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Assessing the Effect of Social Capital on Depression in Adults

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ABSTRACT

Background: Depression is a mental health problem that affects an individual's quality of life. Previous studies have shown that individuals with high social capital are less likely to experience depression. Understanding the dynamics of social capital and its impact on depression is essential for developing interventions and policies that can improve mental well-being at both the individual and community levels. This study aims to analyze the influence of structural, cognitive, and relational social capital on depression in adults.
Subjects and Method: This study is a cross-sectional study carried out in Klaten, Central Java in September-October 2024. Population of 726,839 adults and a sample of 200 adults aged 19-59 years were selected using multistage random sampling. The dependent variable was depression. The independent variables were structural social capital, cognitive social capital, and relational social capital. Depression data was measured using Patient Health Questionnaire-9 (PHQ-9) and other data using questionnaires. Data was analyzed using the Structural Equation Model run on STATA 13.
Results: Strong social capital lowered adults' risk of depression (b= -0.39; CI 95%= -0.56 to -0.23; p= 0.001). The older you get, the lower the depression score (b= -0.17; CI 95%= -0.31 to -0.03; p= 0.018). The social capital construct in this study is positively and statistically significant by the structural social capital component (b= 0.75; CI 95%= 0.58 to 0.92; p= 0.001), cognitive social capital component (b= 0.56; CI 95%= 0.39 to 0.73; p= 0.001), and the relational social capital component (b= 0.62; CI 95%= 0.48 to 0.76; p= 0.001). The SEM model showed a good fit (Chi-square p= 0.113; RMSEA= 0.070; CFI= 0.98; TLI= 0.93; SRMR= 0.03).
Conclusion: Strong social capital and increasing age lower the risk of depression in adults. The social capital construct is positively and statistically significant by the components of structural social capital, cognitive social capital, and relational social capital. This SEM model shows a good fit.

Keywords: Social capital, depression, adult

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BACKGROUND

Mental health is a state of mental well-being that allows a person to realize their potential, overcome life pressures, work productively, and contribute to the community. Mental health is an integral part of overall health, defined by the WHO as physical, mental, and social well-being and not only freedom from disease (WHO, 2022a). WHO also emphasizes that mental health is closely

related to human rights, where every individual has the right to quality mental health services without discrimination (WHO, 2023a).

Depression is a common mental disorder characterized by depressed mood, loss of interest or pleasure, feelings of worthlessness, sleep and appetite disturbances, feelings of tiredness, difficulty thinking, and experiencing poor concentration for a minimum of two weeks (Amha et al., 2020). This disorder affects about 350 million people in the world and is the second largest cause of disability. The risk of suicide in individuals with depression is 20 times greater than in the general population (Molla et al., 2016).

In 2019, about 1 in every 8 people, or 970 million people worldwide, were living with mental disorders, especially anxiety and depression disorders. In 2020, the number of people living with anxiety and depression disorders increased significantly due to the COVID-19 pandemic (WHO, 2022b). According to WHO (2023b) An estimated 3.8% of the population is depressed, including 5% of adults (4% men and 6% women), and 5.7% of adults ≥60 years of age.

In Indonesia, mental health is a significant problem. Some of the regulations that regulate mental health include Law of the Republic of Indonesia Number 17 of 2023 concerning Health, Regulation of the Minister of Health of the Republic of Indonesia Number 54 of 2017 concerning Measures to Prevent Attachment in People with Mental Disorders, and Law of the Republic of Indonesia Number 18 of 2014 concerning Mental Health. Data from the Indonesian Ministry of Health shows that around 1 in 10 people in Indonesia experience mental disorders, with a prevalence of depression in the population aged ≥15 years of 6.1% (Riskesdas, 2019).

The study focused on the adult population in Klaten Regency, where the prevalence of depression reached 5.1% higher than the average of Central Java Province, which was 4.4% (Riskesdas, 2019). Depression has the potential to be a cause of suicide, and Klaten is in the third highest position in suicide cases in Central Java with 11 cases in 2023 (Central Java Health Office, 2024). This indicates the need for more effective interventions.

Social capital has been identified as a determinant of mental health and as a possible explanation for the differences in mental health status found between communities or countries (Bassett and Moore, 2013a). Social capital can be categorized into two dimensions, cognitive construction and structural social capital (Bassett and Moore, 2013a; Uphoff et al., 2013; Ehsan and De Silva, 2015). Meanwhile, Janine Nahapiet and Sumantra Ghoshal group social capital into three dimensions, namely structural, cognitive, and relational (Claridge, 2018).

Social capital is assumed to be an alternative form of relationship. Social capital is referred to as the resources and community capital that can be accessed through social relations and social involvement of the community to work together to achieve common goals in various groups and organizations (Adriani et al., 2024).

Social capital is a relatively newer construct in the field of social epidemiology studies, and generally refers to the resources that individuals and groups can access through social connections. Although there has been progress in studies on social capital and mental health, little is known about the contribution of psychosocial mechanisms in the relationship between social capital and depression. To develop a better understanding of the relationship, more studies are needed to investigate the relationship

between social capital and depression (Bassett and Moore, 2013b).

Some studies show that individuals with high social capital tend to have better mental health (Backhaus et al., 2020). Cumulative empirical evidence from public health studies suggests that low social capital measured at the individual or ecological (community) level is significantly associated with poor mental health status including depression (Bassett and Moore, 2013a; Han and Lee, 2015; Wilmot and Dauner, 2017; Han et al., 2018).

Understanding the dynamics of social capital and its impact on depression is essential for developing interventions that improve mental well-being at both the individual and community levels (Tariq et al., 2019; Flores et al., 2018). Most studies on social capital and depression focus on older people (Amegbor et al., 2020; Han et al., 2018; Fu et al., 2024; Yamaguchi et al., 2019; Zhou et al., 2022; Bai et al., 2020) or children and adolescents (McPherson et al., 2014; Sotaquirá et al., 2022; Solmi et al., 2017). Studies exploring the link between social capital and depression in adults are limited.

Based on the description of the problem above and the consideration of the urgency of the concept of social capital on mental health, the researcher is interested in conducting a study related to the influence of social capital on the risk of depression in adults. This study aims to analyze the influence of structural social capital, cognitive social capital, and relational social capital on the risk of depression in adults in Klaten Regency, Central Java.

SUBJECTS AND METHOD

1. Study Design

The type of study used is an analytical observational study with a cross-sectional study design. This study was conducted in Klaten Regency, Central Java from September to October 2024.

2. Population and Sample

The population in this study is all adults aged 19-59 years living in Klaten, Central Java, and the sample in this study is 200 adults selected using multistage random sampling.

3. Study Variables

The dependent variable is depression. The independent variables are structural social capital, cognitive social capital, and relational social capital.

4. Operational Definition of Variables

Depression: is a mental disorder with depressed mood, loss of interest, feelings of worthlessness, sleep disturbances, and poor concentration for a minimum of two weeks.

Structural social capital: is a characteristic of the network of social relationships that affect the interaction and exchange of knowledge between individuals or groups.

Cognitive social capital: is a shared value and assumption that facilitates the understanding of behaviors and needs in social networks, which is reflected in language and norms.

Relational social capital: is an intangible asset such as trust and integrity in a relationship, which drives behavior based on trust and reciprocity, and is measured through the frequency and strength of relationships.

5. Study Instrument

Data on depression were measured by the Patient Health Questionnaire-9 (PHQ-9) and structural, cognitive, and relational social capital variables were measured using questionnaires made by researchers who had been tested for validity and reliability. The method of filling out the questionnaire uses the interview method.

6. Data Analysis

Measurement components and structural components of several variables were ana-

lyzed with the Structural Equation Model (SEM). SEM analysis is carried out with steps that include model specification, model identification, model suitability, coefficient estimation, and model respecification (if necessary). This data analysis uses the STATA 13 application.

7. Research Ethics

The ethical issues of the study including consent sheets, anonymity, and confidentiality, are handled carefully throughout the study process. The approval letter for the study ethics permit was obtained from the Study Ethics Committee at Dr. Moewardi Hospital, Surakarta, Indonesia, No. 2.273/-IX/HREC/2024, on September 23, 2024.

RESULTS

1. Sample Characteristics

Table 1 shows that the majority of study subjects are female (67%), the last education of most subjects is Diploma/Bachelor/Master/Doctoral (72%), and the majority have jobs as teaching staff (49.5%).

Table 2 shows that the age variables have a mean value = 40.93 and SD = 10.35 with the lowest age being 19 years and the highest being 59 years. Income has a mean value = 1,769,508 and SD = 1,706,737 with the lowest monthly income being 0 and the highest 8,000,000. Structural social capital has a mean value = 14.16 and SD = 2.64 with the lowest score of 4 and the highest score of 16. Cognitive social capital had a mean value = 7.93 and SD = 3.08 with the lowest score of 0 and the highest score of 12. Relational social capital has a mean value = 11.13 and SD = 1.45 with the lowest score of 4 and the highest score of 12. The depression variable had a mean value = 3.15 and SD = 3.19 with the lowest score of 0 and the highest score of 15.

Table 1. Sample characteristics on categorical data on sex, education, and occupation in Klaten (n= 200)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Man	66	33.0
	Woman	134	67.0
Education	Elementary School	7	3.5
	Junior High School	5	2.5
	Senior High School	44	22.0
	Diploma/Bachelor/Master/Doctoral	144	72.0
Job	Not Working/Housewife	18	9.0
	Labor/Maid	18	9.0
	Teaching Staff	99	49.5
	Civil servants	18	9.0
	Private Employees	25	12.5
	Self-employed/Entrepreneur	13	6.5
	Student	9	4.5

Table 2. Sample characteristics on continuous data on age, income, structural social capital, cognitive social capital, relational social capital, and depression in Klaten

Variable	n	Mean	SD	Min	Max
Age (years)	200	40.93	10.35	19	59
Revenue (rupiah)	200	1769508	1706737	0	8000000
Structural Social Capital	200	14.16	2.64	4	16
Cognitive Social Capital	200	7.93	3.08	0	12

Variable	n	Mean	SD	Min	Max
Relational Social Capital	200	11.13	1.45	4	12
Depression	200	3.15	3.19	0	15

2. Bivariate Analysis

The bivariate analysis in this study was carried out using a simple linear regression analysis with the aim of explaining the relationship between the independent variable, namely age, and the dependent variable, namely depression.

Table 3 presents the results of a bivariate analysis of the effect of age on the risk of depression in adults. The table shows that age negatively affects the risk of depression in adults and that the effect is statistically significant. This shows that the older you get, the lower the depression score in adults.

Table 3. Results of bivariate analysis of the effect of age on depression

Variable	b	CI 95%		p
		Lower Limit	Upper Limit	
Age	-0.09	-0.13	-0.05	0.001

3. Multivariate Analysis

Figure 1 presents the Structural Equation Model which includes the components of social capital measurement and the structural component of the effect of social capital on the risk of depression in adults.

Figure 1 shows that the SEM model shows a good fit. Goodness of Fit: Chi-square p= 0.113 (>0.05). RMSEA= 0.07 (<0.08). CFI= 0.98 (>0.90). TLI= 0.93 (>0.90). SRMR= 0.03 (<0.05).

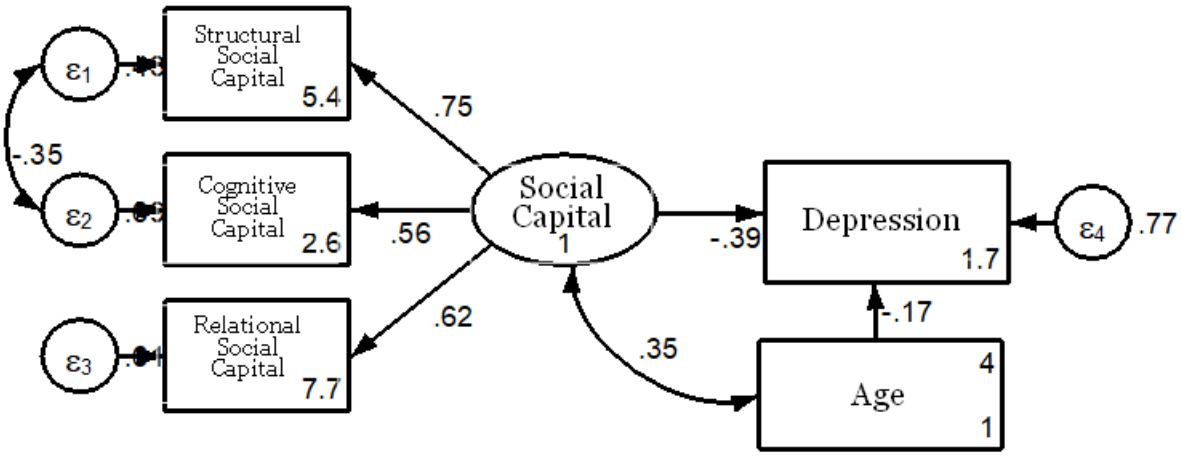

Figure 1. Structural Equation Model on the measurement of social capital and the effect of social capital on the risk of depression in adults

Table 4. Results of SEM analysis on the influence of social capital and age on depression in adults

Variable Dependent	Independent variables	b	CI 95%		p
			Lower Limit	Upper Limit	
Structural					
Depression	← Age	-0.17	-0.31	-0.03	0.018
	← Social Capital	-0.39	-0.56	-0.23	0.001

Variable Dependent	Independent variables	b	CI 95%		p
			Lower Limit	Upper Limit	
Measurement					
Structural Social Capital	← Social Capital	0.75	0.58	0.92	0.001
Social Capital Cognitive	← Social Capital	0.56	0.39	0.73	0.001
Relational Social Capital	← Social Capital	0.62	0.48	0.76	0.001
N observations= 200					
Chi-square p= 0.113					
RMSEA= 0.07					
CFI= 0.98					
TLI= 0.93					
SRMR= 0.03					

Table 4 shows the results of the Structural Equation Model (SEM) analysis on the influence of social capital and age on the risk of depression in adults and the contribution of structural social capital, cognitive social capital, and relational social capital components to the formation of social capital variables.

a. Structural Components

1. The effect of social capital on depression

Table 4 shows that there is an influence of social capital on depression in adults. Strong social capital of the community where adults live decreases the risk of adults to develop depression and this effect is statistically significant (b= -0.39; CI 95%= -0.56 to -0.23; p= 0.001).

2. The effect of age on depression

Table 4 shows that there is an effect of age on the risk of depression in adults. The older you get, the lower the depression score and the effect is statistically significant (b= -0.17; CI 95%= -0.31 to -0.03; p= 0.018).

b. Measurement Components

Table 4 shows that structural social capital makes a positive and statistically significant contribution to the formation of latent variables of social capital (b= 0.75; CI 95%= 0.58 to 0.92; p= 0.001). The cognitive social capital makes a positive and statistically significant contribution to the formation of latent variables of social capital (b= 0.56; CI 95%= 0.39 to 0.73; p= 0.001). The table also shows that relational social capital makes a positive and statistically significant contribution to the formation of latent variables of social capital (b= 0.62; CI 95%= 0.48 to 0.76; p= 0.001).

c. Model Fit

The statistics of the Goodness of Fit model analysis of the Structural Equation Model (SEM). The SEM model (Figure 1) shows a good fit with the existing sample data. The SEM model shows a chi-square value of p= 0.113, which satisfies the p>0.05 fit. The RMSEA= 0.07 (<0.08) which indicates a good fit of the model with a small error. CFI and TLI= 0.98 and 0.93, respectively. This statistic exceeds the minimum fit figure for a good model of >0.90. SRMR statistics= 0.03 (<0.05) which indicates a good fit of the model. So the model conformity figure shows a good model conformity for both structural components and measurement components in the SEM analysis in this study.

DISCUSSION

1. The Effect of Social Capital on Depression

Based on Table 4, it is known that there is an influence of social capital on depression in adults. Strong social capital lowered adults' risk of depression and the effect was statistically significant (b= -0.39; CI 95%= -0.56 to -0.23; p= 0.001). Social capital is an important psychosocial factor associated with public health. The psychological mechanisms for being part of the environment and community are beneficial for mental and emotional health for both adolescents and adults (Kang et al., 2023). According to Berkman et al. (2014) Social networking, participation, and individual support are not only linked to health habits, but also to psychological health, such as depression and emotional regulation. The more we become part of the social network and the more support we have, the better our mental health will be.

Social capital refers to the bonding relationships (family, friends, and neighbors) and social networks that are available in social situations and that include interpersonal trust, social bonding, social engagement, and a sense of belonging (Joyce and Liamputtong, 2017; Bae, 2020). Social capital is negatively associated with depression (Cao et al., 2015; Gilliver et al., 2014; Li et al., 2018). Findings in the study Bae (2020) showed an increase in social capital related to a decrease in depressive symptoms.

Cumulative evidence has shown that individuals with higher levels of social capital enjoy better mental health than individuals with lower levels of social capital. According to studies, Backhaus et al. (2020) Students with lower social capital experience more severe depressive symptoms. That is, students with low individual perceptions of social capital have a greater risk of clinically relevant depressive symptoms.

a. Structural Social Capital

Based on Table 4, it is known that structural social capital makes a positive and statistically significant contribution to the formation of latent variables of social capital (b= 0.75; CI 95%= 0.58 to 0.92; p= 0.001). Structural social capital can benefit mental health in the form of instrumental resources, sharing valuable health knowledge, and providing information support to local facilities. The higher the participation of social networks, the better the physical and psychological health status through social safety nets, such as health and nursing information (Kang et al., 2023).

Previous studies have shown that adults who live in neighborhoods with high structural social capital, such as close social relationships and active involvement in the community, tend to have lower rates of depression (Noguchi dan Shang, 2024). Strong social interaction provides emotional support, information, and instrumental assistance, which helps adults cope with the stresses of daily life, improve mental well-being, and prevent social isolation, which is a risk factor for depression (Drageset, 2021).

Participation in social activities also gives adults a sense of belonging and purpose that is important for mental health. By staying involved in society, adults can reduce feelings of loneliness. A supportive and trusting social environment can create a sense of security and stability that is beneficial for mental health (Andersen et al., 2021).

b. Cognitive Social Capital

Based on Table 4, it is known that cognitive social capital makes a positive and statistically significant contribution to the formation of latent variables of social capital (b= 0.56; CI 95%= 0.39 to 0.73; p= 0.001). The cognitive dimension is the social capital that

is expressed through perceptions, thoughts, and attitudes. The cognitive dimension of social capital tends to affect mental health through psychosocial pathways such as self-esteem, social support, and social buffering for stressful life incidents (Kang et al., 2023). Factors such as social support, altruism, and a mature culture of respect can improve psychological health (Berkman et al., 2014).

This study is in line with the study Cohen-Cline et al. (2018) which states that lower cognitive social capital is associated with more severe depressive symptoms. Previous studies have also suggested there is an inverse relationship between social capital, especially cognitive capital, and common mental disorders such as anxiety and depression in different populations, including the general adult population and the older adult population. This means that individuals with higher cognitive social capital are less likely to experience depression (Rotenberg et al., 2020; Lu and Peng, 2019; Bassett and Moore, 2013b).

c. Relational Social Capital

Based on Table 4, it is known that relational social capital makes a positive and statistically significant contribution to the formation of latent variables of social capital (b= 0.62; CI 95%= 0.48 to 0.76; p= 0.001). Interpersonal and reciprocal trust is inversely related to depression. Higher interpersonal and reciprocal trust predicted lower rates of depression. This study is in line with the study Tariq et al. (2019) which revealed that low levels of interpersonal trust and reciprocity led to higher rates of depression in older people.

Li et al. (2017) and Han et al. (2018) suggest that lower levels of social capital (regarding trust and reciprocity) are associated with depression. Individuals with higher trust and reciprocity towards neighbors or others are less likely to experience depression. This may be because higher trust and reciprocity can improve a person's social relationships with and perceptions of others, which in turn is expected to be a stress prevention factor (Hatakeyama et al., 2024).

2. The Effect of Age on Depression

Based on Table 4, it is known that there is an influence between age and the risk of depression in adults. The older you get, the lower the depression score and the effect is statistically significant (b= -0.17; CI 95%= -0.31 to -0.03; p= 0.018).

This is in line with the study Xin dan Ren (2020) that Older adults with higher social capital have a lower risk of depression. According to studies Rohmah (2020), it is known that a person with strong social capital has a probability of experiencing stress -0.54 units lower than someone with weak social capital (p= 0.011).

There are several explanations for this finding. Older adults often develop more mature coping strategies, have more life experience, and may have adapted to life stressors, which can contribute to a reduced risk of depression. In addition, those who reach advanced age may also tend to have a more positive outlook on life or be more involved in social activities that support their mental well-being (Marks, 2021).

This is in line with the finding that age factors can improve mental health with reduced levels of stress and the burden of social responsibility compared to younger ages. In addition, several studies also show that physical activity and social involvement in old age can be protective factors against depressive symptoms, especially in those who have maintained physical health (Laird et al., 2023; Lima et al., 2024).

Overall, the results of this study show the influence of social capital and age on the risk of depression in adults and the contribution of structural social capital, cognitive

social capital, and relational social capital components to the formation of social capital variables. This can be an effective prevention and intervention strategy to reduce the risk of depression in the community, namely by increasing social capital, such as being more active in community social activities, building a strong social network, increasing mutual trust and solidarity in the surrounding environment.

Some limitations in this study are that this study uses a cross-sectional design that cannot provide enough evidence to establish causality. This study uses a sample of adults in a specific region, so the results of this study cannot be generalized to the entire adult population in other regions. And there is no commonly used social capital measuring tool, making comparison with other studies difficult.

Therefore, it is hoped that the next researcher can research other variables besides this study and can develop studies with other analysis methods. It is also recommended to expand the study sample to be more representative, use different methodologies to identify causal relationships more clearly, and develop more accurate and relevant measurement methods.

AUTHOR CONTRIBUTION

Aulia Putri Nugraheni is the principal researcher who develops conceptual frameworks, collects data, analyzes data, and writes scripts. Bhisma Murti assists in developing conceptual frameworks, guiding data analysis, and interpreting the results of data analysis. Argyo Demartoto guided contextual in the discussion.

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CONFLICT OF INTEREST

There was no conflict of interest in this study.

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