# Socioeconomic accessibility for rehabilitation therapy for patients with stroke: Using a national representative administrative dataset

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## OBJECTIVES

This study aimed to examine the associated factors, including Socioeconomic status, for accessibility of rehabilitation among stroke patients using administrative claims data.

## METHODS & MATERIALS

### 1 Study population & data

- Administrative claims data from 2018 to 2020 from National Health Insurance (NHI) database in Korea.
- A total of 64,460 stroke inpatients with subarachnoid haemorrhage (I60), ischemic stroke (I63, I64), and intracranial haemorrhage (I61, I62) were followed 365 days after the first stroke onset in 2019.

### 2 Measurement

- **Outcome variables: Rehabilitation therapy (MM105)**
  - **Receiving rehabilitation**
    was defined as 41 days or more
  - **The number of rehabilitation treatment**
- **Demographic factors**
  - Age, sex, Income levels, residential area
- **Clinical factors**
  - Type of stroke, chronic obstructive pulmonary disease, diabetes, hypertension, hear failure, coronary artery disease, arrhythmia, readmission, LOS / ICU / ER / PEG-tube / L-tube of index hospitalization
- **Hospital factors**
  - Hospital type / Hospital area of index hospitalization

### 3 Study design & Analysis

- **Analysis model**
  - Simple regression
  - Multiple regression:
    Model I: Demographic
    Model II: Demographic + Clinical
    Model III: Demographic + Hospital
    Model IV: Demographic + Clinical + Hospital
- **Linear regression**
  - Risk factor analysis for obstacles of the number of rehabilitation treatment.
- **Logistic regression**
  - Risk factor analysis for obstacles of receiving rehabilitation.

## RESULTS

Table 1. Distribution of study population, the number of rehabilitation therapy, and rehabilitation therapy by covariates among stroke inpatients in 2019

| | Total | | | | | The number of people with rehabilitation therapy (41 days/year or more) | | |
|---|---|---|---|---|---|---|---|---|
| | Population | | The number of rehabilitation therapy | | | | | |
| | N | % | Amount | SD | P-value[a] | N | % | P-value[b] |
| **Total** | 64460 | 100.0 | 37.1 | 0.4 | | 9392 | 14.6 | |
| ***Demographic factors*** | | | | | | | | |
| **Income levels** | | | | | 0.008 | | | 0.4296 |
| Q1 | 20808 | 32.3 | 35.5 | 0.6 | | 2965 | 14.3 | |
| Q2 | 14820 | 23.0 | 37.0 | 0.8 | | 2159 | 14.6 | |
| Q3 | 11484 | 17.8 | 37.6 | 0.9 | | 1675 | 14.6 | |
| Q4 | 13233 | 20.5 | 38.5 | 0.8 | | 1985 | 15.0 | |
| Medical Aid | 4115 | 6.4 | 40.5 | 1.6 | | 608 | 14.8 | |
| **Residential area** | | | | | <.0001 | | | <.0001 |
| Capital | 28261 | 43.8 | 37.6 | 0.6 | | 4128 | 14.6 | |
| Urban | 11956 | 18.6 | 41.4 | 0.9 | | 1915 | 16.0 | |
| Rural | 24243 | 37.6 | 34.5 | 0.6 | | 3349 | 13.8 | |
| ***Clinical factors*** | | | | | | | | |
| **Type of stroke** | | | | | <.0001 | | | <.0001 |
| SAH | 5833 | 9.1 | 38.6 | 1.2 | | 939 | 16.1 | |
| IS | 48085 | 74.6 | 31.2 | 0.4 | | 5920 | 12.3 | |
| ICH | 10542 | 16.4 | 63.6 | 1.2 | | 2533 | 24.0 | |
| **Hypertension** | | | | | <.0001 | | | <.0001 |
| No | 20317 | 31.5 | 24.9 | 0.6 | | 1984 | 9.8 | |
| Yes | 44143 | 68.5 | 42.8 | 0.5 | | 7408 | 16.8 | |
| ***Hospital factors*** | | | | | | | | |
| **Hospital area of index hospitalization** | | | | | <.0001 | | | <.0001 |
| Capital | 29214 | 45.3 | 37.2 | 0.6 | | 4240 | 14.5 | |
| Urban | 15210 | 23.6 | 40.7 | 0.8 | | 2393 | 15.7 | |
| Rural | 20036 | 31.1 | 34.4 | 0.6 | | 2759 | 13.8 | |

A: P-value of the t-test comparing the mean of covariates across different groups
b: P-value of chi-square test comparing the prevalence of continuous rehabilitation therapy across the different groups

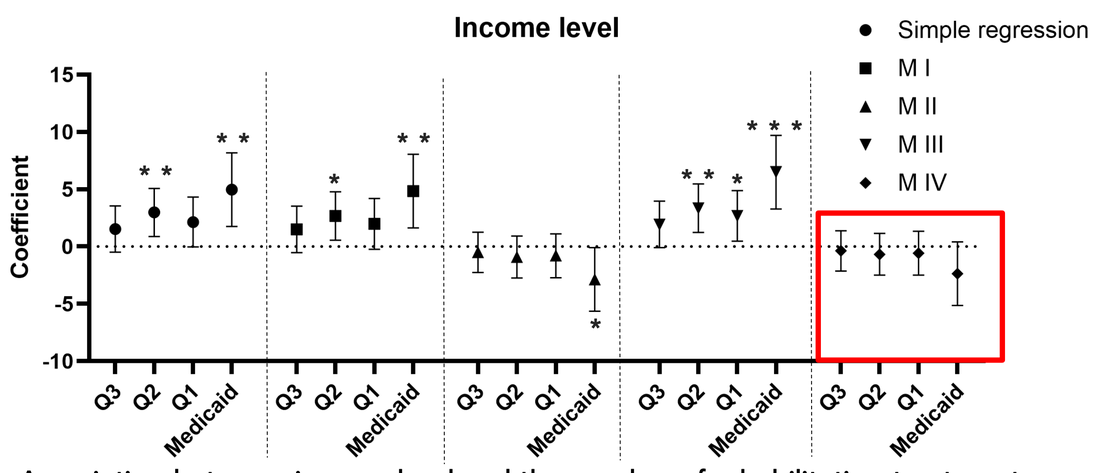


Fig 1. Association between income level and the number of rehabilitation treatment.

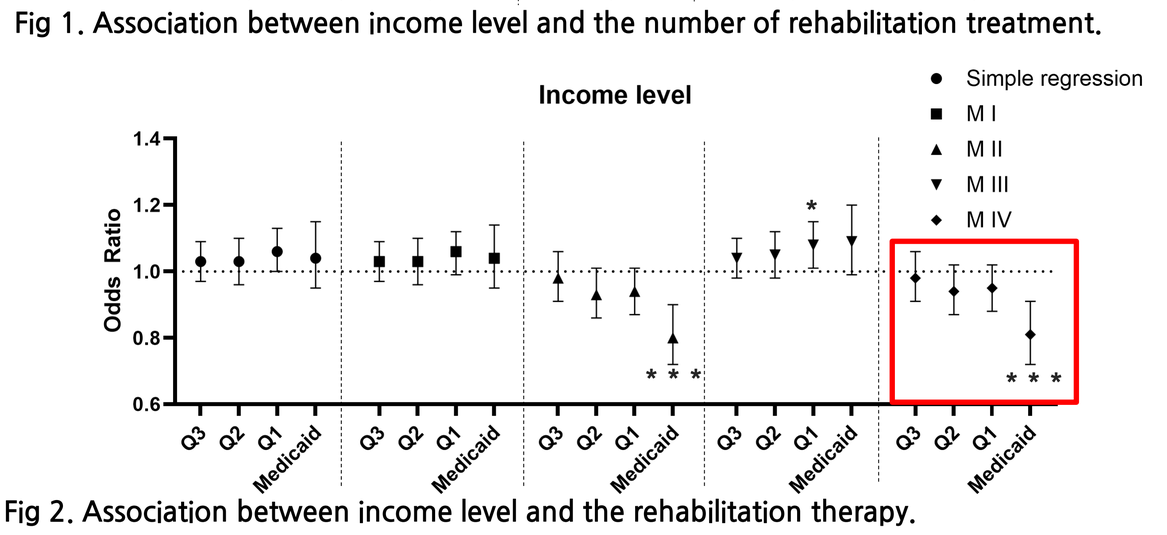


Fig 2. Association between income level and the rehabilitation therapy.

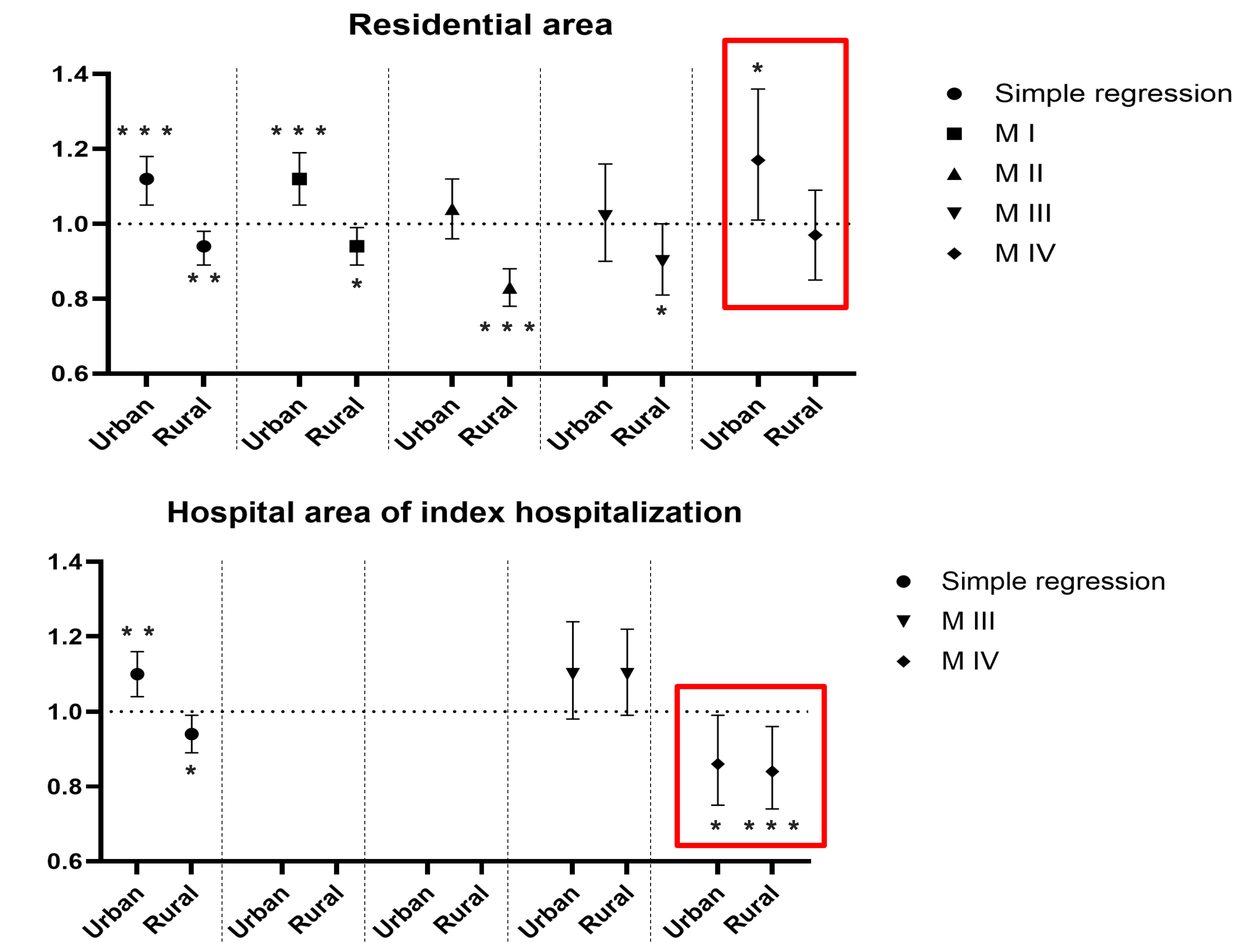


Fig1. Association between residential & hospital area and rehabilitation therapy.

## CONCLUSIONS

The results might imply there were gaps in receiving adequate rehabilitation by patients' income and regional access to the first hospital.