

NON-HODGKIN LYMPHOMA (NHL) LINKAGE WITH RESIDENCE NEAR HEAVY ROADS - A CASE STUDY FROM HAIFA BAY, ISRAEL

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Background and Aims: Some of the risk factors for Non-Hodgkin Lymphoma (NHL) are related to environmental exposure and occupations. However, studies into a possible linkage between NHL and residence near heavy traffic roads are lacking. NHL rates of Israeli Jews are among the highest in the world while the highest NHL rate within Israel is in Haifa Metropolis. The study analyzed the possible linkage between NHL morbidity and residence near heavy traffic roads among the Jewish population in the Haifa Metropolitan Area.

Methods: Addresses of 1436 patients (94.5% of all cases, 1995-2004) were geocoded. Only patients residing in the metropolis at least 10 years prior to the diagnosis were included (gender, age). The density values were interpolated by the Inverse Distance Weighted (IDW) method. The number of NHL patients was calculated for buffer zones, extending by a 50-meter increment from a main road. By dividing the actual number of NHL patients (male/female) in each buffer zone by the value of the "density coefficient", we obtained the "density adjusted" number of patients in each zone. Testing for the statistical significance of the differences across buffer zones was performed using a non-parametric Chi-square test.

Results: The road distances for each NHL patient ranged from 0 to 700m, with the median distance of 56.5m. About half of the NHL patients appear to live in a distance of less than 50m from a main road. The analysis indicates steady decline in the "density adjusted" numbers of patients as a function of increasing road distances ($P < 0.01$). Differences between genders / age groups or socioeconomic levels were not found.

Conclusions: The much higher occurrence of NHL in areas near main roads may be indicative of disease risks. Future studies may compare the relative contribution of residence near traffic to other factors such as industrial air pollution.