POLICY OPTIONS

Cardiovascular risk mapping in the Netherlands and Australia: a comparative analysis

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Policy context

Lifestyle-related chronic illnesses (such as diabetes mellitus and cardiovascular disease (CVD)) are predicted to rise alarmingly in Australia and worldwide over the next few decades; posing challenges that will need to be met by effective preventive medicine strategies and primary health care services planning. Chronic disease risk analysis is a key area of interest for APHCRI and the Radboudumc Department of Primary and Community Care.

The Radboudumc Department of Primary and Community Care is a well-known and active research Centre analysing large longitudinal primary health care and chronic disease data in the Netherlands. This visiting fellowship provided a unique opportunity for me to build international research relationships and collaborations in primary health care research. It also enhanced my international profile as well as that of the National Centre for Geographic and Resource Analysis in Primary Health Care (GRAPHC), a spatial modelling service to support policy relevant research in primary health care and build research capacity for PHC.

This opportunity had a great impact on translating evidence-based research findings into the development of policy to enable geographic targeting of preventive interventions. The APHCRI/Radboud University Medical Centre visiting fellowship also provided an opportunity to access international primary health care data and allowed me to undertake a comparative study of geospatial analysis of cardiovascular risk. This was an important opportunity to develop my leadership in chronic disease risk mapping and gain further knowledge in the area of chronic diseases risk assessment and innovations in primary health care methods. The finding could help preventive interventions to be targeted to the right place, at the right time, to the right people. It also provides an innovative tool to help address the alarming rise of CVD in the Australian and Dutch communities.

Policy options

There are a number of CVD risk assessment tools, which are predominately focused on individual level CVD risk. For the first time, this study examined and estimated CVD risk for both individual and neighborhoods levels in the Netherlands and Australia communities. Additionally, neighbourhoods’ fine-grained CVD risk maps were generated to highlight areas with higher risk of CVD in both countries. Furthermore, this project investigated relationship between CVD risk hotspots and built environment characteristics and lifestyle factors.

Up to this day, the majority of policy interventions for reducing CVD burden were focused on individuals’ CVD risk profiles. However, to effectively geographically target preventative interventions, both individual and community risk profiles were needed. This comparison CVD risk
study in the Netherlands and Australia aimed to investigate CVD risk profile at both individual and neighbourhood levels to provide a comprehensive picture of CVD risk in communities.

Additionally, this study investigated correlation of community/neighbourhood CVD risk patterns with built environment characteristics and people’s lifestyle factors in the study area in the Netherlands and Australia. This study showed that people living in the hotspot areas had poor lifestyle status compared to the low risk neighborhoods. For example, people in hotspot areas had a high rate of smoking, less vegetable consumption and low level of physical activity. Linking prevalence of CVD risk to location and overlaying against lifestyle data opened a new vein of knowledge for policy makers to target appropriate preventative intervention to the right people, at the right time and in the right location.

The research suggested that policy makers could focus on four domains/options in terms of CVD risk reduction activities to play a vital role in reducing CVD burden in communities; (1) enhancing GP practice clinical data quality with collaboration of GPs and practices and making use of this unique and valuable dataset; (2) individual CVD risk profiling to identify people with higher risk of CVD in communities; (3) neighbourhood/community CVD risk profiling to areas with higher rate of CVD risk, and (4) improve population lifestyle in order to mitigate CVD risk and provide high life expectancy for all.

Key findings

> GP practice data, as real life data, are important primary health care data which could be used to estimate absolute CVD risk over the next five or 10 years for individuals

> There were spatial variation of CVD risk across Dutch and Australian Communities

> Lifestyles data also vary across the Dutch and Australian neighborhoods

> Linking population lifestyle and built environment characteristics with CVD risk patterns across communities gave a comprehensive picture of risk profile at neighbourhood and individual level

> Policy makers from both countries had shown great interest in community level CVD risk and correlation of CVD risk with lifestyle and built environment data

> Framingham risk equation methodology has some advantages and disadvantages in estimating CVD risk