SOCIAL ENGAGEMENT WITH COGNITIVE FUNCTION IN THE ELDERLY AT POSYANDU LANJUT USIA MEKAR SARI, RW V, MOJO, SURABAYA

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ABSTRACT

Introduction: The increased number of the elderly dominates the improvement of life expectancy of age in Indonesia. This condition is caused by a variety of health problems, including the decline of cognitive function. One of the risk factors for cognitive decline is social engagement. Social disengagement was associated with lower cognitive function.
Aim: The objective of this study was to determine the correlation between social engagement and cognitive function in the elderly at Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya
Method: This research is an observational analysis with a cross-sectional study design. The population in this research is all elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya. The sample of this study is the elderly aged above 60 years old. The sampling research in this report is Consecutive Sampling
Result: The result of the Rank Spearman correlation test hold the probability value as (Sig.) 0.201. The test showed a result of $p > \alpha$ ($\alpha = 0.05$)
Conclusion: There was no significant correlation between social engagement and cognitive function in the elderly at Posyandu Lansia Mekar Sari, RW V, Mojo, Surabaya.

Keyword : Social Engagement, Cognitive Function, Elderly

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INTRODUCTION

The success of national development, especially in the health sector, has an impact on increasing the life expectancy of the Indonesian population. According to the Ministry of Health of the Republic of Indonesia in 2016, the life expectancy of the Indonesian population since 2004-2015 has increased from 68.6 years to 70.8 years, with a higher percentage of women compared to men.[1] Increased life expectancy has an impact on increasing the number of the elderly in Indonesia.

According to the World Health Organization (WHO) data, at present, the population aged 60 or over is increasing rapidly. In 2050, it is predicted that the population of 60 years and over will increase to two billion from nine hundred million in 2015.[2.3] Data from the Central Statistics Agency (Badan Pusat Statistik or BPS) shows the percentage of the elderly people in Indonesia has reached 8.34% of the total population. The increasing number of elderly population from year to year shows that the population structure in Indonesia is transitioning to an aging population structure where the elderly population is more than seven percent.[3]

The elderly generally experience a variety of symptoms due to a decrease in biological, psychological, social, and economic functions. This change affects all aspects of life.[4] Changes in biological function in the elderly, one of which is a change in the nervous system. Changes in the nervous system cause a decrease in the work of the brain or a decrease in cognitive function.[5] Decreased cognitive function is one of the causes of the elderly unable to perform normal activities resulting in dependence on others to care for themselves (care dependence).[6]

Individual factors and environmental factors influence cognitive function in the elderly. Individual factors that can affect, namely, age, race, genetics, and diseases suffered by the elderly (hypertension, diabetes mellitus, etc.)[7] While environmental factors also influence cognitive functions, such as social engagement and activity, both physical activity or cognitive activity.[8] One environmental factor that is thought to influence cognitive function is the role of social engagement.

Social engagement broadly gives positive results to the elderly. Elderly who do social activities can prolong life, have better health, and reduce depression.[9] Social engagement is reported to have a positive effect in maintaining cognitive function and delaying the onset of Alzheimer's disease.[10] Studies conducted by Wreksoatmodjo in Jakarta, stated that poor social engagement can be one of the

risk factors for impaired cognitive function in the elderly.[8] Based on the background that has been described, the researchers are interested in examining "Correlation of Social Engagement with Cognitive Function in the Elderly".

METHOD

This research uses observational analysis research methods. This study uses a cross-sectional study design. The independent variable in this study is social engagement, and the dependent variable in this study is cognitive function.

The inclusion criteria in this study were the elderly (aged ≥ 60 years), residents of the Mojo village, willing to be respondents, able to communicate and speak Indonesian well. The exclusion criteria in this study were psychotics, history of stroke/disability, elderly with moderate depression and major depression, and elderly who refused to be interviewed.

The sample in this study were elderly men/women aged > 60 years in the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya, who met the criteria. The number of samples of this study was 46 people in the form of primary data. Sampling in this study using consecutive sampling techniques, the researchers set subjects who meet the selection criteria (inclusion and exclusion).

This research was conducted on 29 July 2017 to 11 October 2017 at the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya. The research was started by recording the number of elderly people at the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya. Furthermore, this research was conducted by conducting interviews to obtain research subject data and filling out questionnaires. The questionnaire used in this study is the Social Disengagement Index, The Montreal Cognitive Assessment Indonesian version (MoCA-Ina), Mini International Neuropsychiatric Interview (MINI), Geriatric Depression Scale (GDS) Indonesian Form, International Physical Activity Questionnaire (IPAQ). Primary data obtained were analyzed using IBM SPPS Statistics 23 for Windows and correlation tests were performed using the Spearman Rank Correlation Test because the researchers tested the relationship between social engagement (independent variable) and cognitive function (dependent variable), both variables using ordinal data scales.

RESULT

Chracteristics of the elderly taken as research sample is detailed in Table 1.

Table 1 The Elderly Demographics in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya in 2017

Elderly Demographics	Frequency (n)	Percentage (%)
Gender		
Women	36	87.8
Men	5	12.2
Age		
Prasenium (60-64 y/o)	16	39.0
Senium (≥ 65 y/o)	9	22.0
Elderly with risk (≥ 70 y/o)	16	39.0
Level of Education		
Elementary	20	48.8
Junior High School	7	17.1
Senior High School	10	24.4
Bachelor/Associate Degree	4	9.8
Employment Status		
Employed	6	14.6
Unemployed	35	85.4

Based on **Table 1**, the elderly in the Posyandu lanjut Usia Mekar Sari, RW V, Mojo, Surabaya, contain more women (87.8%) compared to men (12.2%). Whereas age is mostly classified as Prasenium group (60-64 years old) and elderly people with risk ((≥70 years). The level of education of the elderly is mostly elementary school graduates, with a percentage of 48.8%. The working status of the elderly is largely unemployed, with a percentage of 85.4%.

Table 2 The Elderly Demographics based on Social Engagement

No.	Social Engagement	Frequency (n)	Percentage (%)
1.	Good	35	85.4
2.	Poor	6	14.6
Total		41	100.0

Based on **Table 2** above, the social engagement of the elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya, is quite good. This is indicated by the elderly who have good social engagement numbered 35 people from 41 people with a percentage of 85.4%, while the elderly with poor social engagement numbered six people (14.6%).

Table 3 Distribution of Social Engagement by Age

No.	Age	Social Engagement		Total
		Good	Poor	
1.	Prasenium (60-64 y/o)	15 (93.75%)	1 (6.25%)	16 (100%)
2.	Senium (≥ 65 y/o)	9 (100.0%)	0	9 (100%)
3.	Elderly with risk (≥ 70 tahun)	11 (68.75%)	5 (31.25%)	16 (100%)

Based on **Table 3**, it can be seen that the best social engagement is in the senium group, with a total of 9 people (100.0%), whereas the elderly with poor social engagement was mostly in the elderly with risk, consisting of five people (31.25%).

Table 4 Distribution of Social Engagement by Gender

No.	Gender	Social Engagement		Total
		Good	Poor	
1.	Women	31 (86.11%)	5 (13.89%)	36 (100.0%)
2.	Men	4 (80.0%)	1 (20.0%)	5 (100.0%)

Based on **Table 4** above, it can be seen that 31 elderly women have good social engagement (86.11%), and five people have poor social engagement (13.89%). In contrast, in elderly men, four people have good social engagement (80.0%), and one person has poor social engagement (20.0%).

Table 5 Distribution of Social Engagement by Education Level

No.	Educa-tion Level	Social Engagement		Total
		Good	Poor	
1.	Elementary	17 (85.0 %)	3 (15.0 %)	20 (100.0 %)
2.	Junior High School	5 (71.43 %)	2 (28.5 7%)	7 (100.0 %)
3.	Senior High School	9 (90.0 %)	1 (10.0 %)	10 (100.0 %)
4.	Bachelor/ Associate Degree	4 (100.0 %)	0	4 (100.0 %)

Based on **Table 5** above, it can be seen that the elderly with a Bachelor/Associate Degree education level have a good social engagement with a percentage of 100.0%. In the elderly with poor social engagement are at the junior high school level, with a percentage of 28.57%.

Table 6 Characteristics of the Elderly by Cognitive Function

No.	Cognitive Function	Frequency (n)	Percentage (%)
1.	Normal	8	19.5
2.	Abnormal	33	80.5
Total		41	100.0

Based on **Table 6** above, the number of elderly people in the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya, whose cognitive function is not normal, is more than the elderly with normal cognitive function. Elderly with abnormal cognitive function numbered 33 people with a percentage of 80.5%, while the elderly with normal cognitive function is 8 people with a percentage of 19.5%.

Table 7 Distribution of Cognitive Functions by Gender

No.	Gender	Cognitive Functions		Total
		Normal	Abnormal	
1.	Women	7 (19.44%)	29 (80.56%)	36 (100.0 %)
2.	Men	1 (20.0%)	4 (80.0%)	5 (100.0 %)

Based on **Table 7** above, it can be seen that older people with abnormal cognitive functions are more common in women (80.56%) compared to men (80%), but the difference is not significant. In the elderly with cognitive function, that is normal male (20.0%) higher than women (19.44%).

Statistical test results of gender variables with cognitive functions obtained probability results (Sig.). 977. These results indicate that the value of p> α (α = 0.05), which means there is no gender correlation with cognitive function in the elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya.

Table 8 Distribution of Cognitive Functions by Age

No.	Age	Cognitive Functions		Total
		Normal	Abnormal	
1.	Prasenium (60-64 tahun)	3 (18.75%)	13 (81.25%)	16 (100%)
2.	Senium (≥ 65 tahun)	3 (33.33%)	6 (66.67%)	9 (100%)
3.	Elderly with risk (≥ 70 tahun)	2 (12.5%)	14 (87.5%)	16 (100%)

Based on **Table 8** above, it can be seen that the elderly with abnormal cognitive function are most numerous in the elderly group with risk (≥ 70 years) with a percentage of 87.5%. In the elderly with normal cognitive function, the most in the prasenium group (≥ 65 years) with a percentage of 33.33%.

Statistical test results for the age variable with cognitive function obtained probability results (Sig.). 665. These results indicate that the value of p> α (α = 0.05), which means there is no correlation between age and cognitive function in the elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya.

Table 9 Distribution of Cognitive Functions by Education Level

No	Education Level	Cognitive Functions		Total
		Normal	Abnormal	
1.	Elementary	0	20 (100.0%)	20 (100.0 %)
2.	Junior High School	1 (14.29%)	6 (85.71%)	7 (100.0 %)
3.	Senior High School	5 (50.0%)	5 (50.0%)	10 (100.0 %)
4.	Bachelor/ Associate Degree	2 (50.0%)	2 (50.0%)	4 (100.0 %)

Based on **Table 9** above, it can be seen that the elderly with an elementary education level of 20 people have abnormal cognitive functions (100.0%). In the elderly with high school education and a Bachelor / Associate Degree, there are as many elderly people with normal and abnormal cognitive functions with a percentage of 50.0%.

Statistical test results for educational level variables with cognitive functions obtained probability results (Sig.). These results indicate that the value of p <α (α = 0.05), which means there is a significant correlation between the level of education and cognitive

function in the elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya.

Table 10 Distribution of Cognitive Functions based on Physical Activity

No	Physical Activity	Cognitive Functions		Total
		Normal	Abnormal	
1.	Mild	0	3 (100.0%)	3 (100.0%)
2.	Moderate	5 (20.0%)	20 (80.0%)	25 (100.0%)
3.	Heavy	3 (23.08%)	10 (76.92%)	13 (100.0%)

Based on **Table 10** above, it can be seen that the elderly with mild physical activity with three people have an abnormal cognitive function (100.0%). In the elderly with moderate physical activity, five people have a healthy cognitive function (20.0%), and 20 people have an abnormal cognitive function (80.0%). Whereas in the elderly with strenuous physical activity, three people have normal cognitive functions (23.08%), and ten people have abnormal cognitive functions (76.92%).

Statistical test results for physical activity variables with cognitive functions obtained probability results (Sig.). 523. This shows that the value of p> α (α = 0.05), which means there is no relationship between physical activity and cognitive function in the elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya.

Table 11 Distribution of Social Engagement by Cognitive Function in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya.

No	Social Engage-ment	Cognitive Functions		Total
		Normal	Abnormal	
1.	Good	8 (19.5%)	27 (65.9%)	35 (85.4%)
2.	Poor	0	6 (14.6%)	6 (14.6%)
Total		8 (19.5%)	33 (80.5%)	41 (100.0%)

Based on the primary data that has been obtained, a Spearman Rank correlation test is performed to determine whether there is a correlation of social engagement with cognitive function in the elderly at Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya and the probability (Sig.) results obtained in this test are .201 or the value can be written 0.201. This shows that the value of p> α (α = 0.05), which means there is no correlation between social engagement with cognitive function in the elderly or the hypothesis is rejected.

DISCUSSION

Based on the data obtained, it can be seen that overall, the social engagement of the elderly in the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya, is quite good. From short questions and answers with respondents, it was found that their daily activities

included activities with family members (such as looking after grandchildren), working, participating in religious activities (such as religious studies), participating in social gathering and PKK activities, participating in gymnastics activities every Saturday, and take part in health check-up activities held by the Puskesmas Mojo every month.

In Table 3, it appears that the number of elderly in the prasenium (60-64 years old) and senium group (≥ 65 years) with good social engagement is relatively higher compared to the elderly in the risky elderly group (≥ 70 years). These results are in accordance with The Irish Longitudinal Study on Aging (TILDA), where this study shows elderly people at risk of having less good social engagement than other age groups, caused by loss of social function due to aging. In Table 4, it can be seen that the number of male respondents with poor social engagement is higher than women. This result is in accordance with TILDA, which states that males with poor social engagement are higher than females. In Table 5, it can be seen that the elderly with a Bachelor/Associate Degree level of education have a better social engagement compared to other levels of education. These results are consistent with the TILDA study in which individuals with higher levels of education have a right level of social engagement.[11]

Based on the data obtained, it can be seen that overall, cognitive function in the elderly in Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya is classified as abnormal. This can be seen from 41 elderly people, 33 of whom have abnormal cognitive functions. Many factors affect cognitive function in the elderly, including age, gender, level of education, and physical activity.

In Table 7, it appears that older people with abnormal cognitive function are more numerous in women compared to men. This is supported by research conducted by Kalaria in 2008, which stated that elderly women tend to experience cognitive decline compared to men.[12] Research by Zahriani also reported that gender did not affect cognitive decline.[13]

In Table 8, the elderly with risk, have a higher percentage of abnormal cognitive function compared to other age groups. This is consistent with the literature, that increasing age results in changes in anatomical structure and biochemical changes in the central nervous system so that by itself it can cause a decline in cognitive function.[14]

Based on the results of statistical tests, it was found that there was a correlation between cognitive function

and the level of education in the elderly in the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya. The results of this study are supported by research conducted by Zahriani Ulfa in 2013, which showed a significant relationship between education level and cognitive function in old age. With the results of the analysis of the p-value of (sig.) 0.029. That is, respondents with higher education levels tend to be more able to maintain cognitive function compared with lower education levels.[13] Also, the results of this study are also supported by research conducted by I Gusti Ayu H. et al. have a prevalence of probable cognitive impairment compared to those with higher levels of education.[15] Research conducted by Petersen et al. in 2010 also shows that mild cognitive impairment decreases with the increasing length of education.[16]

In Table 10, it appears that the elderly with current physical activity levels have higher normal cognitive functions compared to less active physical activity levels. The results of this study are supported by research conducted by Milfa in 2014, which stated that respondents with active physical activity had more normal cognitive function compared to less active physical activity. High levels of physical activity and routine and ongoing have a relationship with high cognitive function scores and cognitive function decline.

Based on the results of the analysis with the Spearman Rank Correlation test, it is known that the value of probability (Sig) obtained is $p = 0.201$. This means that $p > \alpha$ ($\alpha = 0.05$) so that it can be concluded that there is no correlation between social engagement with cognitive functions in the elderly in the Posyandu Lanjut Usia Mekar Sari, RW V, Mojo, Surabaya.

In this study, there was no correlation between social engagement and cognitive function, due to the small number of respondents, so it was not representative enough. Also, this research was conducted during elderly gymnastic activities, which tend to be attended by elderly people who are active in social activities. Several other studies with a more significant number of respondents and longer observation times found a higher risk of dementia in groups with poor social engagement. A comparison of this research with other studies can be seen in the table below.

Table 12 A comparison of research results with other similar studies

Researchers	Trifena Dian Wijaya (2017)	Budi Rianto Wreksoatmodjo (2014)[8]	Krueger KR, *et all* (2009)[18]
Research Design	*Cross-sectional*	*Cross-sectional*	Experiment
Sample Amount	41 people	286 people	838 people
Research taken place in	Posyandu Lanjut Usia Mekar Sari RW V Mojo Surabaya	Kelurahan Jelambar and Jelambar Baru, Jakarta Barat	*Chicago metropolitan area*
p-Value	p=0.201	p<0.0001	p<0.001
Result	There is no correlation between social engagement with cognitive function in the elderly in Posyandu Lanjut Usia Mekar Sari RW V Mojo Surabaya	Social engagement influences cognitive function, i.e., poor social engagement increases the risk of cognitive function disorders.	Participation in social activities and higher social support is associated with high cognitive functions.

CONCLUSION

This study is an observational analysis with a cross-sectional study design to see whether there is a correlation of social engagement with cognitive function in the elderly at Posyandu Lanjut Usia Mekar Sari RW V Mojo Surabaya. Based on the results of research and data processing, the following results can be obtained:

1. The description of social engagement in the elderly in the Posyandu Lanjut Usia Mekar Sari RW V Mojo Surabaya overall shows an excellent social engagement. Only 14.6% had bad social engagement. Various factors can influence social engagement, including age, gender, education level.
2. The description of cognitive function in the elderly in Posyandu Lanjut Usia Mekar Sari RW V Mojo Surabaya, as many as 80.5% of the elderly have an abnormal cognitive function, and 19.5% of the elderly have a healthy cognitive function.
3. Spearman Rank correlation test results using SPSS shows the results of the absence of correlation between social engagement with cognitive function in the elderly at Posyandu Lanjut Usia Mekar Sari RW V Mojo Surabaya.

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