

## 論文の内容の要旨

論文題目      The association between economic development, lifestyle differentiation and C-reactive protein concentrations within rural communities in Hainan Island, China  
(中国海南省農村部コミュニティにおける経済発展と  
C反応性タンパク質濃度に関する研究)

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**Objectives:** Previous research in lower income countries has suggested that there might be an increase in cardiovascular disease risk in response to the adoption of more “modern” lifestyles in the course of economic development. The designation of Hainan Island, China as a special economic zone in the late 1980s was accompanied by dramatic lifestyle changes among local residents. Importantly, a series of earlier fieldwork studies in rural Hainan communities witnessed increasing differences emerging in socioeconomic status and lifestyles within each community in terms of inter-individual variation. It is possible that these variations might have stratified residents into sub-populations with different health attributes; to explore this issue, this study examined the associations between C-reactive protein (CRP) concentration, a biomarker of future cardiovascular events, and personal lifestyle parameters and whether it differs according to the degree of community-level economic development among rural communities.

**Methods:** Fieldwork was undertaken in 19 rural communities in 5 regions in Hainan Island which differed in terms of the extent of their economic development. Convenience sampling was used to collect dried blood spot samples to measure high-sensitivity CRP concentration, anthropometric data and information on residents’ lifestyles from 1744 individuals aged 15 years old and above during the period from November to December, 2010. Duplicated samples were assayed for CRP with a

high-sensitivity sandwich enzyme immunoassay (EIA). Logistic regression analyses were conducted to identify factors which contributed to an elevated CRP concentration (i.e., serum equivalent concentration of 3 – 10 mg/L) among the participants.

**Results:** A positive association was found between CRP concentrations and markers of individual-level lifestyle in rural Hainan Island, China. CRP concentration was positively associated with the weekly consumption frequency of poultry (odds ratio [OR] = 1.36,  $p = 0.049$ ) and experience of migratory work in the previous year (OR = 1.79,  $p = 0.006$ ). CRP concentration was also positively associated with the degree of community-level economic development, indexed as maximum income reported in each community, a proxy of community income inequality (OR = 1.01,  $p = 0.012$ ), after adjusting for socio-demographic and lifestyle variables. These associations were more pronounced among the female participants. Statistically significant interactions between sex and the degree of community-level economic development suggest that the associations between CRP concentration and sex were modulated by the extent of community-level economic development.

**Conclusions:** The health impact of economic development may be easily observed among those who were previously isolated from market exposure, e.g., female residents. In contrast to male residents, who had had opportunities to go outside of their own communities and be exposed to “modern” lifestyles, female residents seemed to have been especially isolated from such lifestyles. This conclusion is supported by the fact that the impact of higher mobility, as indicated by the experience of migratory work in the previous year, on elevated CRP concentration was also more apparent among females. This study also suggests that within these rural communities that once used to be homogenous economic development might have stratified people into differing population subgroups with different health attributes.