

## Integrating Geographic Information into Diabetes Disease Management

**Authors :** Tsu-Yun Chiu, Tsung-Hsueh Lu, Tain-Junn Cheng

**Abstract :** Background: Traditional chronic disease management did not pay attention to effects of geographic factors on the compliance of treatment regime, which resulted in geographic inequality in outcomes of chronic disease management. This study aims to examine the geographic distribution and clustering of quality indicators of diabetes care. Method: We first extracted address, demographic information and quality of care indicators (number of visits, complications, prescription and laboratory records) of patients with diabetes for 2014 from medical information system in a medical center in Tainan City, Taiwan, and the patients' addresses were transformed into district- and village-level data. We then compared the differences of geographic distribution and clustering of quality of care indicators between district- and villages. Despite the descriptive results, rate ratios and 95% confidence intervals (CI) were estimated for indices of care in order to compare the quality of diabetes care among different areas. Results: A total of 23,588 patients with diabetes were extracted from the hospital data system; whereas 12,716 patients' information and medical records were included to the following analysis. More than half of the subjects in this study were male and between 60-79 years old. Furthermore, the quality of diabetes care did indeed vary by geographical levels. Through the smaller level, we could point out clustered areas more specifically. Fuguo Village (of Yongkang District) and Zhiyi Village (of Sinhua District) were found to be "hotspots" for nephropathy and cerebrovascular disease; while Wanchangliu Village and Erwang Village (of Yongkang District) would be "coldspots" for lowest proportion of  $\geq 80\%$  compliance to blood lipids examination. On the other hand, Yuping Village (in Anping District) was the area with the lowest proportion of  $\geq 80\%$  compliance to all laboratory examination. Conclusion: In spite of examining the geographic distribution, calculating rate ratios and their 95% CI could also be a useful and consistent method to test the association. This information is useful for health planners, diabetes case managers and other affiliate practitioners to organize resources to the areas most needed.

**Keywords :** catchment area of healthcare, chronic disease management, Geographic information system, quality of diabetes care

**Conference Title :** ICMGPH 2017 : International Conference on Medical Geography and Public Health

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** May 14-15, 2017