Wide statistical dispersion of mercury hair concentrations may hide overexposed females in the surrounding of a hydroelectric plant being built in Brazilian Amazon

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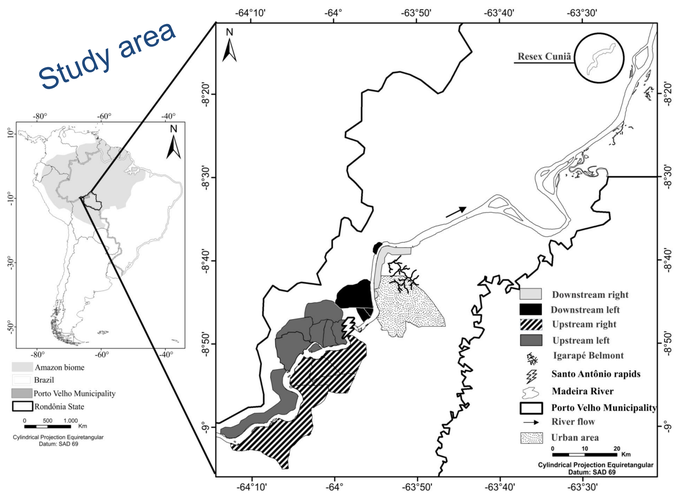
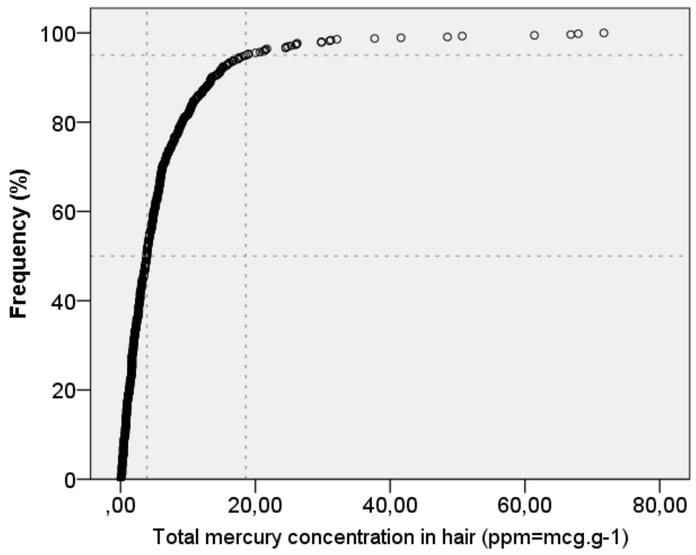
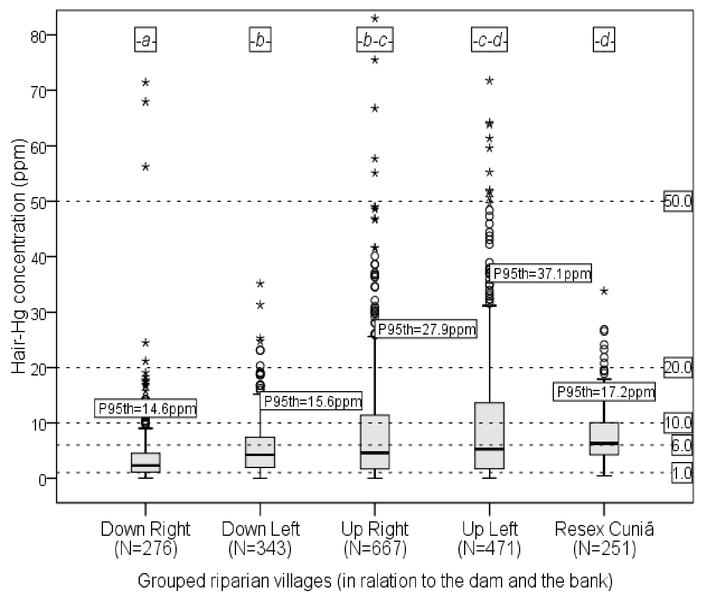
OBJECTIVE. From May 2009 to April 2011, we assessed 2008 riparians living around Santo Antônio rapids (Madeira River), including 484 healthy females at childbearing age (12 to 40y-old). The focus was the background Hg exposure through fish consumption



Total mercury concentration in hair (both sexes)



Total mercury concentration in hair for area (both sexes)



Area 1. Downstream/Right (n=156): the nearest city.

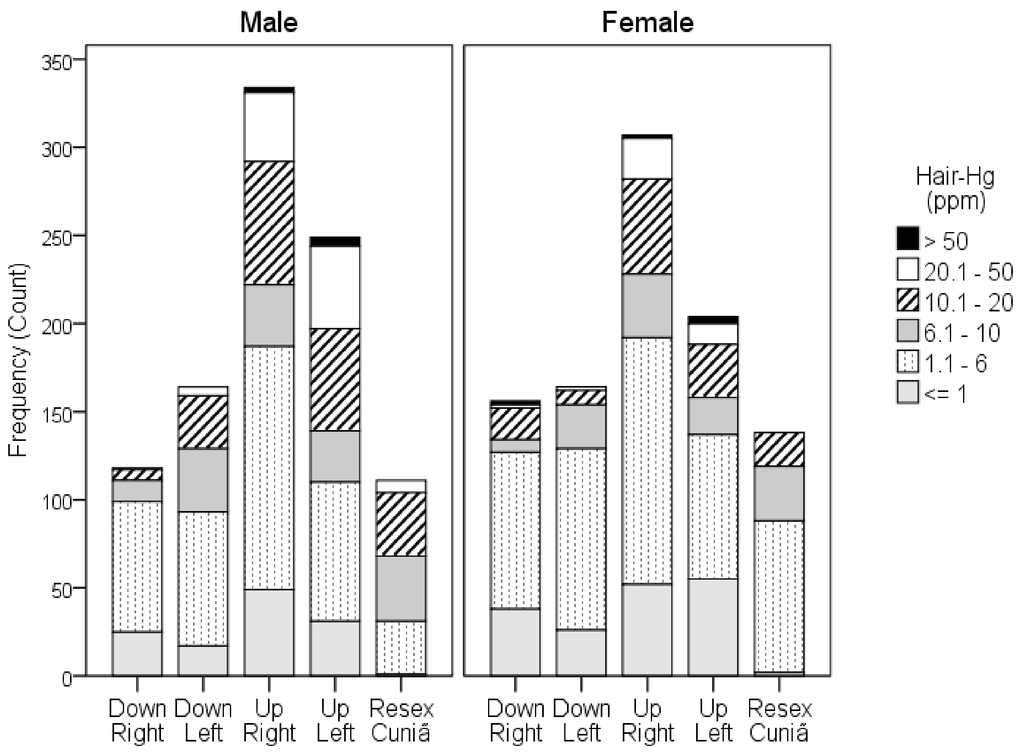
Area 2. Downstream/Left (n=95): close the city; but people have to cross the river to get products.

Area 3. Upstream/Right (n=81): similar to group 1, but people do not need to cross the river to get products.

Area 4. Upstream /Left bank (n=89): large carnivorous fish species from Madeira River available all year long.

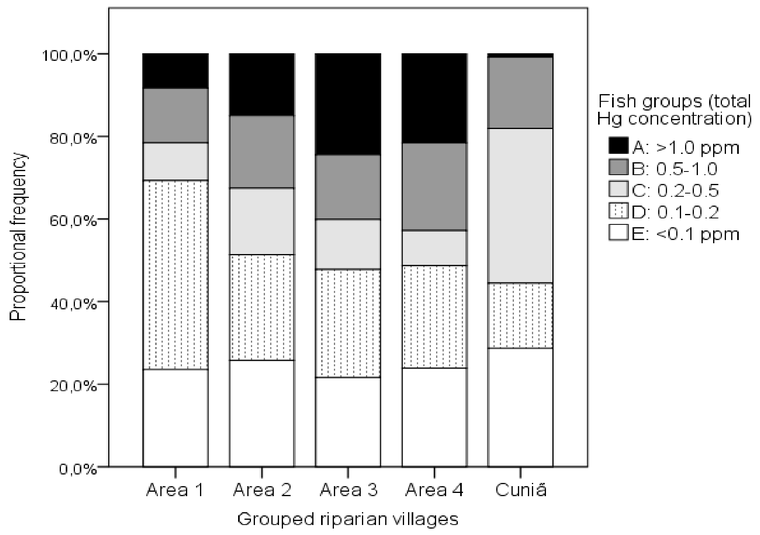
Area 5. Cuniã Lake (n=63): the more isolated group located 180 km from rapids.

Levels of exposure: proportional frequency



Madeira River

Proportional specie-specific fish intake



The most frequent self-reported consumed species were classified and categorized according to total-Hg concentration with basis on the descriptive study of Bastos et al (2008)..

RESULTS & DISCUSSION. Although more isolated females from Cuniã Lake have fish more frequently (56% eat fish daily) and the higher median hair-Hg (5.8ppm; 95th percentile=12.8ppm), the two less isolated groups (Downstream, Left and Right), despite lower medians (4.0 and 2.9ppm, respectively), showed the highest 95th percentiles (both 26.2ppm).

Females living near the dam (risky dispersion in hair-Hg) deserve as much attention as isolated communities where the overall exposure to MeHg (though larger) is more homogeneous and predictable. Concerning intrauterine exposure, the probability of finding a neurological effect may be greater near the dam, where large carnivorous fish are more available.

CONCLUSION. Concerning intrauterine exposure, the probability of finding a neurological effect may be greater near the dam, where large carnivorous fish are more available. This descriptive cross-sectional study was approved by a Brazilian Research Ethics Committee.

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