

# **Fishing activity, health characteristics and mercury exposure of Amerindian women living alongside the Beni River (Amazonian Bolivia).**

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Table 1 Fishing activity and fish consumption of the women in relation to hair mercury concentrations (H-Hg,  $\mu\text{g/g}$ )

| Variable                      | Number | Median<br>H-Hg | 95% CI  | H value <sup>1</sup><br>p |
|-------------------------------|--------|----------------|---------|---------------------------|
| Livelihoods                   |        |                |         |                           |
| Wage earners and craftsmen    | 18     | 2.3            | 1.7-3.9 | 38.1                      |
| Farming and logging           | 88     | 3.3            | 2.7-3.9 | 0.000                     |
| Fishing as principal activity | 57     | 8.2            | 6.4-9.1 |                           |
| Fish consumption              |        |                |         |                           |
| Once a day                    | 32     | 8.0            | 5.6-9.1 | 15.7                      |
| At least once a week          | 99     | 3.7            | 2.9-5.0 | 0.0003                    |
| Less than once a week         | 32     | 3.5            | 2.3-5.1 |                           |

<sup>1</sup>Z: Mann-Whitney U or Wilcoxon rank-sum test for difference in medians (two means comparisons).

Table 2 Characteristics of women examined during the study

| Variable                            | Mean/number                    | SD   | median | Percent abnormal<br>(95% CI)          |
|-------------------------------------|--------------------------------|------|--------|---------------------------------------|
| Ethnic group                        | Esse Ejjas: 25<br>Tacanas: 148 |      |        |                                       |
| Age (years)                         | 34.9                           | 13.2 | 33.0   |                                       |
| Height (cm)                         | 149.2                          | 5.3  | 148.6  | % < 145 cm<br>21.3 (15.5 ~ 28.2)      |
| BMI (kg/m <sup>2</sup> )            | 24.1                           | 3.3  | 24.0   | % > 24.5<br>42.7 (35.3 ~ 50.5)        |
| Hemoglobin<br>(g/100 ml)            | 12.2                           | 1.7  | 12.4   | % < 11 g/100 ml<br>22.3 (16.3 ~ 29.3) |
| H-Hg (µg/g)                         | 5.5                            | 4.1  | 4.4    | % > 10 µg/g<br>14.7 (9.6 ~ 21.1)      |
| Systolic blood pressure (mm<br>Hg)  | 106.9                          | 14.8 | 108    | % > 130 mmHg<br>4.1 (1.6 ~ 8.2)       |
| Diastolic blood pressure (mm<br>Hg) | 66.2                           | 9.3  | 65     | % > 90 mmHg<br>0.0 (0.0 ~ 2.1)        |

**Table 3** Responses to neurological examination of contaminated and non-contaminated women

| Item               | Response    | H-Hg $\leq$ 5 $\mu$ g/g | H-Hg $>$ 5 $\mu$ g/g | $\chi^2$       | p <sup>a</sup> |
|--------------------|-------------|-------------------------|----------------------|----------------|----------------|
| Visual field       | normal      | 78                      | 57                   | 0.31           | ns             |
|                    | reduced     | 7                       | <b>7</b>             |                |                |
| Paresthesia        | no          | 82                      | 53                   | 7.0            | <b>0.007</b>   |
|                    | yes         | 5                       | 13                   |                |                |
| Static balance     | normal      | 86                      | 59                   | 5.5            | <b>0.01</b>    |
|                    | instability | 1                       | 6                    |                |                |
| Dynamic balance    | Normal      | 61                      | 45                   | Fisher<br>0.01 | ns             |
|                    | Instability | 26                      | 20                   |                |                |
| Motor coordination | normal      | 78                      | 53                   | 1.5            | ns             |
|                    | weak        | 9                       | 11                   |                |                |

<sup>a</sup> statistical power (ns: not significant)

<sup>b</sup> power value of the Fisher exact test

Table 4 Reproductive health parameters of the women in relation to hair mercury concentrations (H-Hg,  $\mu\text{g/g}$ )

| Variable                  | Number | Median<br>H-Hg | 95% CI  | Z values or H value <sup>1</sup><br>p |
|---------------------------|--------|----------------|---------|---------------------------------------|
| Post-menopausal           | 132    | 4.2            | 2.5-6.1 | Z = 0.7                               |
| Pre-menopausal            | 132    | 4.5            | 3.5-5.5 | ns                                    |
| Pregnant <sup>2</sup>     | 17     | 3.2            | 1.3-3.8 | Z=2.4                                 |
| Not pregnant              | 115    | 5.2            | 3.9-6.2 | 0.001                                 |
| Lactating                 | 59     | 5.5            | 4.5-6.4 | Z=2.2                                 |
| Not lactating             | 72     | 3.5            | 2.8-5.2 | 0.02                                  |
| Child deaths              |        |                |         |                                       |
| 0 child deaths            | 79     | 3.5            | 2.6-4.4 | H= 9.0                                |
| 1 child death             | 33     | 5.2            | 3.5-7.8 | 0.01                                  |
| More than one child death | 50     | 5.6            | 3.7-7.9 |                                       |
| Spontaneous abortion      |        |                |         |                                       |
| 0 abortions               | 114    | 4.0            | 3.3-5.6 | H=4.2                                 |
| 1 abortion                | 30     | 4.4            | 2.7-6.1 | ns                                    |
| More than one abortion    | 19     | 8.0            | 2.9-9.6 |                                       |

<sup>1</sup>Z: Mann-Whitney U or Wilcoxon rank-sum test for difference in medians (two means comparisons).

H: Kruskal Wallis one way analysis of variance on ranks (several means comparisons)

Ns= not significant

<sup>2</sup> Comparisons made only in pre-menopausal women

Table 5. Result of logistic regression between risk of mercury contamination, socio-cultural and physical characteristics of women

| Parameter                       | Wald<br>Z-Value<br>(Beta=0) | Wald<br>Prob<br>Level | Odds<br>Ratio<br>Exp(B) | Lower<br>95%<br>CI | Upper 95%<br>CI | Regression<br>Coefficient<br>(B or Beta) |
|---------------------------------|-----------------------------|-----------------------|-------------------------|--------------------|-----------------|--|
| Intercept                       | -1.55                       | 0.12                  | 0.03                    | 0.00               | 2.64            | -3.63                                    |
| Age                             | -2.41                       | 0.02                  | 0.95                    | 0.92               | 0.99            | -0.05                                    |
| BMI                             | 2.32                        | 0.02                  | 1.18                    | 1.03               | 1.35            | 0.16                                     |
| Static balance<br>abnormalities | 2.30                        | 0.02                  | 22.46                   | 1.59               | 316.80          | 3.11                                     |
| Esse Ejjas ethnic<br>group      | 1.98                        | 0.05                  | 6.31                    | 1.01               | 39.23           | 1.84                                     |
| Paresthesia                     | 2.12                        | 0.03                  | 4.48                    | 1.12               | 17.94           | 1.50                                     |
| Fishing activity                | -3.19                       | 0.00                  | 0.18                    | 0.06               | 0.51            | -1.73                                    |
| Child death                     | 2.81                        | 0.01                  | 4.17                    | 1.54               | 11.31           | 1.43                                     |
| Daily fish<br>consumption       | 2.73                        | 0.01                  | 4.80                    | 1.56               | 14.79           | 1.57                                     |
| Blood hemoglobin                | 0.49                        | 0.63                  | 1.07                    | 0.83               | 1.37            | 0.06                                     |