poor physical functioning, and 44% of respondents had ever had a smoking habit. Based on financial capital factors, the average income of respondents was $21,945,560 \pm 38,584,500$ rupiahs and 13.65% of respondents were unemployed. Based on intellectual capital factors, 40.65% of respondents had a poor level of cognition and just 16.79% of respondents had a higher education level (Table 1). While the crude

odds ratio association between components of human capital and depressive symptoms are noted in Table 2.

Based on social capital factors, respondents who had poor social trust had 26% (AOR=1.26; 95% CI 1.13-1.40, $p < 0.001$) higher odds of experiencing depressive symptoms compared to respondents who had good social trust. Respondents who had more social networks had 3% (AOR=1.03; 95% CI=1.004-1.06, $p = 0.024$) higher odds to experience depressive symptoms compared to respondents who had fewer social networks. Based on emotional capital factors, respondents who felt unsatisfied had 39% (AOR=1.39; 95% CI=1.25-1.55, $p < 0.001$) higher odds to experience depressive symptoms compared to respondents who felt satisfied (Table 3).

Based on physical capital factors, respondents who had an unhealthy status had 54% (AOR=1.54; 95% CI=1.36-1.74, $p < 0.001$) higher odds to experience depressive symptoms compared to respondents who had a healthy status. Respondents who had poor sleep quality had 6.16 times (AOR=6.16; 95% CI=5.44-6.97, $p < 0.001$) higher odds to experience depressive symptoms compared to respondents who had good sleep quality. Respondents who suffered more chronic diseases had 18% (AOR=1.18; 95% CI=1.10-1.26, $p < 0.001$) higher odds to experience depressive symptoms compared to respondents who had a lower number of chronic diseases. Respondents who had poor physical functioning had 38% (AOR=1.38; 95% CI=1.24-1.54, $p < 0.001$) higher odds to experience depressive symptoms compared to respondents who had good physical functioning. Respondents with normal (AOR=1.24, 95% CI=1.02-1.51, $p = 0.027$) and overweight status (AOR=1.31, 95% CI=1.04-1.63, $p = 0.018$) had 24% and 31% higher odds to experience depressive symptoms compared to respondents with underweight status.

Based on financial capital factors, respondents who had higher log income had 6% (AOR=0.94; 95% CI=0.91-0.97, $p < 0.001$) lower odds to experience depressive symptoms compared to respondents who had lower log income. Based on intellectual capital factors, respondents who had a poor cognitive level had 12%

Table 2. Crude Odds Ratio Association Between Components of Human Capital and Depressive Symptoms

No	Variables		OR ^a	SE	95% CI		P value
					Lower	Upper	
Social Capital							
1	Social trust	Good	Ref				
		Poor	1.37	0.07	1.25	1.51	<0.001
2	Cooperativeness	Yes	Ref				
		No	1.54	0.43	0.89	2.66	0.124
3	Social network		0.99	0.01	0.97	1.02	0.548
Emotional Capital							
4	Perception of life satisfaction	Satisfied	Ref				
		Not satisfied	1.58	0.08	1.43	1.74	<0.001
Physical Capital							
5	Perception of health status	Healthy	Ref				
		Unhealthy	2.30	0.13	2.06	2.56	<0.001
6	Quality of sleep	Good	Ref				
		Poor	7.17	0.44	6.36	8.09	<0.001
7	Number of chronic disease		1.25	0.04	1.18	1.32	<0.001
8	BMI	Underweight	Ref				
		Normal	1.08	0.10	0.91	1.30	0.367
		Overweight	0.99	0.10	0.81	1.21	0.931
		Obesity	0.84	0.08	0.70	1.01	0.064
9	Physical functioning	Good	Ref				
		Poor	1.76	0.09	1.60	1.94	<0.001
10	Status of smoking	No	Ref				
		Yes	1.07	0.05	0.98	1.18	0.149
Financial Capital							
11	Log income		0.90	0.01	0.87	0.92	<0.001
12	Occupation	Working	Ref				
		Not working	1.22	0.08	1.07	1.39	0.003
Intellectual Capital							
13	Level of cognition	Good	Ref				
		Poor	1.28	0.06	1.16	1.40	<0.001
14	Level of education	Higher	Ref				
		Middle	1.42	0.10	1.23	1.63	<0.001
		Lower	1.55	0.12	1.34	1.80	<0.001
Covariates							
15	Age (years)	15-19	2.53	0.50	1.72	3.73	<0.001
		20-24	1.95	0.28	1.47	2.57	<0.001
		25-29	1.35	0.17	1.05	1.73	0.020
		30-34	1.23	0.15	0.97	1.57	0.088
		35-39	1.18	0.15	0.93	1.50	0.180

		40-44	1.14	0.15	0.89	1.46	0.303
		45-49	0.89	0.12	0.69	1.16	0.410
		50-54	0.91	0.13	0.68	1.20	0.494
		55-59	Ref				
16	Sex	Male	Ref				
		Female	1.21	0.06	1.10	1.33	<0.001
17	Married	Married	Ref				
		Not married	1.70	0.12	1.47	1.96	<0.001

^aOdds Ratio

(AOR=1.12; 95% CI=1.01-1.24, p=0.030) higher odds to experience depressive symptoms compared to respondents who had a good cognitive level. Respondents who had a lower education level had 36% (AOR=1.36; 95% CI=1.15-1.63, p=0.001) higher odds to experience depressive symptoms compared to respondents who had a higher education level (Table 3).

DISCUSSIONS

General Finding

Social capital (social trust and social networks), emotional capital (perception of life satisfied), physical capital (self-rated health, sleep quality, number of chronic diseases, BMI, and physical functioning), financial capital (income), and intellectual capital (cognitive level and education level) related to depressive symptoms.

Social Capital

Social trust and social networks had a significant relationship with depressive symptoms. This is consistent with several previous studies that state that the level of trust is related to depression [21-24]. Besides, the results of this study are consistent with several studies which state that individuals who feel socially isolated tend to have more symptoms of depression than those who have extensive social networks [23]. The utilization of social trust and social networks in several countries has been recognized to reduce symptoms of depression. Studies in South Korea also found that social trust among family members can reduce symptoms of depression [22]. According to a study in China, good social trust and social networks reduced depression symptoms [24], and by fostering a conducive and safe community, we can reduce depression [21]. Potentially, efforts to prevent depression could be implemented in Indonesia, as it has a culture of *gotong-royong* (mutual assistance) [25]. In addition, several studies have proven that community participation could improve health, mental health, and well-being [26,27].

Emotional Capital

Respondents who felt life dissatisfaction tended to develop depressive symptoms. This finding is similar to a 15-year follow-up study among a healthy Finnish population [28]. Research among university students found that life satisfaction and happiness will prevent respondents from developing depression [29]. Other study suggested that life dissatisfaction is associated with a poor health outcome, including a long-term bad health outcome [30]. Emotional capital is an important base for surviving in the community and society [31]. Therefore, mature emotional capital is expected to be the first step of an emotionally healthy individual.

Physical Capital

Physical capital consists of self-rated health, sleep quality, number of chronic diseases, BMI, and physical functioning. All factors were significantly associated with depressive symptoms. Our research showed that respondents with poor health increase the risk of depression symptoms by 1.5 times. A longitudinal study in Japan among the middle-aged and elderly found that poor health status increases the risk of depression; the risk was higher among women than men (2.4 vs 2.0) [32]. Additionally, perception of health status influence how people behave: if they value themselves healthy, they will behave healthily and vice versa [33].

Our study discovered that poor sleep quality caused depression symptoms to be six times higher compared to good quality sleep. This finding is similar to studies in Australia [34] and Finland [35]. Another study suggested sleep quality was a trigger to maladaptive emotional regulation that caused symptoms of depression [36]; emotional regulation was a mediator in how sleep quality induces depression symptoms. Also, sleep disorders can be a sign of early depression [37].

Our study found that an increasing number of chronic diseases will increase the risk of depression. Previous studies had reported that productive age with chronic disease would increase the risk of depression [38,39]. For

Table 3. Adjusted Odds Ratio Association Between Components of Human Capital and Depressive Symptoms

No	Variables		AOR ^b	SE	95% CI		P value
					Lower	Upper	
Social Capital							
1	Social trust	Good	Ref				
		Poor	1.26	0.07	1.13	1.40	<0.001
2	Cooperativeness	Yes	Ref				
		No	1.15	0.35	0.63	2.12	0.639
3	Social network		1.03	0.01	1.004	1.06	0.024
Emotional Capital							
4	Perception of life satisfaction	Satisfied	Ref				
		Not satisfied	1.39	0.08	1.25	1.55	<0.001
Physical Capital							
5	Perception of health status	Healthy	Ref				
		Unhealthy	1.54	0.10	1.36	1.74	<0.001
6	Quality of sleep	Good	Ref				
		Poor	6.16	0.39	5.44	6.97	<0.001
7	Number of chronic diseases		1.18	0.04	1.10	1.26	<0.001
8	BMI (kg/m ²)	Underweight	Ref				
		Normal	1.24	0.12	1.02	1.51	0.027
		Overweight	1.31	0.15	1.04	1.63	0.018
		Obesity	1.13	0.12	0.92	1.39	0.251
9	Physical functioning	Good	Ref				
		Poor	1.38	0.08	1.24	1.54	<0.001
10	Status of smoking	No	Ref				
		Yes	1.13	0.08	0.98	1.31	0.093
Financial Capital							
11	Log income		0.94	0.02	0.91	0.97	<0.001
12	Occupation	Working	Ref				
		Not working	0.95	0.07	0.82	1.11	0.516
Intellectual Capital							
13	Level of cognition	Good	Ref				
		Poor	1.12	0.06	1.01	1.24	0.030
14	Level of education	Higher	Ref				
		Middle	1.15	0.09	0.98	1.34	0.078
		Lower	1.36	0.12	1.15	1.63	0.001
Covariates							
15	Age (years)	15-19	2.25	0.51	1.44	3.52	<0.001
		20-24	1.94	0.32	1.41	2.67	<0.001
		25-29	1.53	0.22	1.15	2.03	0.004
		30-34	1.46	0.20	1.11	1.92	0.007

		35-39	1.37	0.19	1.04	1.80	0.023
		40-44	1.36	0.19	1.03	1.80	0.031
		45-49	1.06	0.16	0.79	1.42	0.703
		50-54	1.04	0.16	0.76	1.41	0.818
		55-59	Ref				
16	Sex	Male	Ref				
		Female	1.10	0.09	0.94	1.28	0.241
17	Married	Married	Ref				
		Not married	1.30	0.11	1.10	1.55	0.002

^bAdjusted Odds Ratio

example, a study in South Korea among the middle-aged and elderly, the adjusted odds ratio was higher among the middle-aged with chronic diseases compared to the elderly to experience depression [38]. Although we did not differentiate the types of chronic disease, some studies suggested that cancer, diabetes mellitus, myocardial infarction, arthritis, hypertension, and pulmonary disease were commonly found in patients with depression [40,41].

Our study discovered that respondents with normal and overweight BMI had higher depressive symptoms compared to underweight respondents. Many researchers found that obesity had positive correlation with depressive symptoms [42,43], meaning higher levels of depressive symptoms were associated with increased body obesity [44]. However, in this study, we found that respondents who were obese were not associated with depressive symptoms. Several other studies have also found different results such as higher levels of depression being associated with lower rates of obesity or vice versa and or even no association or mixed results [45-49]. Possible explanations for the varying results were differences in demographic factors, socioeconomic status, ethnicity, nationality, and health status.

Poor physical functioning is significantly associated with symptoms of depression. In line with a previous study among adults in the Netherlands [37], South Carolina [50], and Indonesia [15]. The risk of poor physical functioning would increase symptoms of depression among people with comorbidities [50,51]. Another study found that 28% of people with physical functioning limitations showed signs of clinical anxiety and depression [52].

Financial Capital

Income, a part of financial capital, was significantly associated with depressive symptoms. Higher income decreased the odds of experiencing depressive symptoms. This result is in line with the finding from national sur-

veys in the United States [53]. Financial strain or financial distress, the stressful feeling about financial situations, is one of the underlying factors that explain this association [54,55]. The low-income population is more likely to experience financial strain/distress. Limited access to basic needs, such as healthy food, clothing, housing, and health, puts them in a miserable condition that can trigger depression [54,55].

Intellectual Capital

All components of intellectual capital had a significant association with depressive symptoms. The odds of getting depressive symptoms were higher in someone who has poor cognition and lower educational level. This finding is consistent with national surveys in the United States, Australia, and some countries in Europe [56-59]. Cognitive function shows a person's ability in reasoning, remembering, perception, and also concentration. Someone who has poor cognition was more likely to experience difficulty conducting daily activities. This impairment can cause various problems that lead to depressive symptoms [56].

Education has an important role in the formation of people's knowledge, attitudes, and behavior. This capacity helps them to determine what must they do in dealing with stressors [59]. Education level may be related to the ability in processing and understanding information [58,59]. Those with higher levels of education have more access to mental health information and have healthy lifestyles [57]. Education is also related to socioeconomic status. Higher educated people have better life satisfaction, higher incomes, good careers [57]; they have adequate resources and higher resilience to cope with stressors [58].

Strength and Weakness

The strength of this study related to a large study sample. The data were obtained from a national survey, so it provided sufficient statistical power and the results

were generalizable. Moreover, the data collection process was carried out by trained personnel and used validated instruments. Information bias might exist in this study. Data were collected based on the respondent's recall so there was a possibility that they could not remember the previous conditions. The use of a cross-sectional design could not explain the existence of a causal relationship between the components of human capital and depression symptoms.

CONCLUSION

Increasing human capital is thought to contribute to decreasing depressive symptoms. Thus, the creating of health improvement program/policy changes needs to be emphasized on the components of human capital. Understanding the role of human capital in mental health has broader public health implications in terms of treatment and prevention programs. Components in human capital must be considered when creating mental health programs at the individual and population levels. Of all the components of human capital, physical capital has the most attributes associated with the risk of depressive symptoms. Therefore, depression prevention programs can be prioritized on attributes related to physical capital. Human capital can be used as a mechanism for health promotion. Increasing human capital in a community can be fostered by emphasizing community development, which can be enhanced by defining objectives at the community level, mobilizing resources, and developing plans to overcome collective problems. Through the development of human capital in society, the problem of inequality in health and well-being can be addressed directly.

Acknowledgments: Thanks to the RAND Corporation for providing the 2014 IFLS data.

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