

The Effectiveness of the Revitalization of “Jogo Tonggo” as Local Wisdom in Vigilance and Prevention of Transmission of COVID-19 in Central Java Province

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How to cite this article: Yulianto Prabowo, Agus Suwandono, Bagoes Widjanarko et al. The Effectiveness of the Revitalization of “Jogo Tonggo” as Local Wisdom in Vigilance and Prevention of Transmission of COVID-19 in Central Java Province. *Indian Journal of Forensic Medicine and Toxicology* 2022;16(3):381-387.

Abstract

Background: Jogo tonggo is an empowerment effort to increase community participation in preventing the transmission and spread of Covid-19 in Central Java. The study aims to assess the effectiveness of the revitalization of “jogo tonggo” as local wisdom toward increasing community knowledge, attitudes, and behavior toward COVID-19.

Methods: This study is true-experimental study involving 352 respondents, which are divided into the experimental group and the control group. The used statistical analyses were paired simple t-test, independent t-test, Mann-Whitney, and Wilcoxon.

Results: There was an increase in the mean after intervention between group 1 and group 2 including knowledge of “jogo tonggo” ($\delta=2.39$; $p=0.001$), knowledge of COVID-19 symptoms and transmission modes ($\delta=2.87$; $p=0.001$), knowledge of prevention methods of COVID-19 ($\delta=1.63$; $p=0.001$), attitudes towards “jogo tonggo” ($\delta=2.00$; $p=0.004$), attitudes towards COVID-19 ($\delta=1.58$; $p=0.011$), and COVID-19 prevention behavior ($\delta=6.04$; $p=0.001$).

Conclusion: The revitalization of “jogo tonggo” can increase knowledge, attitudes, and behavior toward COVID-19.

Keyword: Community engagement and empowerment, COVID-19, Jogo tonggo, Local wisdom

Introduction

On February 19, 2021, COVID-19 was confirmed positive in Indonesia, reaching 1,252,685, including

33,969 people died.¹ While the same date is also real time data at 09.00 WIB in Central Java, COVID-19 was confirmed positive as many as 147,609 people, with CFR 6.25%.² The majority of death cases had

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comorbidities, while the most prevalent reported comorbidities were diabetes and hypertension. Meanwhile, old age patients were more likely to associate comorbidity^[3]. The COVID-19 cases have spread to 35 cities/regencies in Central Java Province.^{4,5}

Resistance to the spread and transmission of COVID-19 must be carried out systematically, and continuously, so an effective, and strong organization is needed. Therefore, the formation of a community-based Task Force against COVID-19 is urgent to implement immediately.⁶ "Jogo tonggo" is an empowerment effort to increase community participation in preventing the transmission and spread of COVID-19 in the RW area with the principle of "gotong royong" or mutual cooperation. Exploring the potential of the community so that they are empowered and able to participate in handling COVID-19.⁶

"Gotong royong" is an activity that is carried out together and is voluntary in nature. "Gotong royong," which has been deeply rooted in people's lives, is one of the characteristics of the Indonesian nation, stated in Pancasila, namely the 3rd principle of Indonesian unity.⁷ The Javanese people, especially Central Java, really uphold Javanese customs with a culture of mutual help. The culture of "gotong royong", which is often referred to as "sambatan" is a habit for residents to help out in their daily lives, both for personal and public interests.⁸ This is of course a strong enough basic capital for community raising in dealing with COVID-19. This study aims to assess the effectiveness of the revitalization of "jogo tonggo" as a program which emphasizes community empowerment and involvement toward increasing community knowledge, attitudes, and behavior in preventing the COVID-19 occurrence.

Methods

Study design

This study is a true-experimental research design with pre-test and post-test group design.⁹

Sample and sampling method

The sampling procedure was by multi-stage sampling consisting purposive sampling for determining the district, and simple random sampling technique for selecting samples. The research was conducted in 16 sub-districts in Semarang City, Central

Java Province, Indonesia consisting 8 sub-districts as intervention subject location, and 8 sub-districts as the control subject location in 2020. Determination of the sample size using the formulation¹⁰ as follows:

$$n = \frac{N \cdot Z^2 \cdot p \cdot q}{d (N - 1) + Z^2 \cdot p \cdot q} \quad (1)$$

Note:

n = Number of samples

N = Population Size (30,613)

Z = Normal standard value for $\alpha=0.05$ (1.96)

p = Approximate proportion 50% (0.5)

q = (100%-p)

d = level of significance (0,05)

To avoid the lack of samples due to drop out, which was assumed to be 10%, the number of samples (20), as the result of the above calculation, was added by 2, so that the number of samples became 22. Finally, 22 would be multiplied by 16 (total number of RW), with the results of 352 respondents divided into two groups, experimental group and control group.

The data collection was carried out by 8 enumerators who previously given three days of training. The treatment of the intervention group was carried out by the "jogo tonggo" task force accompanied by the facilitator through providing education on the three indexes which was conducted for 4 weeks with a frequency of every day, duration of 60 minutes per intervention.

Statistical analysis

Data was analyzed using SPSS for Windows Release version 25.0 computer program consisting of descriptive analysis (mean and standard deviation) and inferential statistics (Mann-Whitney, Wilcoxon, Independent T Test, and Paired T Test).

Results and Discussion

General description of subjects

The majority of the subjects both in the experimental group and the control group were male (107 respondents, 60.8%), 25-35 years old (59 respondents, 33.5%), and as self-employed (62 people, 35.2%) (Table 1). The characteristics distributions of subject from both groups are relatively the same (Table 1).

Table 1: Characteristics of Research Subjects

Variable	Experimental Group		Control Group	
	F	%	F	%
Gender				
Male	107	60.8	107	60.8
Female	69	39.2	69	39.2
Age				
25-35 Years	59	33.5	59	33.5
36-45 Years	49	27.8	50	28.4
46-55 Years	48	27.3	49	27.8
56-60 Years	20	11.4	18	10.3
Education				
Not Completed in Primary School	2	1.1	1	0.6
Elementary School	10	5.7	9	5.1
Junior High School Graduate	18	10.2	18	10.2
Senior High School Graduate	85	48.3	86	48.9
Graduated College	61	34.7	62	35.2
Job				
Civil Servant	12	6.8	10	5.7
Private Employees	35	19.9	35	19.9
Self-Employed	62	35.2	62	35.2
Laborer	13	7.4	13	7.4
Unemployment	50	28.4	50	28.4
Pension	4	2.3	6	3.4

Based on the frequency data analysis, the result showed that before the intervention was carried out, respondents who had good knowledge of jogo tonggo were 56.8%, increasing to 90.3% after the intervention. Respondents' knowledge of the symptoms and mode of transmission of Covid-19 was originally 42.0% and after intervention it became 96.6%. Knowledge of how to prevent Covid-19 transmission before intervention was 48.3% and it became 93.2% after intervention. Attitudes towards jogo tonggo were originally 37.5% to 93.2%, and attitudes towards Covid-19 before the intervention were 25.6% to 88.6% after the intervention. Furthermore, the behavior of respondents in implementing health protocols before the intervention was 34.7% and after the intervention increased to 92.0%.

Analysis of measuring knowledges about jogo tonggo, symptoms, COVID-19 transmission, and ways to prevent COVID-19

There is a difference in the mean knowledge of "jogo tonggo" after the intervention between group 1 and group 2 which is statistically significant

with p-value=0.001 (Table 2). The mean of knowledge about "jogo tonggo" after intervention was higher at group 1 (7.99 ± 1.00), compared to group 2 (5.60 ± 1.08), with a mean difference of 2.39 (Table 2). In the group 1 or the intervention group, the mean of knowledge of "jogo tonggo" was higher (7.99 ± 1.00) after the intervention, compared to before the intervention (5.56 ± 1.25), with a mean difference of 2.43 which was statistically significant (p-value=0.001) (Table 2).

Besides, there is a difference in the mean knowledge of symptoms and modes of transmission of COVID-19 after the intervention between group 1 and group 2 which is statistically significant with p-value=0.001 (Table 2). The mean knowledge of symptoms and modes of transmission of COVID-19 after intervention was higher at group 1 (9.11 ± 0.81), compared to group 2 (6.24 ± 1.16), with the mean difference was 2.87 (Table 2). At group 1 the mean knowledge of symptoms and modes of transmission of COVID-19 was higher (9.11 ± 0.81) after intervention, compared to before intervention (6.22 ± 1.61), with a mean difference of 2.89 which was statistically significant (p-value=0.001) (Table 2).

Table 2 showed that there is a difference in the mean knowledge of how to prevent COVID-19 after the intervention between group 1 and group 2 is statistically significant with $p=0.001$. The mean knowledge of how to prevent COVID-19 after intervention was higher at group 1 (5.53 ± 0.64), compared to after intervention at G2 (3.90 ± 1.16), with a mean difference of 1.63 (Table 2). In group 1, the mean of COVID-19 prevention was higher (5.53 ± 0.64) after the intervention, compared to the average before intervention (3.81 ± 1.36), with a mean difference of 1.72 which was statistically significant ($p=0.001$) (Table 2).

The results of the quantitative analysis were strengthened by qualitative analysis result which showed that there was an increase in the knowledge from before the intervention to after the intervention. Based on the results of qualitative data analysis, the average percentage of knowledge about COVID-19 in the research subjects was 45.54%, increasing to 77.68% after the intervention, so that the level of informant knowledge increased by 70.57%. Meanwhile, the average percentage of knowledge about the “jogo tonggo” program before the intervention was 27.21% and after the intervention increased to 73.53%, so that the level of informant knowledge increased by 178.35%.

Table 2: Results of Differences Analysis in Knowledge about Jogo Tonggo, Symptoms and Modes of Transmission of COVID-19, and How to Prevent COVID-19

Measurement Phase	Jogo Tonggo			Symptoms and Modes of Transmission of COVID-19			How to Prevent COVID-19		
	G1 (Mean±SD)	G2 (Mean±SD)	P-value	G1 (Mean±SD)	G2 (Mean±SD)	P-value	G1 (Mean±SD)	G2 (Mean±SD)	P-value
Before Intervention	5.56±1.25	5.55±1.27	0.798	6.22±1.61	6.12±1.45	0.532	3.81±1.36	3.80±1.37	0.969
After Intervention	7.99±1.00	5,60±1,08	0.001**	9.11±0.81	6.24±1.16	0.001*	5.53±0.64	3.90±1.16	0.001*
Difference (Delta)	2.43±1.53	0.51±0.66	—	2.88±1.19	0.11±0.95	-	1.72±1.52	0.09±0.97	—
P-value	0.001****	0.341	—	0.001***	0.098	-	0.001***	0.107	—

SD = Standard Deviation

G1 = Experimental Group

G2 = Control Group

** = Significant based on the Mann-Whitney $p\leq\alpha$ (0.05)

**** = Significant based on the Wilcoxon $p\leq\alpha$ (0.05)

* = Significant based on the Independent T Test $p\leq\alpha$ (0.05)

*** = Significant based on the Paired T Test $p\leq\alpha$ (0.05)

The intensification program for community education through “jogo tonggo” was proven to increase the average score of respondents’ knowledges about “jogo tonggo”, symptoms and modes of transmission of COVID-19, and ways to prevent COVID-19. Interventions that involve culture in a community have the potential to increase community involvement (participation) and will have an impact on the success of the intervention. According to research conducted by Kumpfer (2020), et.al, it is shown that family strengthening programs that adapt to cultural values will increase acceptance in society by up to 40%.¹¹

Community empowerment is deemed necessary to overcome problems caused by the pandemic. The purpose of implementing community empowerment is to increase the ability to meet physical, economic and social needs. In addition, community empowerment has the ability to increase self-confidence, participate

in social activities, and the ability to be independent in carrying out life tasks.¹²

Kaim, et.al’s research in 2020 in the State of Israel which intervened in the form of short education on the characteristics of COVID-19, etiology, symptoms and signs, modes of transmission, measures to combat infection, and guidelines during home quarantine showed an increase in scores on all measured variables^[13]. Research by Sabarudin showed that there were statistically significant differences before and after the implementation of online education about the prevention of COVID-19.¹⁴

Analysis of measuring attitudes towards “jogo tonggo” and COVID-19

There is a difference in the mean attitude of “jogo tonggo” after the intervention between group 1 and group 2, which is statistically significant with a value of $p=0.004$ (Table 3). The mean of “jogo tonggo”

attitude after intervention was higher at group 1 (8.78±1.67), compared to group 2 (6.78±1.55), with a mean difference of 2.00 (Table 3). At group 1, the mean “jogo tonggo” attitude was higher (8.78±1.67) after the intervention, compared to before the intervention (6.73±1.70), with a mean difference of 2.05, which was statistically significant (p=0.001) (Table 3).

There was a difference in the mean attitude towards COVID-19 after the intervention between group 1 and group 2 which was statistically significant

with a value of p=0.011 (Table 3). The mean attitude towards COVID-19 after intervention was higher at group 1 (7.90±1.48), compared to after intervention at group 2 (6.32±1.65), with a mean difference of 1.58 (Table 3). In the group 1, the mean attitude towards COVID-19 was higher (7.90±1.48) after the intervention, compared to before the intervention (6.22±1.72), with a mean difference of 1.68, which was statistically significant (p-value=0.001) (Table 3).

Table 3: Results of the analysis of differences in attitudes towards Jogo Tonggo and COVID-19

Measurement Phase	Jogo Tonggo			COVID-19		
	G1 (Mean±SD)	G2 (Mean±SD)	P-value	G1 (Mean±SD)	G2 (Mean±SD)	P-value
Before Intervention	6.73±1.70	6.66±1.64	0.726	6.22±1.72	6.27±1.63	0.751
After Intervention	8.78±1.67	6.78±1.55	0.004*	7.90±1.48	6.32±1.65	0.011*
Difference (Delta)	2.05±1.09	0.11±0.90	–	1.78±1.20	0.04±0.86	–
P-value	0.001***	0.098	–	0.001***	0.484	–

SD = Standard deviation

G1 = Experimental group

G2 = Control group

* = Significant based on the Independent T Test $p \leq \alpha$ (0.05)

*** = Significant based on the Paired T Test $p \leq \alpha$ (0.05)

The current study is in accordance with the previous research. Study of Yudiansyah (2020) showed the “jogo tonggo” program received a positive response by the people of Central Java.¹⁵ Study from Arditama (2020) showed that “jogo tonggo” during the pandemic led to the formation of awareness and obedience of the Central Java people to the state appeal. The community’s response is clearly illustrated by the formation of social and economic networks, which are formed and managed massively in the environment. This encourages the re-strengthening of social solidarity, community togetherness at the RT/ RW level, and the existence of legal rules that contain sanctions.¹⁶ Research from Ayed, et al. (2020), who conducted COVID-19 education in school students, showed that there was a statistically significant positive relationship between scores of knowledges, attitudes, and practices after the implementation of the intervention.¹⁷

Sufficient knowledge related to the definition, mode of transmission and prevention of COVID-19

greatly affects a person’s change in attitude. Someone who knows well the benefits of the expected behavior change will have a tendency to maintain a good attitude as well.¹⁸ Attitudes are formed starting with knowledge (including awareness, feelings, etc.) and in the next stage forming actions.¹⁸

Behavior analysis to prevent COVID-19

Table 4 clearly showed that there was a difference in the mean COVID-19 prevention behavior after the intervention between group 1 and group 2 which was statistically significant with a value of p=0.001. The mean COVID-19 prevention behavior after intervention was higher at group 1 (40.69±1.58), compared to group 2 (34.65±3.04), with a mean difference of 6.04 (Table 4). At group 1 the mean prevention behavior against COVID-19 was higher (40.69±1.58) after the intervention, compared to before intervention (34.77±2.95), with a mean difference of 5.92, which is statistically significant (p-value=0.001) (Table 4).

Table 4: The Results of Analysis of Differences in COVID-19 Prevention Behavior

Measurement Phase	G1 (Mean± SD)	G2 (Mean± SD)	P-value
Before Intervention	34.77±2.95	34.55±2.93	0.492
After Intervention	40.69±1.58	34.65±3.04	0.001*
Difference (Delta)	5.92±2.58	0.09±0.86	-
P-value	0.001***	0.138	-

The present research is in line with the research previously. Research from Bavel et al. (2020) provided an explanation that knowledge has a close relationship with decision making and the achievement of positive attitudes and the embodiment of new behaviors.¹⁹ The results of research in Banyumas Regency by Kusumawardani and Triyanto (2020) found that 77% of respondents had a positive attitude and it supports behavior change. This is evidenced by the behavior of washing hands and wearing masks almost reaching 100%.²⁰

Based on the integrated theory, the behavior change model is influenced by several factors, including demographics, knowledge, attitudes, norms, habits, environment, and media. These factors complement each other which then influence each other to create the expected new behavior. Good behavior is created and can be cultured in people's daily lives through family empowerment and community empowerment.²⁰

Conclusion and Acknowledgement

In conclusion, the revitalization of "jogo tonggo" has an effect on increasing knowledge, attitudes, and behavior in preventing COVID-19 transmission. This "jogo tonggo" model has very good implications for the community to stay awake from existing health problems. Besides, the current study contributes to the literature on how jogo tonggo revitalization has affected on enhancing the awareness and behavior of the community of Central Java in preventing and controlling COVID-19, and on the involvement of the community in facing the COVID-19 outbreak. Hence, the Jogo Tonggo can be adopted by others.

The authors would like to acknowledge the heads of sub-districts, heads of community units, the "jogo tonggo" task forces, the "jogo tonggo" task force facilitators, and the community at the community unit of the research location, for their participation in the implementation of the "jogo tonggo" empowerment education intensification activities.

Conflicts of Interest: None

Funding Statement: None

Ethical considerations

The scientific procedure for ethical research permission was obtained from the Faculty of Public Health, Diponegoro University, Number: 60/EA/KEPK-FKM/2020.

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