Preliminary Estimation of the Disease Management Program in Japan: Relationship between Risk Factors and Medical Cost

Naohiro Mitsutake,[a] Takashi Fukuda,[a,b] Yuji Furui[c]

[a]*Institute for Health Economics and Policy, Tokyo, Japan*
[b]*School of Public Health, University of Tokyo, Tokyo, Japan*
[c]*The Twenty-second Century Medical Center, University of Tokyo, Tokyo, Japan*

Abstract/Objective

Since the 2008 health care reform, medical care insurers have an obligation to provide a specified health examination and health guidance for all Japanese people aged 40 to 74. This policy aims to decrease the number of patients with metabolic syndrome and the medical expenditure. Health examination results submitted in Health Level 7 (HL7)/ XML format are currently stored in a national database. This database also stores medical fee claim data to be utilized not only for statistical tracking but also for academic research. This preliminary study aims to clarify the relationship between metabolic syndrome risk factors and medical cost using log-linear regression analysis. Our study suggests that the medical cost per person in the high-risk group was higher; however, the ratio of the cost per person in the high-risk group to the total medical expenditure was lower than that of the other groups. Therefore, medical cost containment in Japan depends not only on health guidance for high risk groups but also on health education for no-risk groups that aren't targeted in the current program.

Keywords:

Specified health examination and health guidance, Medical cost, Disease management

Methods

We collected data from insured persons and dependents of two society-managed health insurance associations and six community-based health insurance associations who underwent a specified health examination and incurred medical costs in 2008.

Subjects were stratified into three categories: 1) high-risk group with abdominal waist circumference ≥ 85 cm in men and ≥ 90 cm in women or body mass index (BMI) ≥ 25, and having three metabolic-risk factors; 2) medium-risk group with high BMI or waist circumference, and having one or two metabolic-risk factors; 3) no-risk group having no metabolic-risk factors according to criteria specified in the interim guidelines of the specified health examination and health guidance program proposed by the Ministry of Health, Labor and Welfare in Japan. Metabolic risk criteria include: 1) triglyceride ≥ 50 mg/dl or low blood cholesterol HLD < 40 mg/dl, 2) systolic blood pressure ≥ 130 mmHg or diastolic blood pressure ≥ 85mHg, and 3) fasting blood sugar level ≥ 100 mg/dl or HbA1c ≥ 5.2%.

We linked health examination data and medical cost data, and used log-linear regression analysis to assess relationship between risk factors and medical cost.

Results

Medical cost per person was 253,420 yen in the high-risk group, 128,159 yen in the medium-risk group, and 110,254 yen in the no-risk group. The ratio of medical cost per person to total medical expenditure was 3.3% in the high-risk group, 25.6% in the medium-risk group, and 71.1% in the no-risk group.

Controlling for age, gender, and other covariates, we found that abdominal waist circumference, BMI, blood pressure, and fasting blood sugar levels were associated with higher medical costs. Triglyceride levels did not contribute significantly ($P = 0.14$).

Conclusion

The national database was established in 2009 is currently planning to provide for healthcare policy development and academic research. This preliminary study indicates the importance of preventing metabolic syndrome because the cost of treating lifestyle-related disorders (such as high blood pressure and diabetes) accounts for over 25% of the total annual medical expenditure. The medical cost per person in the high-risk group was higher than the per person cost in the other risk groups; however, the ratio to total medical expenditure was lower. Therefore, medical cost containment in Japan depends not only on health guidance for members of high-risk groups but also on interventions (e.g., health education) for members of the no-risk group that are not targeted in the current program. This study also points out the non-significance of triglyceride levels as criteria for risk stratification.