

## The Implementation of Balinese Culture-Based Occupational Activities is Improved Cognitive Elderly

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### Abstract

*Cognitive is defined as what a person knows and thinks, which is classically interpreted as a high-level mental process that makes humans aware of objects and then able to remember them, make classifications, concepts, symbols, and solve problems in response to objects or stimuli. The purpose of this study is the relationship of Balinese culture-based occupational therapy to the cognitive enhancement of elderly people in Gianyar Regency in 2019. This research is an experimental study with a randomized pre-test and post-test control group design. The population in this study were all elderly people in Sukawati District, Gianyar Regency, amounting to 48,857. The sampling technique in this study is a probability "Multistage random or simple random stratified sampling technique. and using the multistage random method with a sample size of 215 people. The independent variable in this study is culture-based occupational activities (dancing, metetabuhan, sewing, painting / sculpting and mesanti). The dependent variable in this study is elderly cognitive. The instrument used was a questionnaire to determine whether the elderly were doing occupational therapy or not, since when and for how long the duration, as well as observation using MMSE. The data analysis techniques were descriptive and chi square. And to determine the cognitive differences in the elderly who have a history of occupational activity, the Anov test is used. The results showed that the cultural activity variables that had a relationship with the prevention of dementia were dancing and sewing with constant values of 2.027 and 2.266, respectively. While the constant of all other variables is -5.344. Based on these results, it is hoped that the elderly will continue to practice based on hobbies, so that the cognitive decline process can be reduced.*

**Keywords:** Activity; Occupation; Balinese Culture; Cognitive Age

### 1.0 INTRODUCTION

#### 1.1 Background

As a result of increasing age, most of the elderly experience cognitive decline (the ability to recognize and interpret a person's environment in the form of attention, language, memory, visuospatial, and deciding functions), including memory and intelligence or intelligence<sup>(1)</sup>. Several structural and physiological changes in the brain in old age (decreased cell counts, deposition of lipofuscin and amyloid in cells, and changes in neurotransmitter levels) are associated with cognitive impairment. Age-related loss is more common in new and short-term memory<sup>(2)</sup>. Medika Journal (2009) published an editorial which stated the fact that 80% of elderly who come to primary health care facilities experience cognitive impairment. In 1999, Sidiarto L.D.<sup>(3)</sup> conducted a survey in Indonesia of 647 elderly people, with an average age of 58 years. The result is that the most dementia is 83% forgetting to put things in, 75% forgetting people's names, 58% forgetting that they have done something, and the least is that 28% of the elderly have forgotten the telephone numbers that are often used<sup>(1)</sup>.

Research conducted by B. M. van Gelder and friends (2004)<sup>(4)</sup> found the fact that the elderly who decrease the intensity and duration of their activities will experience faster cognitive decline. Therefore, if no action is taken to inhibit cognitive decline in old age, this can lead to problems that are detrimental to the quality of life of the elderly. Research conducted by Hesti et al. Proves that the elderly who experience cognitive impairment are 5.46 times more likely to experience balance disorders which are at risk of injury<sup>(5)</sup>. From the results of a preliminary study conducted at the Gianyar Regency Health Office, it was found that the elderly Posyandu at the Sukawati I Community Health Center, Gianyar Regency, was not running, and occupational activities for the elderly had never been carried out. Occupational activities commonly carried out by Balinese elderly who are Hindu include making canang or offering, dancing, playing the gamelan, farming, gardening, trading, fishing, mekekawin, making ceremonial tools as spiritual leaders, painting, sculpting, and temple weaver. Gianyar is an area with a well-known cultural entity so that various occupational activities are assumed to affect the cognitive of the elderly.

Activities that aim to improve health status, especially cognitive health in the elderly, will certainly be more meaningful if they can produce something that is beneficial for themselves and others. The type of activity that can be done is culture-based occupational therapy. Culture-based occupation is an effort to promote health and well-being by involving participants in work or activities (World Federation of Occupational Therapists) that are in accordance with the culture of the community. The American Occupational Therapy Association (AOTA) affirms that occupational therapy, through the use of work and activities, facilitates individual cognitive enhancement of performance, self-efficacy, participation, and perceptions of quality of life<sup>(6)</sup>.

## 1.2 Purpose

The general objective of this study is to determine the relationship of occupational therapy based on Balinese culture to the cognitive enhancement of the elderly in Gianyar Regency in 2019

## 2.0 METHODOLOGY

This research is an experimental study with a randomized pretest and posttest control group design (in the form of a community trial)<sup>(7)</sup>. The population in this study were all elderly people in Sukawati District, Gianyar Regency, amounting to 48,857<sup>(8)</sup>. The sampling technique in this study was side random multistage. The sample size is 215 elderly people. The independent variable in this study is occupational activities based on Balinese culture which consists of dancing, metetabuhan, mejejahitan, painting / sculpting and mesanti. The dependent variable in this study is elderly cognitive. The instrument used in this study was a questionnaire to determine whether the elderly was doing occupational therapy or not, since when and for how long the duration, as well as observation using MMSE. To determine the therapeutic relationship of each occupational activity to cognitive changes, it was analyzed using a non-parametric test, namely chi Square with a degree of significance  $\alpha = 0.05$ . To see the cognitive differences in the elderly who have a history of different occupational activities, the Anova test is used.

## 3.0 RESULTS

### 3.1 Gender, Education, Profession and Dementia of Elderly

In general, the characteristics of elderly people in the Work Area of the Sukawati I Community Health Center in Sukawati District can be seen in table 1.

Table 1. Characteristics of Elderly at Working Area of Sukawati Community Health Center I in Sukawati District, Gianyar Regency, Bali

Characteristics	Frequency	Percentage
Gender		
Male	75	34.9
Female	140	65.1
Level of education		
No school	55	25.6
Primary school	80	37.2
Junior High	29	13.5
High school	44	20.4
Bachelor	7	3.3
Profession		
Does not work	14	6.5
Domestic Work	76	35.3
Farmer	18	8.4
Labor	24	11.2
Civil servant / soldier	8	3.7
Private	27	12.6
Entrepreneur	48	22.3
Dementia Overview		

Characteristics	Frequency	Percentage
Symptoms of Dementia	17	7.9
There are no symptoms of dementia	198	92.1

From table 1 shows that the number of elderly women (65.1%), the number is more than the elderly men, namely (34.9%). Most of the senior secondary education is primary school (37.2%) and the least has a bachelor degree (3.3%). Most of the elderly work domestic work or do light domestic work (35.3%), and only a small proportion work as civil servants / ABRI (3.7%). The prevalence of dementia was only 7.9%.

### 3.2 Age and MMSE Score of Elderly

The tendency of the average age and the MMSE score of the elderly in the Sukawati I Community Health Center Work Area in Sukawati District can be seen in table 2.

Table 2. Age and MMSE Score of Elderly at Work Area of the Sukawati I Community Health Center in Sukawati District, Gianyar Regency in 2019

Characteristics	Average
Age	
Average	65.89 years
Max	80 years
Min	60 years
SD	4.84
MMSE score	
Average	24.3
Max	30
Min	9
SD	5.28

From table 2, it illustrates that the average age of the elderly in Sukawati District, Gianyar Regency is 65.89 with the youngest 60 years and the oldest 80 years with a standard deviation of + 4.84. The results of the analysis of the MMSE score found that the mean MMSE score for the elderly at the Community Health Center in Gianyar was 24.3 with the lowest score 9 and the highest 30 and the standard deviation + 5.28.

### 3.3 The Cultural Activities of Elderly

The distribution of elderly cultural activities in the Work Area of the Sukawati I Community Health Center in Sukawati District can be seen in table 3.

Table 3. The Cultural Activities of Elderly at Work Area of the Sukawati I Community Health Center in Sukawati District, Gianyar Regency in 2019

Cultural Activities	Frequency	Percentage
Dance		
Yes	151	70.2
Not	64	29.8
Total	215	
Sewing		
Yes	164	76.3
Not	51	23.7
Total	215	

Cultural Activities	Frequency	Percentage
<b>Painting / Drawing</b>		
Yes	54	25.1
Not	161	74.9
Total	215	
<b>Beat</b>		
Yes	48	22.3
Not	167	77.7
Total	215	
<b>Pesantian</b>		
Yes	24	11.2
Not	191	88.8
Total	215	

Based on the results of the analysis of cultural activities carried out by the elderly in Gianyar Regency, it shows that most of the elderly have a habit of dancing both then and until now, amounting to 70.2%. Most of the activities carried out by the elderly were sewing at 76.3%, while other activities tended to be low, among others: painting only 25.1%, playing 22.3% and dancing 11.2%.

### 3.4 Cultural Activity and Dementia Incidence

Table 4. The relationship between cultural activities and the incidence of dementia

Cultural Activities	Incidence of Dementia		Chi Square			
			P Value	OR	CI 95%	
	Yes	No			Upper	Lower
Dance						
Yes	7	144	0.006	3.810	1.380	10.515
Not	10	54				
Sewing						
Yes	7	157	0.00	5.470	1.962	15.250
Not	10	41				
Paint						
Yes	4	50	0.875	1.098	.342	3.522
Not	13	148				
Beat						
Yes	3	45	0.629	1.373	.378	4.989
Not	14	153				
<i>Pesantian</i>						
Yes	15	176	0.935	0.938	.201	4.375
Not	2	22				

From table 4, it shows that 7 samples of those who actively dance are still dementia, 144 people who don't dance, 10 people who don't dance but 54 people don't dance but don't dance. The analysis results found p value  $p = 0.006$  ( $p < 0.05$ ) with OR: 3.81 95% CI (1.380 - 10.52). This means that there is a relationship between dancing activities and the absence of dementia. Dancing had the opportunity to prevent dementia by 3.81 times compared to elderly people who did not dance. The elderly who actively sew 7 people suffer from dementia while 157 do not have dementia, 10 elderly people who do not do sewing activities suffer from dementia while 41 people who do not sew still do not experience dementia. Sewing was closely related to the prevention of dementia  $p = 0.00$  ( $p < 0.05$ ). Older people who actively sew had no chance of experiencing dementia with OR: 5.470. This means that elderly who actively sew 5 times more likely not to experience dementia 95% CI (1.96 - 15.25).

Table 5. The result of logistic regression analysis

Cultural activities	B	S.E.	Wald	df	Sig.	Exp(B)
Dance	2.027	0.611	11.013	1	0.001	7.592
Sewing	2.266	0.606	13.972	1	0.000	9.644
Painting	0.101	0.650	0.024	1	0.876	1.107
Beat	0.570	0.715	0.635	1	0.426	1.768
Pesantian	0.134	0.852	0.025	1	0.875	1.143
Constant	-5.344	2.176	6.031	1	0.014	0.005

Table 5 shows that the cultural activity variables that have a relationship to the prevention of dementia are only dancing and sewing with constant values, respectively 2.027 and 2.266. While the constant of all variables is -5.344. So the elderly who are diligent in dancing have a 28.6% chance of being free from dementia. Sewing activities carried out by the elderly can reduce the probability of the elderly to experience dementia, and can prevent dementia by 22.71%. Older people who are active in dancing and sewing have the opportunity to avoid dementia up to 38.8%, after being controlled by other variables such as *pesantian*, drawing and painting.

#### 4.0 DISCUSSION

Table 1 shows that the number of elderly people at the Sukawati I Community Health Center in Gianyar Regency, the female gender is (65.1%), more than the male elderly (34.9%). Most of the senior secondary education is elementary school (37.2%) and the least amount is undergraduate level (3.3%). Most of the elderly work domestic work or do light domestic work (35.3%). The prevalence of dementia was 7.9%. From the description of the proportion of elderly characteristics, it shows that the proportion of elderly women is greater than that of men. This figure is in accordance with the condition of the demographic data of elderly people in Indonesia, where the proportion of elderly women is male (3: 2). The high life expectancy of elderly women cannot be separated from the increasing health condition of elderly women and biological factors which make it possible for women to be stronger and to have a lower risk of illness and death than men.

Based on the results of the analysis in this study related to the incidence of dementia in the elderly, it shows that the prevalence of dementia in the elderly in Gianyar is 7.9%. This figure is much lower than the dementia data in several places in Indonesia such as in Yogyakarta 20% and Bali 30% <sup>(9)</sup>. The low number of dementia in Gianyar is closely related to several positive behaviors, namely the old culture in Gianyar, including dancing and sewing. Conditions in Bali dancing is a common activity carried out by the elderly as part of the activities of the elderly in preserving culture. However, behind this cultural activity, the elderly have a positive impact in the form of preventing the risk of cognitive decline. The results of a single analysis of the relationship between dancing activity and the occurrence of dementia obtained OR 3.8 95% CI results (1.38–10.515), so it can be concluded that dancing activity can prevent dementia up to 3.8 times compared to elderly people who do not dance, with a potential prevention range from 1.38 to 10.515 time. The results of this study are the same as the results of research <sup>(10)</sup> which explains that dancing improves mood, prevents loneliness, optimizing the modulation of cortisol which is a biomarker for preventing dementia. Dancing activity is often said to be a model of dance movement therapy (DMT). research conducted by Rahmawati, Bangun Wibowo and Lestari, 2018) <sup>(11)</sup> states that the impact of dancing can (1) increase the integration of cognition, affection, and physical experience; (2) expressions of competence; (3) increase self-awareness; (4) as a form of coping in an effort to deal with problems of pressure / stress, mood, emotions; (5) helps in increasing self-efficacy (6) is a form of social support.

Elderly people who perform Balinese dance activities directly perform movements that stimulate the performance of the muscles and nerves of the body, this movement will support the coordination process of body functions. Dancing also demands the readiness of the elderly to be able to memorize the movements that are danced so that it stimulates the brain, especially memory functions, to remain active. Dance practice is an activity that is done together so that it can increase social support for the elderly and

reduce the risk of loneliness in the elderly. Sewing activity from a single analysis of the relationship between stitching and dementia found that elderly people who actively engaged in sewing activities had the potential to avoid dementia up to 5.47 times compared to those who did not do sewing activities with a preventive range between 1.96 and 15.25.

Sewing or sewing of religious ceremony materials is the activity of assembling materials made from coconut leaves or other materials which are shaped in such a way as to meet the needs of Balinese religious ceremonies. The Balinese, including the elderly, in every religious ceremony activity, always make preparations in the form of ceremonial means (offerings). The means for the ceremony are simple, some are complicated. The ingredients for the ceremony are made from the ingredients of janur, banana leaves, palm leaves, old coconut leaves, and other leaves according to religious regulations. Ceremony materials are sewn and assembled from one part and basic shape into a shape as needed. The process of putting together and forming materials is done with the help of pins (a type of stick), staples or other materials so that the series can come together. Sewing activity is a form of combination activity between hand skills and cognitive. Lee, Jin & Lee, ByoungHee & Park, YuHyung & Kim, Yumi. (2015)<sup>(12)</sup> explained that activities in the form of hand skills training by coloring, playing blocks, jigsaw and playing instruments carried out continuously for at least 6 months can improve cognitive scores by 50-74 points. The research conducted focuses on exercise which tends to be only in the form of physical exercise. Unlike the case with sewing activities, besides being a hand craft activity, there are also various additional activities including: cognitive activities because making upakara materials must be based on the ability to remember names, shapes and ways of making them which require cognitive abilities, especially memory and good musculoskeletal coordination. With continuous sewing activities, it will be able to maintain both short and long term memory functions, improve the count function because each sewing process will always be followed by the process of imagining the number and size of stitches that must be made.

Sewing will increase the closeness of old age to God, because the activity of preparing religious ceremonial materials is a form of devotion to God. With a sincere sense of devotion will increase a sense of surrender and gratitude which can trigger a client's immune system boost. Aitao Lu, Michael Harris Bond and Shatin, N. T. (2010)<sup>(13)</sup>. The process of sewing also has an economic impact on the elderly. Old age through sewing will be able to produce goods to sell so that the elderly is still productive. The ability to make money will increase self-esteem, self-efficacy and the economic function of the elderly so that it will reduce the risk of cognitive decline in the elderly<sup>(14,15,16)</sup>. From the analysis results, the combination of dancing and sewing activities contributed to the prevention of depression up to 36.8 times. It can be concluded that dancing activities combined with sewing activities can reduce the risk of dementia by up to 37 times. The combination of dancing as a comprehensive physical activity and sports and sewing as a hand and cognitive skill which has a physical, cognitive, spiritual and economic impact is a combination of activities that many Balinese elderly people do as a cultural activity which turns out to have a preventive impact on dementia. controlled by other cultural activities such as mesanti, metetabuhan and painting. Dancing, playing and painting in general have a good impact on cognitive, but due to the limitations of the elderly who carry out these activities, the analysis does not show a very meaningful relationship, but it needs to be developed as another part of the cultural activities of the elderly.

## 5.0 CONCLUSION

The conclusion in this study is that there are several factors that can prevent dementia in the elderly in Bali. Based on the research results, cultural factors that exist in Bali that can inhibit the occurrence of dementia include dancing activity factors, sewing activities. In accordance with the culture in Bali, continuous sewing activities will be able to maintain both short and long term memory functions, improving the count function because every sewing process will always be followed by the process of imagining the number and size of stitches that must be made.

Based on the conclusions of the results of this study, in an effort to improve the health status of the elderly, especially aspects of cognition in preventing dementia, it can be recommended that the activities of the elderly need to be increased, especially activities related to cultural activities.

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