

Participation in the Setouchi Triennale and the Health of Residents in Naoshima: A Cross-Sectional Study

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Arts festivals have become increasingly popular in various parts of Japan in recent years. The purpose of this study was to investigate the relationships between arts festival activities participation at the Setouchi Triennale and the health of residents in the town of Naoshima. This was a cross-sectional study. Questionnaires were distributed to all residents of Naoshima who were 20 years old or older (n = 2,588). We analyzed responses from 708 people. The associations between arts festival activities participation and health (measured by self-rated health) were analyzed using logistic regression analysis as the primary outcome. Kessler's psychological distress scale scores were also analyzed in the same manner as the primary outcome. The participating group had an adjusted odds ratio of 1.86 (95% confidence interval: 1.03-3.33) for higher self-rated health compared with those who did not participate. Kessler's psychological distress scale results showed that the participating group had an adjusted odds ratio of 3.23 (95% confidence interval: 1.19-8.81) for lower psychological distress compared with those who did not participate. In conclusion, arts festival activities participation was associated with higher self-rated health and lower psychological distress. However, caution must be taken in regard to generalizability and causality when interpreting these results.

Key words: art, arts in public health, arts festival, self-rated health, Setouchi Triennale

Arts festivals have become increasingly popular in various parts of Japan in recent years. Many of these festivals highlight the special features and the geographic and cultural context of the region, with the main purpose of revitalizing the local community [1, 2].

One of the major current challenges for national and local governments is identifying how to revitalize communities and make them sustainable. In Japan, population decline in rural areas due to the outflow of people to the Tokyo metropolitan area is an ongoing problem

because of the outflow of people to the Tokyo metropolitan area. The aging of the population in suburban areas may also affect economic activities and hinder the maintenance of local communities.

The Setouchi Triennale, one of Japan's most renowned arts festivals, has been held every three years in Naoshima, a town comprising 27 islands located in the Seto Inland Sea in western Japan, Kagawa Prefecture since 2010 (Fig.1). The genesis of the Triennale can be traced to 1992, when the Benesse

Holdings and Fukutake Foundation initiated an effort to revitalize the local community through arts activities at the Benesse Art Site of Naoshima. Their revitalization strategy has come to be known as the Naoshima Method. This approach aims to promote “well-being” by community-building through arts activities and interaction with the landscape, community, and fellow participants. It is of especial significance in the town of Naoshima due to the rapid aging of the population: in 2020, the percentage of Naoshima’s total population aged 65 and over (the aging rate) was 34.7%, 6.8% higher than the national average (28%) [3].

In the field of social epidemiology, it is said that social/environmental factors such as social networks and attributes of communities affect individuals’ health [4,5]. Social capital—defined as “resources that are accessed by individuals as a result of their membership of a network or a group” [6]—is attracting attention as one such social determinant [7]. Many previous studies have examined the relationship between social capital and various health indicators, including mortality, heart disease, mental health indicators, and smoking [7-9].

On the basis of the findings of previous social epidemiological studies, it is expected that participation in art festivals affect people’s health directly and/or indirectly by building social capital. Several studies examining health promotion programs through art activities have reported that participation in arts activities does indeed have a positive impact on health [10,11]. Other studies have examined the effects of art therapy as a medical intervention, and a number of systematic reviews have examined the effects of art as psychotherapy [12-14]. However, to date, there has been little scientific research examining how participation in arts festivals affects residents’ health. Therefore, further studies on this relationship are needed.

The purpose of the current study was to evaluate the relationship between participating in arts festival activities and the health of residents in Naoshima.

Materials and Methods

Study design and participants. This was a cross-sectional study. The target population were residents of the town of Naoshima, Kagawa Prefecture, Japan who

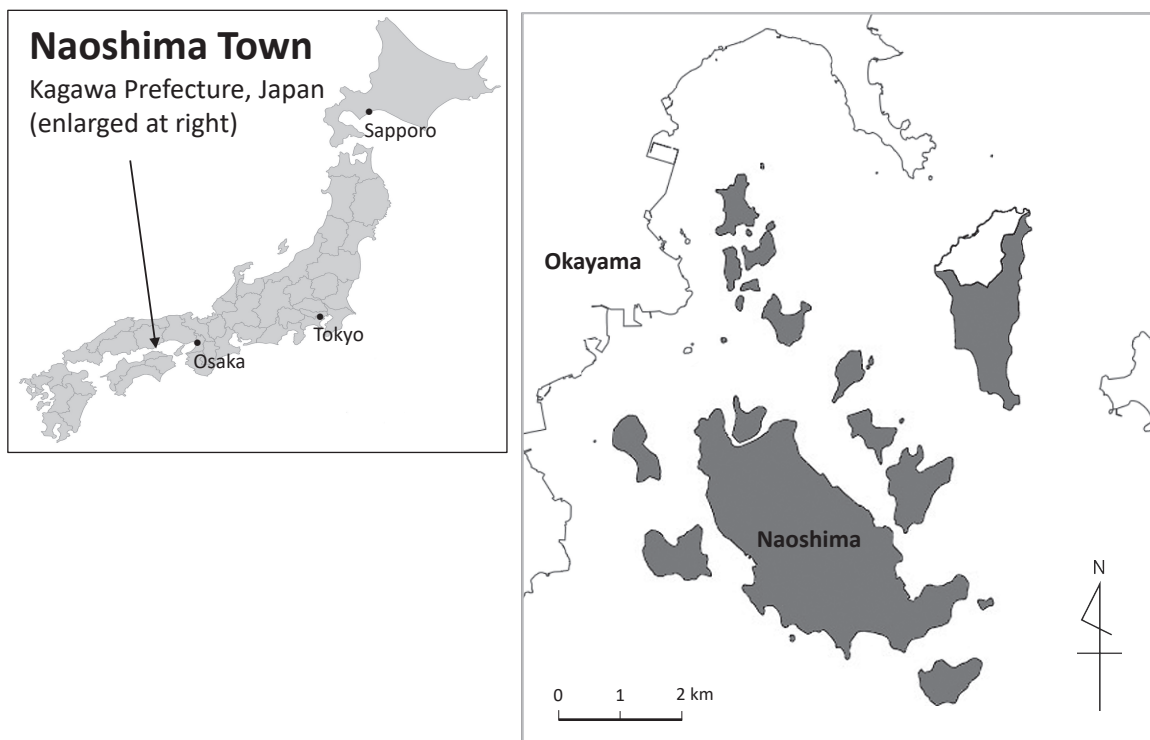


Fig. 1 Map of Naoshima Town.

were ≥ 20 years old as of September 1, 2021 ($n=2,588$). Most of the 27 islands that comprise Naoshima are uninhabited; apart from the main island (also named Naoshima), the most populated islands are Mukaejima and Byobujima, home to only 30 residents total. We surveyed participants in the Setouchi Triennale from December 6, 2021 until March 31, 2022. Participants provided written informed consent, and those who did not provide consent were excluded.

This study was conducted in compliance with the Declaration of Helsinki and the Ethical Guidelines for Medical and Health Research Involving Human Subjects. In addition, this study was approved by the Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences and the Okayama University Hospital Ethics Committee (approval number: K1902-003). This study was reported according to the guidelines provided in Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) [15].

Data collection and variable definitions. We distributed self-administered questionnaires and collected them by mail from December 6, 2021 until March 31, 2022. On the basis of Article 28-3 of the Public Offices Election Law, the addresses of Naoshima residents were obtained from a copy of the Naoshima electoral list obtained by applying to the Naoshima Town Election Management Committee.

As the exposure variable, we determined whether residents had participated in activities related to the Setouchi Triennale. The Setouchi Triennale has been held every 3 years since 2010 (2010, 2013, 2016, 2019, 2022). Participants were queried regarding their participation in arts festival activities by means of a single yes/no question; the definition of participation included attending exhibitions and/or participating as a volunteer, even if only once.

As a primary outcome variable, self-rated health (SRH) was measured using a five-point Likert scale (1=very good; 2=good; 3=moderate; 4=bad; 5=very bad) [16]. The SRH is a single item that captures how an individual feels about their health using the question “How is your health in general?” [17]. Evidence has accumulated showing that SRH is associated with various physical and mental health conditions, and that it predicts mortality [18-22]. We dichotomized the responses into good health (very good/good/moderate) and poor health (bad/very bad) [16, 17].

As a secondary outcome variable, the six-item Kessler Psychological Distress Scale (K6) was measured. The K6 is a self-administered questionnaire about a person's emotional state, with a total possible score of 24 points (range, 0-24 points) consisting of six items rated using a five-point Likert scale (0=all of the time; 1=most of the time; 2=some of the time; 3=a little of the time; 4=none of the time). The questions ask how often the person has experienced specific symptoms (nervousness, hopelessness, restlessness/fidgeting, being so depressed that nothing could cheer them up, feeling that everything was an effort, and worthlessness) during the past 30 days. As in previous studies, respondents who scored higher than 13 were considered to have a serious mental illness when the items were coded as 0-4. On the basis of this cutoff point, a dichotomous variable was created as an indicator of serious psychological distress (0=score 13 to 24 and 1=score 0 to 12) [23-26].

In addition, we collected individual and demographic information as potential confounders, including gender, age, height, weight, smoking status, alcohol consumption, duration of residence in the community, number of people living together in the household, and subjective socioeconomic status (SES). Subjective SES was measured using a single question: “Where would you put yourself socioeconomically on this scale?” Respondents were presented with a ladder assigned with numbers from 1 to 9, on which 1 indicated “wealthy” and 9 indicated “suffering from poverty”.

Statistical analysis. We first described demographic characteristics of the study participants by stratifying them according to whether or not they had participated in the Setouchi Triennale. Continuous variables were presented as means and standard deviations (SDs), while categorical variables were presented as counts and percentages.

As the primary analysis, the relationship between arts festival activities participation and SRH was evaluated using logistic regression models with complete case analysis. We first estimated the crude odds ratio (OR) and 95% confidence interval (CI), then estimated the OR and 95% CI after controlling for potential confounders. We adjusted for gender, age, body mass index, SES, number of people living together in the household, and duration of residence. The factors that may cause M-bias when adjusted, such as smoking sta-

tus and alcohol consumption, were excluded from the adjustment factors [27]. We calculated the E-value to assess the effects of unmeasured confounding on our results. To calculate the E-value, a point estimate of the odds ratio was used under the assumption that the outcome is common (*i.e.*, not based on the rare disease/outcome assumption). The secondary outcome, K6, was analyzed in the same manner as the primary outcome. Stata SE version 17.0 (StataCorp, College Station, TX, USA) was used for all statistical analyses.

Results

Participants. We distributed questionnaires to the residents of the town of Naoshima ($n=2,588$) who were 20 years old or older as of September 1, 2021, and received responses from 739 people (response rate = 28.6%). Of these, we excluded 31 for whom written informed consent was not obtained, and we analyzed the remaining 708 (27.4%).

Participant demographics. Table 1 shows demographic characteristics of the study participants by stratifying them according to whether or not they had ever participated in arts festival activities at the Setouchi

Triennale. There was no clear difference between the two groups in SES, body mass index, or the number of people living together in the same household. In the non-participation group, the average age was 4.58 years older and the average duration of residence in the community was 7.89 years longer than in the participation group. The participation group had almost equivalent proportions of men and women (49.49% men, 50.51% women), whereas the non-participation group had a slightly higher proportion of women (45.27% men, 54.73% women). The proportion of non-smokers was 9.74% higher in the participation group.

The relationship between arts festival participation and SRH. Table 2 shows the results of logistic regression analysis of the relationship between arts festival participation and SRH. The participation group had a crude OR of 2.11 (95% CI: 1.26-3.89) for higher SRH compared with the non-participation group. The table shows the results after adjusting for potential confounders. We observed a similar pattern of results after adjustment (adjusted OR=1.86, 95% CI: 1.03-3.33). The calculated E-value from the observed OR was 2.06.

The relationship between arts festival participation and K6. Table 3 shows the results of logistic regres-

Table 1 Demographic characteristics of study participants in Naoshima Town ($n=708$)

		Non-participation in arts festival ($n=599$) ^a		Participation in arts festival ($n=100$) ^a	
		Mean (SD)/n (%)	Missing, n	Mean (SD)/n (%)	Missing, n
Gender	($n=691$)		7		1
Man		268 (45.27%)		49 (49.49%)	
Woman		324 (54.73%)		50 (50.51%)	
Age, years	($n=681$)	61.83 (18.07)	17	57.25 (19.04)	1
BMI	($n=660$)	23.17 (3.79)	37	22.53 (2.93)	2
Duration of residence	($n=685$)	46.53 (25.53)	14	38.64 (27.79)	0
SES	($n=685$)	5.21 (1.56)	12	4.90 (1.46)	2
Smoking	($n=696$)		3		0
Non		368 (61.74%)		52 (52%)	
Pre		177 (29.70%)		37 (37%)	
Smoker		51 (8.56%)		11 (11%)	
Number of people living together	($n=688$)	2.51 (1.29)	11	2.53 (1.40)	0
SRH	($n=694$)		5		0
Higher		415 (69.87)		83 (83)	
Lower		179 (30.13)		17 (17)	
K6	($n=687$)		10		2
Higher		519 (88.12)		92 (93.88)	
Lower		70 (11.88)		6 (6.12)	

SD, standard deviation; BMI, Body mass index; SES, Subjective socioeconomic status; SRH, self-rated health; K6, six-item Kessler Psychological Distress Scale. ^aThere were missing data for nine participants.

sion analysis of the relationship between arts festival participation and K6 scores. The participation group had a crude OR of 2.07 (95% CI: 0.87-4.90) for lower K6 scores compared with the non-participation group. After adjusting for potential confounders, we observed higher point estimation and a statistically significant association (adjusted OR=3.23, 95% CI: 1.19-8.81). The calculated E-value from the observed odds ratio was 2.99.

Discussion

In the present study, we examined the relationship between participating in arts festival activities at the Setouchi Triennale, a major arts festival in Japan, and the health of the residents in Naoshima using SRH and

K6 as outcome measures. We found that participation in arts festival activities was associated with better SRH and mental health in residents.

There are various potential pathways by which participation in arts festivals might affect people’s health. For example, fostering social capital among arts festival participants may have a beneficial health effect [28]. Since many previous studies have shown that social capital affects various health outcomes [7-9,29], further research is needed to investigate whether participation in arts festival activities, such as those of the Setouchi Triennale, builds social capital.

Although not examined in this study, the potential impact of participating in arts festival activities (particularly during childhood) on cultural capital should be investigated in future long-term research. The French sociologist Bourdieu developed the concept of cultural capital as a contribution to social inequalities in health in the early 1960s [30]. This concept was developed to address a specific empirical problem, namely that “economic barriers are not sufficient” to explain disparities in the educational attainment of children belonging to different social classes. Subsequent researchers suggested that class-related cultural resources interact with economic and social capital in the social construction of people’s health possibilities and choices, and that cultural capital is an important factor in the behavioral transformation from social inequality to health inequality [30,31]. Several previous studies have reported that art influences cultural capital [32], and that cultural capital affects quality of life, food consumption, and children’s learning [33-35]. Previous research suggests that participation in arts festival activities might create cultural capital, influence children’s learning, and improve the future SES of children themselves, which may have a positive impact on the future health of children in the long term. Because the current study was a cross-sectional study of adults only, it will be necessary for future studies to include children, and to measure health outcomes at multiple time points.

One of the strengths of the present study is that it comprehensively targeted all adults in the town of Naoshima. Second, while one previous study has examined the relationship between participation in arts festival activities and residents’ health [11], and another has reported preliminary findings [10], more research is required. Therefore, the current study should provide a useful foundation for future research. Third, we

Table 2 The results of logistic regression analysis of arts festival participation for higher SRH

	Crude model (n=694)	Adjusted model (n=632)
	OR (95% CI)	OR (95% CI)
Non-participation in arts festival	1.00 (reference)	1.00 (reference)
Participation in arts festival	2.11 (1.26–3.89)	1.86 (1.03–3.33)

Adjusted for gender, age, body mass index (BMI), subjective socioeconomic status (SES), number of people living together in the same household, and duration of residence in the community. SRH, self-rated health; OR, odds ratio; 95% CI, 95% confidence interval.

Table 3 The results of logistic regression analysis of arts festival participation for lower K6 scores

	Crude model (n=687)	Adjusted model (n=626)
	OR (95% CI)	OR (95% CI)
Non-participation in arts festival	1.00 (reference)	1.00 (reference)
Participation in arts festival	2.07 (0.87–4.90)	3.23 (1.19–8.81)

Adjusted for gender, age, body mass index (BMI), subjective socioeconomic status (SES), number of people living together in the same household, and duration of residence in the community. SRH, self-rated health; OR, odds ratio; 95% CI, 95% confidence interval.

calculated the E-value of the odds ratio in this study to assess the potential effects of unmeasured confounders. The E-values for the relationship between arts festival participation and SRH and K6 were 2.06 and 2.99, respectively. These values suggest that unmeasured confounding factors would need to have been very strong to fully explain the observed associations.

Several limitations of the current study should be considered. First, because this was a cross-sectional study, the causal direction is unclear: healthier people may have been more likely to participate in arts festival activities. Second, because the response rate was relatively low, the applicability of the current results to the whole target population should be considered carefully. For example, survey respondents may have shared certain demographic characteristics, which could have resulted in a biased sample that is not representative of the overall population. In addition, people who were more interested in their own health status and arts festival participation may have been more likely to respond to the survey, which could have resulted in a self-selection bias, and yielded a sample with more healthy respondents than the general population. Third, common method bias may have affected the current results. Both exposure and outcomes were subjectively measured by respondents using the same questionnaire, which could have led to overestimation of their associations. Fourth, this study did not evaluate specifically which diseases are related to improvements from exposure. Future research will be needed to investigate the specific health effects of long-term participation in arts festival activities. Fifth, although we used logistic regression models with complete case analysis to assess the relationship between participation in arts festival activities and SRH, it should be noted that the assumption of missing completely at random (MCAR) may not hold in our dataset. This could limit the generalizability of our findings to other populations or datasets with different patterns of missingness. Finally, the generalizability of the findings in this study may be limited as the study was conducted only with residents of the town of Naoshima. Therefore, caution is required when applying our study results to the association between residents of other areas and the arts festival. Nonetheless, the present study provides useful evidence, as there have been few previous quantitative studies examining the association between arts festival participation and residents' health.

In conclusion, we evaluated the relationship between participation in arts festival activities at the Setouchi Triennale and the health of the residents in Naoshima using the SRH and K6 as outcome measures. The results suggested that participation in arts festival activities had a favorable impact on residents' health. Regarding generalizability and causality, caution is required in the interpretation of our study results. However, because few previous quantitative studies have examined the relationship between participation in arts festival activities and residents' health, the current study is considered to provide an important basis for further longitudinal research. Additionally, it is important to note that if healthier individuals are more inclined to take part in arts festivals and if such participation enhances health, the resulting increase in the number of festivals may inadvertently widen the health gap between healthy and unhealthy people. To address this issue, it is necessary to focus on outreach, encouraging arts festival participation among all members of the community, regardless of their health status, in order to reduce health inequalities.

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