

Is Consumer Spending an Indicator of Changes in the Suicide Rate? - A Study Based on Trends in Tsu City

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(Received August 6, 2013; Accepted August 15, 2013)

The number of suicides in Japan increased in 1998 and has remained high ever since, despite a slight decline in recent years. The relationships between suicide rates and social, economic, and life-style factors must be examined in detail. This study examined age-adjusted suicide rates and average monthly household consumer spending per household in Tsu City from 1991 to 2005, and performed single regression analysis to assess the relationship between these indices. During the period studied, trends in consumer spending were not an indicator of changes in the suicide rate. Factors related to suicide should continue to be studied in detail.

Key words: suicide, consumer spending, overall, Tsu, discussion

INTRODUCTION

According to a report by the Cabinet Office, the suicide rate in Japan is the world's sixth highest overall; the suicide rate among men is the seventh highest while that among women is the second highest (1). Annually, there were, on average, 22,613.6 suicides in Japan from 1987-1991 and 22,236.6 suicides from 1992-1996; then, in 1997 the number of

suicides climbed to approximately 24,000 suicides according to a report by the National Police Agency in the Cabinet Office (1) and rapidly increased the year after, to over 30,000 in 1998. The number has remained high in the 14 years since. Japan has taken action, as exemplified by the Basic Act on Suicide Prevention of 2006 (1). In 2007, a Cabinet meeting approved guidelines on suicide prevention that the government should promote in accordance with the Basic Act on Suicide Prevention; these guidelines took the form of an Outline of Comprehensive Measures to Prevent Suicides (1). In 2008, a Plan to Accelerate Suicide Prevention Measures was formulated (1), and a 100-day Plan for Suicide Prevention and an Emergency Suicide Prevention Plan to Protect Life were later approved (1).

Many researchers (2-4) have described the need for suicide prevention measures based on suicide trends. The sharp increase in suicides in 1998 is considered to have been largely caused by increases in "economic and life problems" (5, 6), and factors related to suicide must be examined today as well. A statistical study (7) of Iwate Prefecture, an area with a high prevalence of suicides, revealed a clear relationship between the occurrence of suicides and depopulation, a dearth of medical resources, and financial problems such as unemployment. Ono (8) described association between suicide and unemployment. In one study, Kubota et al. (9) performed multiple linear regression analysis with the standardized mortality ratio (SMR) for suicide as a response variable and social welfare indicators as explanatory variables. The result was chosen the "number of retail outlets" as an explanatory factor for men and

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the “divorce rate”, the “ratio of the workforce employed in secondary industry”, and the “total number of people seeking health counseling” as explanatory factors for women. In their study, Kubota *et al.* also performed simple correlation analysis of the SMR for suicide and the selected factors they used in multiple linear regression analysis. They noted that only the “number of retail outlets” was significantly correlated with the SMR in men. The current authors previously reported that the average disposable income per household was related to the suicide rate among the total population and among men (10). However, the average disposable income per household was not related to the suicide rate among women in the study (10). Another study performed psychological autopsies on debt-related suicides (11). There was a report that social changes were adverse affection at the suicide rates (12).

The relationship between social, economic, and lifestyle factors and suicide must be examined in further detail, and preventive measures must be implemented based on the results. A study in Japan was reported that age-adjusted suicide rates among men in 1980 were found to have a significant inverse correlation with prepared food expenses in consumer spending (13). In addition, the report was shown that the suicide rates were significantly correlated with study allowance money (13). However, there are few reports about discussion of suicide and consumer spending.

According to the vital statistics, the suicide rates among overall in Mie Prefecture were low in 2008 and 2010, and slightly low in 2009 as compared with it of Japan as a whole (14-16). The trend of the suicide in Mie Prefecture was similar with the trend of Japan as a whole (17). Tsu City is the location of the prefectural office in Mie Prefecture. Based on an examination of data for Tsu City, the current study assessed the relationship between suicide trends and economic aspects in particular.

MATERIALS AND METHODS

This study examined age-adjusted suicide rates in total (/100,000 population) from 1991 to 2005 in Tsu City, Mie Prefecture, Japan in cooperation with the Mie Prefectural Government (18). Average monthly consumer spending per household (hereafter, “average monthly household spending”) in Tsu

City is report by Mie Prefecture (19). We also examined the average monthly household spending (yen) during the same period (19). These data are for households of two or more persons except for those households engaged in agriculture, forestry, or fishing. However, there are also data containing those households engaged in agriculture, forestry, or fishing in 2004 and 2005. This study was discussion from 1991 to 2005, so we chose the former data in average monthly household spending. The relationship between suicide rates in total and consumer spending was assessed using single regression analysis in an Excel spreadsheet.

RESULTS AND DISCUSSION

Tsu City is located in Mie Prefecture and has a population of approximately 290,000 (20). From 1991 to 2005, age-adjusted suicide rates in total (/100,000 population) ranged from a minimum of 9.64 in 1996 to a maximum of 22.73 in 1999 (Fig. 1). In detail, the rates ranged from 9.64 in 1996 to 16.53 in 1992 during 1991-1997, and from 10.14 in 2005 to 22.73 in 1999 during 1998-2005. The suicide rates in 1998-1999 and 2001-2004 are higher than the rate in 1992. Therefore, the suicide rates in Tsu City were almost transition of the high suicide rates since 1998 excluding 2000 and 2005 during the study period. Average monthly household spending (yen) ranged from a minimum of 277,890 in 2005 to a maximum of 348,494 in 1997 (Fig. 2). The correlation coefficient for age-adjusted suicide rates in total and average monthly household spending was $r = 0.076$. The relationship between age-adjusted suicide rates in total and average monthly household spending was $R^2 = 0.0058$, $p = 0.788$, and $y = 1.73E-05x + 9.252$, so trends in consumer spending were not an indicator of changes in suicide rates.

According to one study (21), much of the literature has noted a close relationship between economic fluctuations and suicide; however, these fluctuations were not limited to economic downturns but included economic upturns as well. As the study also noted, sudden changes - upturns as well as downturns - in the economic climate have led to increases in suicidal behavior. Another study has indicated that the suicide rate among women is almost

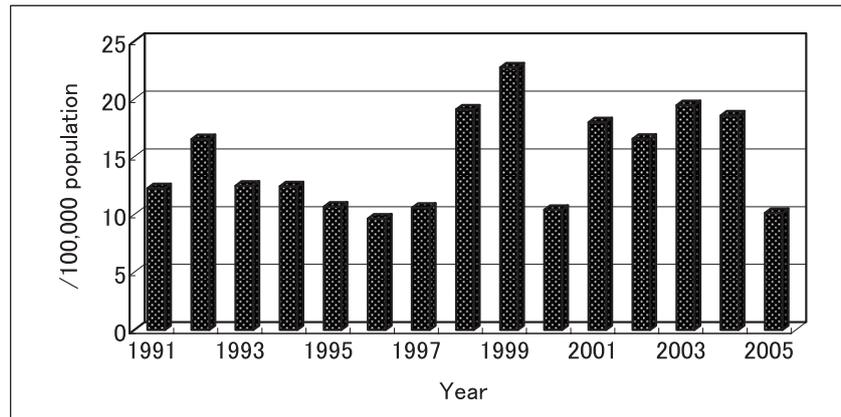


Fig. 1. Age-adjusted suicide rates in Tsu City for 1991-2005.

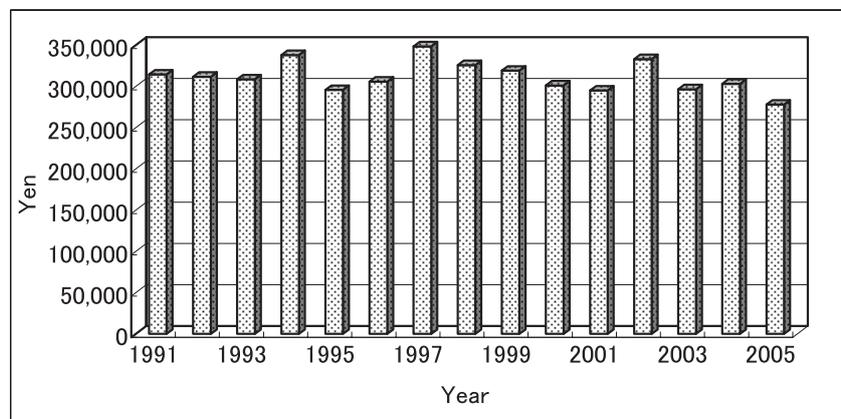


Fig. 2. Average monthly household spending in Tsu City for 1991-2005.

unrelated to socioeconomic factors (22). In South Korea, the suicide rate was found to be clearly related to the unemployment rate but not to increased rates of mining or industrial production or to increased rates of money supply (23). According to a report in Italy, the suicide rates in the unemployed were higher than the rates in the employed (24). There was a report that suicide and unemployment were related in Sweden (25).

The statistical relationships between suicide and social, economic, and lifestyle factors have differed for individual factors. Trends that encompass related factors must be discussed in light of current circumstances.

In Japan, councils on suicide prevention consisting of professionals in numerous disciplines have been convened in each prefecture and major metropolitan area. These councils include medical professionals from various fields who work together to formulate suicide prevention measures for relevant agencies and institutions. A broad examination of suicide prevention measures in

relation to social, economic, and lifestyle factors and a more detailed examination may lead to the implementation of more specific suicide prevention measures. The current study examined a single city. We have plans to conduct more detailed studies on a larger scale in the future. Sex differences will be the first aspect for us to consider in terms of suicides overall.

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