# The impacts of COVID-19 pandemic on hypertension prevalence, hospital visits, and Healthcare costs

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**Background/Aims:** The COVID-19 pandemic has led a significant delay or avoidance of medical care, especially for chronic health conditions such as hypertension(hereinafter referred to as HTN). HTN is the most prevalent comorbidity among COVID-19 patients and is associated with increased COVID-19 risk and mortality. Sedentary lifestyle from physical or social distancing during pandemic has increased population at higher risk of HTN, but the study on the impact of the COVID-19 pandemic on screening and treatment of HTN is yet limited. The current study investigated the consequence of the COVID-19 pandemic on early detection and treatment of HTN.

**Methods:** Data from the Health Insurance Review & Assessment Service between 2016 and 2020 was used. The average annual growth rate of the number of patients newly classified as HTN, the number of medial visits to local hospitals for hypertension management, and the medical care cost for HTN between 2016 and 2019 and in 2020 were compared. Bootstrap(N=1000, 95.0%, figure1) and an independent two-sample t-test were conducted for the analysis.

**Results:** The estimated annual growth rate of the number of patients, the number of medical visits, and the medical care cost related to HTN decreased from 5.3% to 3.2%, 3.5% to 1.1%, 7.5% to 4.4%, respectively, when the rate in 2020 was compared to that between 2016 and 2019. Compared to annual increase of HTN prevalence by 229,972 in average and of medical care cost by 52.63 billion won between 2016 and 2019, the prevalence increased by 208,689 and the cost increased by 36.99 billion won in 2020. The results indicate that a delay in HTN diagnosis existed for minimum 20,000 HTN patients in 2020.

**Conclusions:** The annual growth rate of the number of patients, the number of medical visits, and the medical care cost related to HTN decreased in 2020 compared to that between 2016 and 2019. The results suggest that there is a significant delay in HTN diagnosis and treatment during the COVID-19 pandemic. Considering the impact of HTN on medical conditions, providing optimal health care services for individuals is critical. The effort to reform health care financing to support screening and treatment of HTN during the pandemic would be necessary.

**Bootstrap for Independent Samples Test**

| | | | Bootstrap[a] | | | | |
|---|---|---|---|---|---|---|---|
| | | Mean Difference | Bias | Std. Error | Sig. (2-tailed) | 95% Confidence Interval Lower | Upper |
| PT | Equal variances assumed | .02170434 | -.00028647 | .01192189 | .078 | -.00198153 | .04388654 |
| | Equal variances not assumed | .02170434 | -.00028647 | .01192189 | .084 | -.00198153 | .04388654 |
| Days | Equal variances assumed | .02388719 | -.00010481 | .01438005 | .118 | -.00383482 | .05049864 |
| | Equal variances not assumed | .02388719 | -.00010481 | .01438005 | .118 | -.00383482 | .05049864 |
| cost | Equal variances assumed | .03039137 | -.00009754 | .01346083 | .047 | .00478143 | .05706593 |
| | Equal variances not assumed | .03039137 | -.00009754 | .01346083 | .045 | .00478143 | .05706593 |

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

| | | 2016-19 | 2020 | 2016-19 | 2020 | 2016-19 | 20 |
|---|---|---|---|---|---|---|---|
| | | Patients | | Number of Visits | | Medical Care Cost | |
| Male | 20~29 | 11.7% | 1.4% | 11.5% | 3.7% | 14.2% | 6.0% |
| | 30~39 | 7.7% | 0.9% | 5.6% | -0.2% | 11.1% | 5.4% |
| | 40~49 | 3.7% | 2.2% | 1.6% | -0.2% | 7.6% | 5.6% |
| | 50~59 | 2.8% | 1.8% | 0.7% | -1.3% | 6.2% | 4.2% |
| | 60~69 | 5.5% | 6.4% | 3.6% | 4.0% | 8.6% | 9.7% |
| | 70~79 | 3.7% | 2.8% | 1.7% | 0.4% | 5.4% | 4.7% |
| | 80~ | 9.2% | 8.0% | 6.8% | 4.3% | 7.0% | 3.8% |
| | Mean | 6.3% | 3.4% | 4.5% | 1.5% | 8.6% | 5.6% |
| Female | 20~29 | 10.8% | 7.7% | 10.4% | 10.1% | 12.6% | 7.2% |
| | 30~39 | 6.7% | 3.1% | 4.7% | 2.1% | 10.4% | 6.3% |
| | 40~49 | 0.4% | -0.9% | -1.8% | -3.0% | 3.8% | 3.0% |
| | 50~59 | 0.8% | -0.9% | -1.1% | -4.3% | 4.4% | 1.1% |
| | 60~69 | 3.4% | 5.1% | 1.5% | 2.5% | 7.0% | 8.5% |
| | 70~79 | 2.0% | 1.2% | 0.2% | -1.2% | 3.4% | 2.5% |
| | 80~ | 6.3% | 5.2% | 3.0% | -2.0% | 2.8% | -6.3% |
| | Mean | 4.4% | 2.9% | 2.4% | 0.6% | 6.3% | 3.2% |
| | Total Mean | 5.3% | 3.2% | 3.5% | 1.1% | 7.5% | 4.4% |