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Title of Research *	Spatial Analysis of Leprosy in Nova Cruz, RN, Brazil
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Introduction & Purpose *

Leprosy has been largely eradicated globally with the advent of cheap multi-drug therapy, however Brazil remains endemic. Recently urbanized Northeastern regions are especially burdened. Identifying disease and socioeconomic patterns is essential for effective intervention. Geographic Information Systems (GIS) offer novel technologies for such analysis, and were implemented in the growing city of Nova Cruz. Collaboration included two lowan medical students, regional university scientists, and health agents within the national community-based healthcare system. The objective is to implement GIS surveillance and analysis for management of leprosy in Nova Cruz.

Experimental Design *

The cross-sectional case control study surveyed 98 pre-identified leprosy patients, 128 household communicants, and 77 neighbors. Subjects completed health and economic questionnaires and physical exams. A control group of 420 homes was surveyed for comparison in testing the hypothesis connecting disease to poverty.

Results *

The collected data was archived in Excel and analyzed with Statistica Software to create cluster maps. Contour mapping illustrates disease incidence nearly 4-fold the global accepted limit; generally increasing with population density (p-value = 0.0005012). Expected risk factors of low income and education did not play a role in disease. Cases vs. control differentials include household density (17.42 vs. 20.70 square meters/person) and standing water outside the home post-rainfall (33% vs. 18% reported "very frequent"). A high citywide prevalence of hypertension and obesity was also documented.

Conclusions *

The union between GIS and local health infrastructure proves sustainable and transferrable. The pressures of population growth challenge accepted correlations of disease and poverty, enforcing the need for technology in identifying at-risk populations. Data linking disease and infrastructure will be presented to city officials. Subjects will be followed up with genetic analysis. Interactions between health agents and civilians need focus on chronic disease citywide; while integrating training in leprosy recognition within identified "hotspots" to ensure treatment precedes debilitation and transmission.

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