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Brief report

The effect of public awareness campaigns on suicides: Evidence from Nagoya, Japan

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ABSTRACT

Background: Public awareness campaigns about depression and suicide have been viewed as highly effective strategies in preventing suicide, yet their effectiveness has not been established in previous studies. This study evaluates the effectiveness of a public-awareness campaign by comparing suicide counts before and after a city-wide campaign in Nagoya, Japan, where the city government distributed promotional materials that were aimed to stimulate public awareness of depression and promote care-seeking behavior during the period of 2010–2012.

Methods: In each of the sixteen wards of the city of Nagoya, we count the number of times that the promotional materials were distributed per month and then examine the association between the suicide counts and the frequency of distributions in the months following such distributions. We run a Poisson regression model that controls for the effects of ward-specific observed and unobserved heterogeneities and temporal shocks.

Findings: Our analysis indicates that more frequent distribution of the campaign material is associated with a decrease in the number of suicides in the subsequent months. The campaign was estimated to have been especially effective for the male residents of the city.

Limitation: The underlying mechanism of how the campaign reduced suicides remains to be unclear.

Conclusion: Public awareness campaigns can be an effective strategy in preventing suicide.

1. Introduction

Public awareness campaigns about depression and suicide have been viewed as highly effective strategies in preventing suicide. The guidelines for suicide prevention set forth by the United Nations (1996) and World Health Organization (2011), for example, encourage conducting campaigns that aim to promote public awareness with regard to mental health and suicidal behavior.

Despite the popularity of public awareness campaigns as suicide prevention programs, their effectiveness has not yet been established in previous studies. A review article by Mann et al. (2005) reported that public education and awareness campaigns have little effect on suicidal acts, depression, and treatment-seeking behavior. Similarly, a more recent review by Dumesnil and Verger (2009) 1203 also concluded that, “no study has clearly demonstrated that such campaigns help to increase care seeking or to decrease suicidal behavior”. The null finding on the effectiveness of such campaigns should be a serious concern for policymakers and practitioners worldwide who seek an effective suicide prevention program.

This study tests whether public awareness campaigns can reduce suicidal risks by comparing the number of suicides before and after a city-wide campaign in Nagoya, Japan, in which promotional materials were distributed to its residents. We examined whether more frequent distributions of promotional materials are associated with a reduction in the number of suicides in the months following such distributions.

2. Method

The city of Nagoya is located in Aichi Prefecture in the central part of Japan. Nagoya is the fourth largest city in Japan with a population of 2.3 million (as of February 2013). According to Vital Statistics compiled by the Ministry of Health, Labour, and Welfare, 448 people died by suicide in 2010, which corresponds to a suicide rate of 20.3.

The city government of Nagoya launched a public awareness campaign as part of its city-wide suicide prevention program in 2009. The campaign was designed to heighten the awareness of depression and promote care-seeking behavior among local residents. The city distributed promotional materials to commuters at major train stations and on the streets of the city in February, March, May, and June of 2010, 2011, and 2012. During these

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Table 1
The number of distributions in 16 wards in Nagoya.

Ward	2010				2011				2012			
	Feb	March	May	June	Feb	March	May	June	Feb	March	May	June
Chikusa	11	0	8	0	6	2	3	4	3	3	3	4
Higashi	6	1	2	4	6	0	3	4	4	4	4	3
Kita	5	0	3	0	3	0	2	5	2	4	3	3
Nishi	1	0	1	0	1	0	0	2	1	1	1	1
Nakamura	2	9	0	10	1	9	5	6	8	5	7	5
Naka	9	29	11	23	14	18	18	9	12	11	17	8
Showa	2	0	1	1	1	1	2	1	2	1	0	3
Mizuho	0	0	2	0	2	0	0	1	1	1	1	2
Atsuta	1	5	0	8	0	8	3	3	2	4	5	3
Nakagawa	0	1	0	1	0	2	1	2	1	3	1	2
Minato	0	2	0	1	0	1	0	0	1	0	0	1
Minami	0	1	0	0	0	1	0	1	0	1	0	1
Moriyama	1	0	0	0	0	0	0	0	0	0	0	1
Midori	0	1	2	1	2	1	0	2	3	2	0	2
Meito	2	0	2	3	3	2	1	3	2	2	2	3
Tenpaku	2	0	2	1	1	4	1	5	2	1	0	4

Note: The distributions of the promotional materials are counted as one if the distribution was carried out in the morning or evening in a ward. We aggregated the total number of distributions per ward per month. All other months are coded as zero.

campaign months, the materials were handed over to commuters and pedestrians by paid staff members and volunteers every morning and evening of Monday to Friday. Only one location was targeted each morning or evening of the day. For example, the materials were handed out at A station in the morning of February 1st in 2010 and B station in the evening of the same day. The primary target of the campaign were middle-aged male residents of the city because 50% of total suicides were attributed to this population group. However, the material was distributed without discrimination and as a result, all those walking by had a chance to receive the pamphlet. During the period from April 2011 to March 2012, a total of 0.25 million materials were distributed at 41 different locations for 80 days.

The promotional material consisted of a hand-sized pamphlet that contained plastic bandages. It showed information regarding the symptoms of depression, its treatment options, and a message encouraging those with mental health issues to seek assistance. The back side of the pamphlet listed several telephone numbers for personal consultations, not solely about their mental health, but also about personal debt and other economic concerns. The material also encouraged them to visit a website launched by the city government for more detailed information about consultations and medical services. The pamphlet was called "*Kokoro no Bansoukou*," which generally translates to a first-aid or plastic bandage for mental health.

To test the effectiveness of the public awareness campaign described above, we created monthly panel data. We measured the frequency of the distribution of promotional materials per month in each of the 16 different wards (i.e., administrative jurisdictions in the city) by counting the total number of campaign sessions within the ward. We coded the frequency as zero for the other months of the years because no activity occurred. This ward-specific, monthly data was then merged with the monthly data of suicides in each ward. The unit of observations is a ward-month. Our data covered January 2010 to December 2012 and the number of observations is thus 576 (=16 wards × 36 months).

The frequency of campaign activities per month in 16 wards was measured in the following way. First, we counted the frequency of distributions at each location (e.g., station or street) per month, treating the morning and evening sessions separately. For example, if the materials were handed out at a particular station in both the morning and the evening of the same day, and no additional distribution was carried out at this station within the same month, the number of campaign activities at this station was coded as two. Second, we identified the physical address of the locations where the campaign activities were conducted and classified them into corresponding wards. The Nagoya Station, the largest station in the city, for example, is located in the Naka ward. For a few stations that are located at the boarder of two wards, we coded the number of activities as 0.5 per session for both wards. Third, we aggregated the number of activities per month per ward. Table 1 reports the total count of campaign activities in each ward during the campaign months. The mean number of distributions was 2.77. All other months that are not displayed in the table are coded zero because no distribution was carried out. As is evident, there are substantial variations in distributions both across ward and time.

The monthly data on the number of suicides in each ward was taken from the suicide statistics compiled by the National Police Agency. In addition to the total number of suicides, we also obtained gender-specific suicide data because the campaign primarily targeted the male population and thus, the effect of the campaign may have varied across gender. The average number of suicides per ward-month during the period of our study is 2.56 for the total population (1.71 for the male population and 0.85 for the female population).

To examine the effect of the campaign, we estimated a Poisson regression model where the dependent variable, S_{iym}, is the number of suicides in ward i in month m of year y. We chose to use the suicide counts, rather than suicide rates, as our outcome variable because the population characteristics of the wards remained almost constant during our study period (36 months). The main independent variable, D_{iym}, equals the frequency of campaign activities in ward i in month m of year y. In order to capture a potential long-term effect of the campaign, we also included lagged values of D_{iym} in the estimation. We set the number of lags to be five based on the Akaike Information Criterion (AIC). This means that we measured the impact of campaign activities on the number of suicides over the subsequent five months.

The Poisson model also included ward-specific, month-specific, and year-specific fixed effects in the model. The ward-specific fixed effects capture the effects of time-invariant observed and unobserved characteristics of wards that could be related to the suicide count. Thus, our estimation compares the number of suicides before and after the campaigns and the comparison is not made across wards. The month-specific effects capture the seasonal effect of suicides, while the