Epidemiology and Infection

Environmental factors associated with childhood norovirus diarrhoea in León, Nicaragua

S. Becker-Dreps, C. C. Cuthbertson, F. Bucardo, J. Vinje, M. Paniagua, S. Giebultowicz, F. Espinoza, M. Emch

Supplementary Material

Supplemental Table S1. Characteristics of children who reported diarrhea during surveillance who had complete stool analysis data as compared to those with any missing stool analysis data (n=354)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Complete stool analysis data | Missing any stool analysis data | p-value |
|  | N=117 | N=237 |  |
|  | % or mean (SDA) | % or mean |  |
| Female | 49% | 52% | 0.52 |
| Age, months | 23 (15) | 24 (14) | 0.47 |
| Breastfed at study entryB | 77% | 74% | 0.71 |
| Maternal education |  |  |  |
| Primary or less | 19% | 21% |  |
| Secondary | 44% | 54% |  |
| Professional | 18% | 10% |  |
| University | 19% | 14% | 0.09 |
| Mother employed | 46% | 39% | 0.19 |
| Animals in household | 72% | 69% | 0.62 |
| Indoor municipal water sourceC | 98% | 95% | 0.23 |
| Indoor toiletD | 86% | 81% | 0.26 |
| Brick or cement wallsE | 91% | 83% | 0.05 |
| Non-dirt floorF | 88% | 71% | 0.0004 |
| Distance to closest dump, meters | 676 (283) | 712 (305) | 0.29 |
| Distance to closest river, meters | 654 (411) | 723 (418) | 0.14 |
| Distance to closest market, meters | 914(370) | 946 (387) | 0.45 |

ASD=Standard deviation

BFor those <12 months at study entry; n=88

COther water source includes: community municipal site, well, buy water

DOther type of toilet includes: latrine, no toilet

EOther type of walls includes: adobe, wood, palm, cardboard, plastic, metal

FTile, brick, or cement floor

Supplemental Table S2. Characteristics associated with norovirus diarrhoea episodes in sensitivity analysis

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Complete case sampleA | | | | Negative scenarioB,A | | Positive scenarioC,A |
| n=588 | | | | n=825 | | n=825 |
| IRR (95% CI) | | | | IRR (95% CI) | | IRR (95% CI) |
| **Individual** | |  | | | |  | |  |
| Female | | ref | | | | ref | | Ref |
| Male | | 1.69 (0.82,3.48) | | | | 2.09 (1.23,3.54) | | 1.05 (0.84,1.31) |
|  | |  | | | |  | |  |
| Age, months | | 0.95 (0.93,0.97) | | | | 0.96 (0.95,0.98) | | 0.97 (0.97,0.98) |
|  |  | | |  | | |
| BreastfedD | | | ref | | ref | | | Ref |
| Not breastfed | | | 0.63 (0.15, 2.62) | | 1.01 (0.37, 2.73) | | | 0.65 (0.35, 1.19) |
|  | | |  | |  | | |  |
| **Family** | | |  | |  | | |  |
| Maternal education | | |  | |  | | |  |
| Secondary | | | ref | | ref | | | Ref |
| Primary or less | | | 1.40 (0.53,3.70) | | 1.37 (0.63,2.96) | | | 0.98 (0.74,1.28) |
| Professional | | | 2.46 (0.93,6.55) | | 1.88 (0.92,3.83) | | | 0.92 (0.63,1.32) |
| University | | | 2.41 (0.97,6.02) | | 1.87 (0.97,3.63) | | | 0.82 (0.57,1.19) |
|  | | |  | |  | | |  |
| Mother employed | | | ref | | ref | | | ref |
| Mother not employed | | | 1.12 (0.54, 2.34) | | 1.05 (0.62, 1.78) | | | 1.05 (0.80, 1.36) |
|  | | |  | |  | | |  |
| **Environmental** | | |  | |  | | |  |
| No animals in home | | | ref | | ref | | | ref |
| Animals in home | | | 1.77 (0.71,4.42) | | 1.60 (0.83,3.08) | | | 1.16 (0.89,1.52) |
|  | | |  | |  | | |  |
| Indoor toilet | | | ref | | ref | | | ref |
| Other sanitationE | | | 0.39 (0.12,1.27) | | 0.28 (0.10,0.78) | | | 0.87 (0.63,1.20) |
|  | | |  | |  | | |  |
| Brick or cement walls | | | ref | | ref | | | ref |
| Other wallsF | | | 1.49 (0.55,4.08) | | 0.99 (0.42,2.34) | | | 1.43 (1.03,1.99) |
|  | | |  | |  | | |  |
| Non-dirt floorG | | | ref | | ref | | | ref |
| Dirt floor | | | 0.42 (0.14,1.31) | | 0.55 (0.26,1.16) | | | 1.37 (1.04,1.80) |
|  | | |  | |  | | |  |
| Distance to closest garbage dumpH | | | 1.20 (0.89,1.63) | | 1.22 (0.99,1.50) | | | 1.15 (1.06,1.26) |
| Distance to closest riverI | | | 1.28 (0.85,1.92) | | 1.30 (0.98,1.72) | | | 1.21 (1.08,1.36) |
| Distance to closest marketJ | | | 1.27 (0.86,1.86) | | 1.29 (0.98,1.68) | | | 1.20 (1.07,1.34) |

AEach characteristic is adjusted for age and gender, except the model with age is adjusted only for gender and the model for gender is only adjusted for age

BFor the “Negative scenario” sensitivity analysis, all diarrhea episodes with missing laboratory analysis data were assumed to be negative for norovirus

CFor the “Positive scenario” sensitivity analysis, all missing laboratory analysis data were assumed to be positive for norovirus

DBreastfed at study entry for those < 12 months; N=112 children for complete case sample and N=165 for Negative scenario and Positive scenario

EOther types of sanitation include: latrine, no toilet

FOther types of walls include: adobe, wood, palm, cardboard, plastic, metal

GTile, brick, or cement floor

HStandard deviation for distance to garbage dump is 307 meters

IStandard deviation for distance to river is 411 meters

JStandard deviation for distance to market 391 meters