

**Abstract #: 1499****Health behaviours as risk factors of COVID-19 incidence in South Korea**

Jeehyun Kim<sup>1</sup>, Daesung Yoo<sup>1</sup>, Kwan Hong<sup>1</sup>, Sujin Yum<sup>1</sup>,  
Raquel Elizabeth Gómez Gómez<sup>1</sup>, Byung Chul Chun<sup>1</sup>

<sup>1</sup>Korea University, Seoul, South Korea

**Background:** Personal health behaviours, which rely on community characteristics, could affect individual vulnerability on disease infection. Due to insufficient study to examine health behaviours as risk factors of COVID-19 infection, we conducted municipal level spatial analysis to investigate association between health behaviours and COVID-19 incidence.

**Methods:** We extracted cumulative COVID-19 incidence data from January 20<sup>th</sup> 2020 to February 25<sup>th</sup> 2021, health behaviours, health condition, socio-economic factors, and covariates in municipal level from publicly available dataset. We chose variables, which were standardized, considering multicollinearity ( $VIF < 10$ ). Further, we employed bayesian hierarchical negative binomial model with intrinsic conditional autoregressive (iCAR) and Besag, York and Mollié (BYM) model, and used deviance information criterion (DIC) for final model selection.

**Results:** The mean cumulative COVID-19 incidence per 10,000 population among 229 municipality was 13.73 (Standard deviation=11.43). iCAR model (DIC=2,825.3) outperformed BYM model (DIC=14,009.4). The results of iCAR model highlighted that incidence was associated with dental hygiene practice (incidence risk ratios [IRR]=0.92, 95% Credible Interval [CI]=0.85–1.00), whether tried to be thin (IRR=1.10, 95% CI = 1.00–1.20), proportion of medical personnel (IRR=1.09, 95% CI = 1.01–1.17), and volume of public transportation (IRR=1.19, 95% CI = 1.05–1.35), even after adjusting for various confounding factors.

**Conclusions:** Municipality with lower cumulative incidence was likely to have more people who practiced to keep dental hygiene and less people who tried to be thin.

**Key messages:** Municipal level spatial analysis resulted that health behaviours were associated with COVID-19 incidence in South Korea.