

**Does Telecare have Long-term Economic Effect on Health:
Analysis of Difference-in-Difference Propensity Score Matching
(DID-PSM)**

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Abstract

This paper analyzes the long-term effect of telecare (e-Health) which transmits health data of elderly residents at home to the remote health center and monitors their health. Data includes blood pressure, ECG, plus, etc. Although the economic effect of telemedicine is mostly desired, very few succeeded in demonstrating this, much less long-term effects. This paper aims to examine the long-term effect of telecare on medical expenditures and treatment days based on the data of the telecare project in Nishi-aizu Town, Fukushima Prefecture, Japan. The method of analysis is to compare the above outcomes of two groups, namely users (treatment) and non-users (control) of telecare, and the data used are the receipts of samples issued by National Health Insurance and survey results on their characteristics such as age, gender, years and frequency of telecare use, etc. Our previous paper, Akematsu and Tsuji (2012) analyzes the economic effect of telecare using propensity score matching (PSM) based on the data of this town from 2002 to 2006, and shows that telecare contributes a decrease in medical expenditures and the number of treatment days. In this paper, the sample period is 2002-2010, and the number of samples is 91 of users and 118 of non-users. The long-term data contain time trends and PSM does not necessarily capture these problems. This study therefore uses difference-in-difference propensity score matching (DID-PSM). The DID-PSM estimator can take care of not only biases between two groups but also time trends. Since telecare is effective to chronic diseases such as diabetes, strokes, heart failure and high blood pressure, medical expenditures and treatment days related to all diseases and chronic diseases are examined. As a result, the paper demonstrates that telecare users with longer usage experience tend to have smaller medical expenditures and treatment days related to chronic diseases. The paper discusses how telecare makes these possible and this analysis provides a basis of reimbursement from medical insurance to telemedicine for further diffusion.

JEL classifications: O30, O31, O32