

Effectiveness of Group Recreational Activities of Coloring and Snakes and Ladders on Anxiety and Stress of the Elderly in the Maebashi Elderly Home Maebashi City Gunma Japan

Ajeng Puspita Nugraheni^{1*}, Byba Melda Suhita², Agustin Widyowati³

^{1,2,3} Universitas Strada Indonesia, Kediri, Indonesia

*Corresponding author: pn.ajeng.puspita@gmail.com

ABSTRACT

An elderly person is someone who has reached the age of 60 years and above. This group has entered the final stages of their life and is vulnerable to various complex problems such as health disorders due to the aging process. This process can cause various problems such as physical, biological, social, economic, and mental problems. Anxiety and stress are mental disorders often experienced by the elderly. Many efforts can be made to reduce anxiety and stress, one of which is recreational group play activities such as coloring and snakes and ladders. The purpose of this study was to determine the effectiveness of recreational group play activities coloring and snakes on anxiety and stress in elderly in elderly homes. This type of research is *Quasi Experimental* with the research design *The Non-Equivalent Group Design*. with a total population of 189 which has been homogenized into 75 and a sample of 40 people was taken using the *simple random sampling* technique. Data were collected and analyzed using *Paired T Test*. The results of the *Independent Samples Test* show a Levene test significance value of 0.045 (<0.05). The *t- test* produces a *p-value* of 0.037 (<0.05), which means the difference in the average anxiety between groups is statistically significant. The results of the *Independent Samples Test* show a Levene test significance value of 0.017 (<0.05). The *t- test* produces a *p-value* of 0.023 (<0.05), which indicates there is a significant difference between the average stress levels of the two groups. The conclusion of this study is that there is anxiety and stress in the elderly living in nursing homes. This anxiety and stress can be minimized by diverting attention using recreational activities such as coloring and snakes and ladders.

Keywords: Anxiety, coloring, elderly, recreational activities, snakes and ladders, stress

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BACKGROUND

According to *the World Health Organization* (WHO), an elderly person is someone who has entered the age of 60 years and above. The elderly often face various challenges in their life process such as loss of a partner, physical changes, and dependency, which can increase the risk of experiencing mental health problems. Gradual physical and psychological decline in some elderly people can cause mental health problems. These problems stem from several aspects, including changes in physical, psychological and social aspects that result in stress, anxiety (anxiety) and depression can occur. Symptoms seen in elderly people who experience mental disorders can include unstable emotions, irritability, easily feeling harassed, disappointment, unhappiness, feelings of loss, and feelings of uselessness (Kaunang, 2019).

In 2020, there were 1 billion people in the world who were elderly, or those aged 60 years and over. According to the WHO, the elderly population is increasing rapidly, with an estimated 1.4 billion people by 2030, and the number of elderly people aged 60 years and over is expected to double to 2.1 billion by 2050. Data from *the Economic and Social Commission for Asia and the Pacific* (ESCAP) shows that the elderly population in Asia in 2016 reached 12.4 percent of the total population. It is predicted that by 2050, this number will increase to more than 1.3 billion people (ESCAP, 2022).

In Japan, according to data from the Ministry of Home Affairs and the Japanese Community, the number of elderly people in Japan reached 36.4 million in 2021. This number increased by 220,000 people from 2020 and is a record high. By 2024, the Japanese population aged 65 years and older is expected to reach 36.25 million. The elderly population will reach 29.3 % of the total population of Japan. This data indicates that Japan is one of the countries with the fastest aging population growth rate in the world. In Gunma Prefecture, the elderly population in 2024, aged 65 years and older, reached 35.26% of the total population of Gunma, which is 1.9 million. Meanwhile, in Maebashi City, the elderly population in 2024 reached approximately 33.12% of the total population of Maebashi City, which is approximately 329,120. Based on the data, the increasing elderly population increases the risk of mental health problems in the future (Nippon. 2024).

Globally, the WHO (2023) reports that approximately 20% of adults aged 60 and over experience mental health problems, including anxiety and depression. Data indicate a high prevalence of anxiety and stress in the elderly. In Japan, a survey by Matsumoto et al. (2023) found that approximately 30% of older adults experience significant levels of anxiety. The impact of anxiety causes stress, which can contribute to a decline in physical and mental health. Anxiety and stress can occur due to an individual's inability to manage the pressures they face (Kawai et al., 2022).

After a case study was conducted in March 2025 on 198 elderly care home users at the Maebashi elderly care home in Maebashi city, Gunma, Japan, it was found that several elderly care home users, after being observed and interviewed, said that they felt lonely living in the elderly care home, felt unmotivated and lazy when doing the same daily routine activities every day, felt anxious and afraid because they were alone without family to accompany them, and always wanted to leave the elderly care home to go home. From the feelings of the elderly care home users, it can be seen that there are problems of anxiety and stress in elderly care home users when they are in the elderly care home. One of the fundamental factors of anxiety and stress in elderly people living in elderly care homes is the inability or limitations of the elderly in adapting to anxiety and stress.

Research by Murmu & Saha (2021) shows that recreational activities can reduce symptoms of anxiety and stress in older adults, improve mood, and provide a sense of accomplishment. These activities can rapidly improve quality of life and enhance physical and

mental health in older adults. Therefore, selecting appropriate activities can be an effective strategy for improving mental health in older adults. Recreational activities such as coloring and playing snakes and ladders not only provide entertainment but can also be tools for reducing anxiety and stress.

METHODS

The design and method of this research uses quasi-experimental research *with the Non-Equivalent Group Design*. The purpose of the *quasi-experimental method* is to test the effect of a variable on another variable or to test how the causal relationship between one variable and another. This study conducted an initial measurement (*pre-test*) to determine the initial level of anxiety and stress, then a re-test (*post-test*) was conducted to determine the effect of providing recreational activities interventions of group coloring and snakes and ladders on the level of anxiety and stress in the elderly. This research has been tested ethically with certificate number No: 0823490 / EC / KEPK / I / 08/2025.

RESULTS

General Data

Table 1. Respondent Characteristics Based on Age

Age Range	Amount	Frequency
60-69 Years	6	15.0
70-80 Years	27	67.5
81-90 Years	7	17.5
Amount	40	100.0

Based on the age distribution of respondents, the majority of elderly people who participated in recreational activities at the Maebashi Elderly Home were in the 70–80 year age group (67.5%), followed by the 81–90 year age group (17.5%) and 60–69 year age group (15.0%).

Table 2. Respondent Characteristics Based on Gender

Gender	Amount	Frequency
Man	14	35.0
Woman	26	65.0
Amount	40	100.0

Based on gender distribution, the majority of respondents were female (65.0%), while only 35.0% were male.

Table 3. Respondent Characteristics Based on Length of Stay

Gender	Amount	Frequency
1-4 Years	24	60.0
5-6 Years	16	40.0
Amount	40	100.0

Based on the length of stay in the shelter, the majority of respondents had lived for 1–4 years (60.0%), while the remainder had lived for 5–8 years (40.0%).

Special Data

Analysis of anxiety before and after recreational activities of group coloring and snakes and ladders games in the elderly at the Maebashi Elderly Home.

Table 4. Anxiety Before and After Recreational Activities of Playing Groups Coloring and Snakes and Ladders

Category	Mean	N	Standard Deviation	Std. Error Mean
Anxiety Elderly Pre-test	34.75	20	14,160	1.4160
Anxiety Elderly Post-test	16.80	20	4,607	.607

Based on *Paired Samples Statistics*, the average anxiety score of the elderly before participating in group play recreational activities (coloring and snakes and ladders) was 34.75 with a standard deviation of 14.160, while after the activity the average decreased to 16.80 with a standard deviation of 4.607. This indicates a significant decrease in anxiety levels descriptively, namely by 17.95 points. In addition, the smaller standard deviation in the *post-test score* indicates that the level of anxiety of the elderly after the activity became more homogeneous or even compared to before the activity.

Stress analysis before and after recreational activities of group coloring and snakes and ladders games in the elderly at the Maebashi Elderly Home.

Table 5. Stress Before and After Recreational Activities of Playing Group Coloring and Snakes and Ladders

Category	Mean	N	Standard Deviation	Std. Error Mean
Stres Elderly Pre-test	11.55	20	5.021	1.123
Stres Elderly Post-test	9.85	20	2.925	.654

Based on *Paired Samples Statistics*, the average stress score of the elderly before participating in group play recreational activities (coloring and snakes and ladders) was 11.55 with a standard deviation of 5.021, while after the activity the average decreased to 9.85 with a standard deviation of 2.925. This decrease of 1.70 points indicates an improvement in the stress level of the elderly descriptively. In addition, the smaller standard deviation in the *post-test score* indicates that the stress level of the elderly after the activity became more uniform than before.

Analysis of the influence of recreational activities such as group coloring and snakes and ladders on anxiety and stress in the elderly at the Maebashi Elderly Home. Normality test of elderly anxiety (*pre-test and post-test*).

Table 6. Normality Test (*Kolmogorov-Smirnov*) Anxiety

One-Sample Kolmogorov-Smirnov Test			
		Elderly Anxiety	Elderly Anxiety
N		40	40
Normal Parameters a,b	Mean	32.68	18.93
	Standard Deviation	14,065	6,458
Most Extreme Differences	Absolute	,180	,184
	Positive	,180	,184
	Negative	-,116	-,175
Test Statistics		,180	,184
Asymp. Sig. (2-tailed)		,082 ^c	,092 ^c

The normality test using *the Kolmogorov-Smirnov test* obtained a significance score (Sig.) > 0.05 with a Sig. value of anxiety at 0.082 and 0.092, meaning that the results of the normality test indicate that the significance score (Sig.) > 0.05, which means that the variables studied are normally distributed. The data is normally distributed, so the independent sample T test is continued.

Paired T Test Results The effect of recreational activities such as group coloring and snakes and ladders on anxiety.

Table 7. The Influence of Recreational Activities of Coloring Group Play and Snakes and Ladders on Anxiety

Anxiety Group	N	Mean	Standard Deviation	Std. Error Mean
Recreational play group	20	16.80	4,607	1,030
Control Group	20	21.05	7,409	1,657

Based on the results of *Group Statistics*, the average anxiety score of the elderly in the group participating in recreational play activities (coloring and snakes and ladders) was 16.80 with a standard deviation of 4.607, while in the control group the average was 21.05 with a standard deviation of 7.409. This shows that descriptively the level of anxiety of the elderly in the recreational play group was lower than the control group. The results of *the Independent Samples Test* showed a significance value of the Levene test of 0.045 (<0.05), indicating a difference in variance between groups so that the analysis was continued with the assumption of unequal variances. The *t-test* produced a *p-value* of 0.037 (<0.05), which means that the difference in average anxiety between groups was statistically significant.

The average difference of -4.25 indicates that group play recreational activities have an effect on reducing elderly anxiety by 4.25 points compared to the control group, with a possible range of differences according to the 95% confidence interval between -8.225 and -0.275.

Normality test of elderly stress (*pre-test and post-test*).

Table 8. Normality Test (*Kolmogorov-Smirnov*) Stress

One-Sample Kolmogorov-Smirnov Test		Elderly Stress	Elderly Stress
N		40	40
Normal Parameters ^{a,b}	Mean	10.60	12.45
	Standard Deviation	4,612	5,425
Most Extreme Differences	Absolute	,114	,099
	Positive	,114	,099
	Negative	-,086	-,067
Test Statistic		,114	,099
Asymp. Sig. (2-tailed)		,200 ^{c,d}	,200 ^{c,d}

test using *the Kolmogorov-Smirnov test* obtained a significance score (Sig.) > 0.05 with a Sig. stress value of 0.200, meaning that the normality

test results showed that the significance score (Sig.) > 0.05, which means that the variables studied were normally distributed. The data was normally distributed, so the independent sample T test was continued.

Paired T Test Results: The Effect of Group Play Recreational Activities coloring and snakes and ladders for stress.

Table 9. The Effect of Recreational Activities of Coloring Group Play and Snakes and Ladders on Stress

Elderly Stress Group	N	Mean	Standard Deviation	Std. Error Mean
Recreational play group	20	9.85	2.925	.654
Kelompok Kontrol	20	13.35	5.788	1.294

Based on *Group Statistics*, the average stress score of the elderly in the group participating in recreational play activities (coloring and snakes and ladders) was 9.85 with a standard deviation of 2.925, while in the control group the average was 13.35 with a standard deviation of 5.788. Descriptively, the elderly who participated in recreational play activities had lower stress levels than the control group. The results of *the Independent Samples Test* showed a Levene test significance value of 0.017 (<0.05), which means that the variances of the two groups were different so that the analysis used the assumption of unequal variances. The *t-test* produced a *p-value* of 0.023 (<0.05), which indicated that there was a significant difference between the average stress levels of the two groups. The average difference of -3.50 indicated that recreational play activities reduced the stress levels of the elderly by 3.5 points compared to the control group, with a possible range of differences according to the 95% confidence interval between -6.470 and -0.530.

DISCUSSION

Analysis of anxiety before and after recreational activities of group coloring and snakes and ladders games in the elderly at the Maebashi Elderly Home.

The results showed that before participating in group recreational play activities (coloring and snakes and ladders) the average anxiety score was 34.75 with a standard deviation of 14.160. These data indicate that before receiving the coloring and snakes and ladders recreational activity intervention, the elderly generally experienced anxiety with quite large variations among them. Meanwhile, after being given the coloring and snakes and ladders play intervention, the average result decreased to 16.80 with a standard deviation of 4.607. This shows a fairly large decrease in anxiety levels descriptively, namely by 17.95 points. In addition, the smaller standard deviation in the *post-test score* indicates that the level of anxiety in the elderly after the activity became more homogeneous or even compared to before the activity.

Elderly people tend to have high levels of anxiety due to their thoughts, and those living in nursing homes often feel isolated and lonely due to the absence of family support. Furthermore, both new and long-term residents of nursing homes still experience anxiety due to their inability to adapt and socialize with their surroundings. Anxiety in elderly residents of nursing homes is often overlooked and receives less attention from all levels of society. The cause, or what is often felt by patients living in nursing homes, is a profound sense of worry because they are fully aware that their aging will cause problems in their lives, both physically, socially, and psychologically. Therefore, anxiety is a common experience for elderly residents of nursing homes.

Group recreational activities are voluntary activities that have intrinsic value for individuals, helping them reduce anxiety. These activities serve as a distraction from daily routines that can be burdensome, especially for older adults who frequently face mental health issues. Group recreational activities can improve mood, leading to a happier and more confident older adult. Group games like coloring and snakes and ladders are effective forms of recreational activities. These games are not only fun but also encourage social interaction

between participants (Stebbins, 2017).

This is in line with research conducted by Kwan et al. (2018), which states that participating in group play activities involves social interaction, which can increase feelings of connectedness and reduce feelings of loneliness in older adults. Therefore, combining various types of recreational activities can provide broad benefits for the mental health of older adults, such as reducing anxiety and stress.

Stress analysis before and after recreational activities of group coloring and snakes and ladders games in the elderly at the Maebashi Elderly Home.

Based on *Paired Samples Statistics*, it shows that before being given the coloring and snakes and ladders group recreational activity intervention, the average stress score was 11.55 with a standard deviation of 5.021. This data shows that before receiving the coloring and snakes and ladders group recreational activity intervention, the elderly generally experienced stress with quite large variations among them. Meanwhile, after being given the coloring and snakes and ladders group recreational activity intervention, the average result decreased to 9.85 with a standard deviation of 2.925. This decrease of 1.70 points indicates an improvement in the elderly's stress level descriptively. In addition, the smaller standard deviation in the *post-test score* indicates that the elderly's stress level after the activity became more uniform than before. The stress experienced by the elderly is due to their inability to independently fulfill their basic needs. The aging process affects not only their physical condition but also their social and psychosocial well-being. Decreased self-confidence, reduced concentration and attention, feelings of guilt and worthlessness, impaired appetite, disturbed sleep, and feelings of inability to handle and resolve problems independently are all characteristics of elderly people experiencing stress (Siregar et al., 2022).

Recreational play activities can provide a means of distraction and daily routines that may burden the mind, especially for the elderly who often face mental health problems such as stress. Elderly residents who live in nursing homes when participating in recreational play activities that involve social interaction can increase feelings of connectedness and reduce feelings of loneliness among the elderly. Feelings of appreciation and self-confidence that arise can be a channel for their ideas and opinions. Thus, a combination of various types of recreational activities such as coloring and snakes and ladders can provide broad benefits for mental health. This helps the elderly distract their minds from stress caused by feelings of helplessness due to aging factors.

Tan et al. (2021) also expressed a similar view, showing that recreational games can increase social engagement and provide opportunities for older adults to interact in a fun atmosphere. Furthermore, group recreational games can also help improve cognitive abilities in older adults because these activities involve multiple people, requiring strategic thinking and decision-making, which can help maintain brain health.

The influence of recreational activities such as group coloring and snakes and ladders on anxiety and stress in the elderly at the Maebashi Elderly Home

The effect of recreational activities such as coloring and snakes and ladders group games on the anxiety of the elderly at the Maebashi Elderly Home, Maebashi City, Gunma, Japan.

Normality test using *Kolmogorov-Smirnov Test* obtained the results of significance score (Sig.) > 0.05 with Sig. value of anxiety at 0.082 and 0.092, meaning that the results of the normality test showed that the significance score (Sig.) > 0.05 which means that the variables studied were normally distributed. Distributed data has normal results then continued with independent sample T test. Based on the results of *Group Statistics*, the average anxiety score of the elderly in the group who participated in recreational play activities (coloring and snakes and ladders) was 16.80 with a standard deviation of 4.607,

while in the control group the average was 21.05 with a standard deviation of 7.409. This shows that descriptively the level of anxiety of the elderly in the recreational play group was lower than the control group.

The results of *the Independent Samples Test* showed a Levene's significance value of 0.045 (<0.05), indicating a difference in variance between groups, so the analysis was continued with the assumption of unequal variances. The *t-test* produced a *p-value* of 0.037 (<0.05), which means the difference in average anxiety between groups was statistically significant. The average difference of -4.25 indicates that group play recreational activities have an effect on reducing elderly anxiety by 4.25 points compared to the control group, with a possible range of differences according to the 95% confidence interval between -8.225 and -0.275. These findings indicate that coloring and snakes and ladders activities are effective as recreational methods to reduce elderly anxiety in the Maebashi nursing home.

Group play recreation activities can effectively reduce anxiety in elderly residents of nursing homes. This activity has no side effects and is a non-invasive, easy, simple, and enjoyable therapy that can reduce complications and treatment costs. In addition to reducing anxiety, this social support activity can increase self-confidence in the elderly. According to researchers Handayani and Sari (2021), good social support can help improve the mental health of the elderly. Elderly people with strong social relationships tend to feel happier and have a lower risk of experiencing depression and anxiety. Encouraging elderly participants to participate in recreational play activities can increase social interaction and community, which can help reduce feelings of loneliness and improve their mental well-being. According to research by Egor (2019), recreational activities have been recognized as an effective way to improve the mental health of the elderly. Recreational activities, such as group recreation activities carried out together, not only provide entertainment but can also be a tool to reduce anxiety.

The effect of recreational activities such as group coloring and snakes and ladders on stress in the elderly at the Maebashi Elderly Home, Maebashi City, Gunma, Japan.

Normality test using *Kolmogorov-Smirnov Test* obtained the result of significance score (Sig.) > 0.05 with Sig. stress value at 0.200, meaning that the result of normality test shows that significance score (Sig.) > 0.05 which means that the variables studied are normally distributed. Data is normally distributed then continued with independent sample T test. Based on *Group Statistics*, the average stress score of elderly in the group who participated in recreational play activities (coloring and snakes and ladders) was 9.85 with a standard deviation of 2.925, while in the control group the average was 13.35 with a standard deviation of 5.788. Descriptively, elderly who participated in recreational play activities had lower stress levels than the control group.

The results of *the Independent Samples Test* showed a Levene's significance value of 0.017 (<0.05), which means that the variances of the two groups are different so that the analysis uses the assumption of unequal variances. The *t-test* produced a *p-value* of 0.023 (<0.05), which indicates that there is a significant difference between the average stress levels of the two groups. The average difference of -3.50 indicates that recreational play activities reduce the stress levels of the elderly by 3.5 points compared to the control group, with a possible range of differences according to the 95% confidence interval between -6.470 to -0.530. These findings indicate that coloring and snakes and ladders activities are effective as recreational methods to reduce stress in the elderly at the Maebashi nursing home in Maebashi City, Gunma, Japan.

Recreational activities are all free and enjoyable activities carried out in free time, either individually or in groups/together. Recreational activities have been recognized as an effective way to improve the mental health of older adults. Engaging in recreational activities, including group play, can make participants happier and boost self-confidence, fostering

interaction between participants. The resulting sense of comfort and security can lead to a person's ability to manage stress (Krippendorff, 2019).

CONCLUSION

This study aims to examine the influence of recreational activities, including individual coloring, group coloring, and group snakes and ladders games, on anxiety and stress levels among elderly residents of the Maebashi Elderly Home in Maebashi City, Gunma, Japan, by comparing anxiety and stress levels before and after participation in these recreational activities.

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