Neighborhood Built Environment Characteristics Associated with Physical Activity in Cardio-metabolic Disease Patient in Delhi, India

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Abstract

A Cardio-metabolic disease (CMD) is a major cause of mortality and morbidity worldwide, including among South Asians people. A major risk factor for CMDs is physical inactivity. Neighborhood built environment (NBE) play a vital role in influencing people's physical activity (PA). The main objective of this study is to assess the association among PA, CMDs and NBE. This work is a part of the Geographic Information System component of Cardio Metabolic Risk Reduction Study (CARRS) surveillance study, which is aimed to investigate whether NBE characteristics such as access to parks and other recreational facilities are associated with CMD and their risk factors in 3 South Asian cities including New Delhi, Chennai and Karachi. Here we present data from the Delhi site and geocoded 2487 households from 138 neighborhoods. PA data was measured using the International Physical Activity Questionnaire and transformed to Metabolic Equivalent Task scores. Analysis was carried out at both individual and neighborhood levels. Spatial analytic techniques such as distance calculation and clustering using hot spot analysis in ArcGIS were employed. Whereas, cluster analysis revealed statistically significant high and low PA cluster. High PA clusters (hot spots with 90 – 99 % confidence) seemed to have better access (within 1km buffer) to green and open spaces. Low PA clusters (cold spots with 90 – 99 % confidence) were found to be hot spots of higher than average systolic blood pressure (126 mmHg) and fasting blood glucose levels (115 mg/dL) due to lack of green and open spaces within 1km buffer. Exploratory spatial analysis shows that PA is related to NBE and other CMD risk factors in Delhi. This study helps us to better understand the complex relationship of NBE factors with CMD and its risk factors in Delhi.

Keywords**:** *Neighborhood Built Environment, Cardio-Metabolic Disease, Physical Activity, Cardio Metabolic Risk Reduction Study, Geographic Information System, Urban Delhi*