



Prevalence of intestinal parasites, anaemia, malaria parasitaemia, and nutritional status among children under five years at the lamaram health post

Tine, R.; Ndour, C.T.; Ndiaye, J.L; Faye, B.; Magnussen, Pascal; Bygbjerg, Ib Christian; Gaye, O.

Publication date:
2010

Document version
Early version, also known as pre-print

Citation for published version (APA):
Tine, R., Ndour, C. T., Ndiaye, J. L., Faye, B., Magnussen, P., Bygbjerg, I. C., & Gaye, O. (2010). *Prevalence of intestinal parasites, anaemia, malaria parasitaemia, and nutritional status among children under five years at the lamaram health post*. Poster session presented at ASTMH 59th Annual Meeting, Georgia, United States.



Prevalence of Intestinal Parasites, Anaemia, Malaria Parasitaemia, and Nutritional Status among Children under five years at the Lamarame Health Post.

R. TINE¹, C.T. NDOUR¹, J.L. NDIAYE¹, B. FAYE¹, P. MAGNUSSEN², I.C. Bygbjerg³, O.GAYE¹
¹ Université Cheikh Anta DIOP de Dakar, Faculté de Médecine, Service de Parasitologie Dakar, Sénégal ²DBL-Institute for Health Research and Development Copenhagen Denmark ³ Centre for Medical Parasitology Copenhagen Denmark

Introduction

A cross sectional study was undertaken in January 2010 at the Lamarame health post (in Senegal) as part of a baseline assessment of an operational research aiming to identify appropriate mechanism for an integrated community-based malaria control strategy, including effective case management using rapid diagnostic test, ACTs and prevention through IPTc by community health workers.

Objectives

- To assess the prevalence of malaria parasitaemia, intestinal parasites (IP), anaemia and malnutrition among children <5 years;
- To explore the relationship between malaria, anaemia, intestinal parasite and malnutrition.

Methods

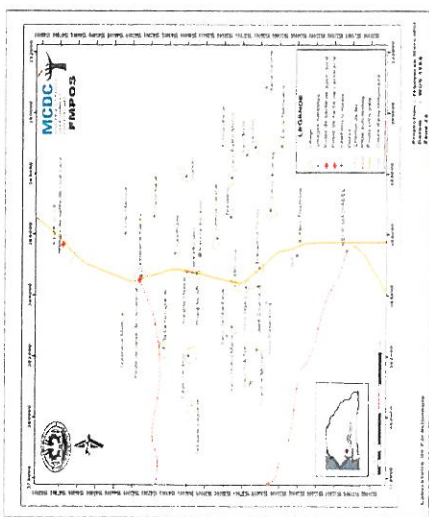
A cross sectional household survey was done using a two level random cluster sampling technique with a total of 30 clusters randomly selected based on probability proportional to population size in the villages. Each eligible child was examined by a physician prior to a biological assessment which included blood and stool samples. Children were weighed using Seca scales. Weight- for -age Z-score was used to denote underweight while height for age Z score was used as an indicator of stunting. The Z-scores were calculated based on the median values of the National Centre for Health Statistics (NCHS) reference population, United States. The study was approved by the Senegalese national ethical committee.

Conclusion

Anemia and malnutrition are frequent in the area of Lamarame, as well as intestinal parasitic infections with a higher prevalence of *Giardia intestinalis*. Mass administration of albendazole which may eliminate both protozoan and helminths, could be considered in this locality, in order to reduce the occurrence of protozoan infections which have been neglected by several health programmes.

Acknowledgment

This study was supported by the Malaria Capacity Development Consortium (MCDC). Thanks are also for the children for their participation and cooperation in this study.



Results

Malaria parasitaemia was 1.5%, moderate and severe anaemia represented 53.4% and 12.5% respectively; 26.2% of children were found with at least one intestinal parasite. Stunting and underweight

Table 1: Prevalence of malaria, anaemia, intestinal parasites and undernutrition among children under 5 years at Lamarame health post. (n=736)

| Variables | Number | Percentage | CI95% |
|---------------------------------------|--------|------------|---------------|
| Malaria parasite | | | |
| Yes | 11 | 1.5 | [0.7 - 2.6] |
| No | 721 | 98 | [90.9 - 100] |
| Missing | 4 | 0.5 | [0.1 - 1.4] |
| Anaemia | | | |
| Mild/moderate/severe | 736 | 10.1 ± 1.9 | |
| Moderate anaemia (Hb<6) | 393 | 53.4 | [48.2 - 58.9] |
| Severe Anaemia (Hb<5) | 92 | 12.5 | [10 - 15.3] |
| Intestinal parasite prevalence | | | |
| Children with at least one parasite | 193 | 26.2 | [22.6 - 30.2] |
| Parasitic species | | | |
| <i>Giardia intestinalis</i> | 115 | 15.6 | [12.9 - 18.7] |
| <i>Strongyloides col</i> | 80 | 10.9 | [8.6 - 13.5] |
| <i>Spirondepsis saeva</i> | 14 | 1.9 | [1 - 3.2] |
| <i>Acanthamoeba</i> | 3 | 0.4 | [0.08 - 1.2] |
| <i>Spirondepsis vermicularis</i> | 3 | 0.4 | [0.08 - 1.2] |
| <i>Platyhelminthes</i> | 1 | 0.1 | [0.003 - 0.7] |
| Undernutrition | | | |
| Stunting (HAZ < -2SD) | 161 | 22 | [18.6 - 25.5] |
| Underweight (WAZ < -2SD) | 120 | 16.3 | [13.5 - 19.5] |

Anaemia (Hb < 11g/dl) was significantly associated with age range from 12 to 23 months, malaria parasite, birth order higher than 3 and residence zone.

Table 2: Factors associated with anaemia among children under five at Lamarame health post

| Variables | Number (%) | Anaemia (Hb<11g/dl) | aOR* (95% CI) | p value |
|--|------------|---------------------|----------------|---------|
| Age (months) | | | | |
| < 12 | 19 (4.2) | 1 | | |
| 12 - 23 | 199 (63.3) | 4 | 4.0 [1.8-8.6] | 0.000 |
| 24 - 35 | 106 (34.9) | 1 | 1.2 [0.2-6.1] | 0.84 |
| 36 - 47 | 83 (60.6) | 1 | 1.2 [0.2-6.1] | 0.84 |
| 48 - 60 | 54 (44.6) | 0 | 0.6 [0.3-1.4] | 0.31 |
| Gender | | | | |
| Male | 264 (67.2) | 1 | | |
| Female | 227 (66.2) | 0 | 0.8 [0.6-1.2] | 0.37 |
| Birth order | | | | |
| 1-3 | 254 (64.6) | 1 | | |
| 4-5 | 235 (69.1) | 1 | 1.8 [1.1-3.5] | 0.04 |
| Number of children within household | | | | |
| 1-3 | 213 (68.9) | 1 | | |
| 4-5 | 137 (69.8) | 0 | 0.5 [0.3-0.8] | 0.01 |
| 6-9 | 137 (69.8) | 0 | 0.4 [0.2-0.8] | 0.14 |
| Malaria parasite | | | | |
| No | 479 (66.4) | 1 | | |
| Yes | 10 (6.9) | 6 | 6.3 [1.5-33.5] | 0.05 |
| Intestinal parasite | | | | |
| No | 369 (63.7) | 1 | | |
| Yes | 49 (6.1) | 0 | 0.0 [0.1-1.9] | 0.66 |
| <i>Giardia intestinalis</i> | 49 (6.1) | 2 | 2.0 [0.5-7.3] | 0.38 |
| <i>Strongyloides col</i> | 10 (1.4) | 0 | 0.3 [0.02-2.7] | 0.27 |
| <i>Spirondepsis saeva</i> | 1 (0.3) | 0 | | |
| <i>Acanthamoeba</i> | 1 (0.3) | 0 | | |
| <i>Spirondepsis vermicularis</i> | 1 (0.3) | 0 | | |
| Residence zone | | | | |
| Health post | 55 (7.7) | 1 | | |
| Other village | 44 | 2 | 2.4 [1.3-3.8] | 0.000 |

*Adjusted OR - Reference: Lamarame Health Post (aOR) = 1.0

Table 3: Factors associated with stunting a more children under five years at Lamarame health post

| Variables | Number (%) | Stunting (HAZ) | aOR* (95% CI) | p value |
|--|------------|----------------|------------------|---------|
| Age (months) | | | | |
| < 12 | 1 (2.4) | 1 | | |
| 12 - 23 | 64 (26.8) | 7 | 7.4 [1.1-57.3] | 0.05 |
| 24 - 35 | 49 (34.9) | 5 | 7.5 [1.1-58.1] | 0.05 |
| 36 - 47 | 29 (21.1) | 6 | 6.6 [0.8 - 52.3] | 0.07 |
| 48 - 60 | 18 (14.9) | 5 | 5 [0.6 - 4.1] | 0.13 |
| Gender | | | | |
| Male | 88 (22.4) | 1 | | |
| Female | 73 (21.3) | 0 | 0.9 [0.6 - 1.4] | 0.82 |
| Birth order | | | | |
| 1-3 | 82 (20.8) | 1 | | |
| 4-5 | 79 (23.2) | 2 | 2.9 [1.3 - 6.6] | 0.01 |
| Number of children within household | | | | |
| 1-3 | 73 (24.3) | 1 | | |
| 4-5 | 45 (19.9) | 0 | 0.4 [0.2 - 0.8] | 0.01 |
| 6-9 | 42 (20.8) | 0 | 0.3 [0.1 - 0.7] | 0.01 |
| Malaria parasite | | | | |
| No | 157 (21.8) | 1 | | |
| Yes | 3 (27.3) | 0 | 1.2 [0.3 - 5] | 0.75 |
| Intestinal parasite | | | | |
| No | 125 (22.9) | 1 | | |
| Yes | 17 (18.3) | 0 | 0.9 [0.7 - 1.6] | 0.73 |
| <i>Giardia intestinalis</i> | 17 (18.3) | 1 | 1.3 [0.7 - 2.1] | 0.35 |
| <i>Strongyloides col</i> | 3 (3.1) | 0 | 1.3 [0.3 - 5.4] | 0.69 |
| <i>Spirondepsis saeva</i> | 0 | | | |
| <i>Spirondepsis vermicularis</i> | 0 | | | |
| <i>Acanthamoeba</i> | 0 | | | |
| <i>Spirondepsis vermicularis</i> | 0 | | | |
| Residence zone | | | | |
| Health post | 7 (6) | 1 | | |
| Other village | 154 (34.8) | 3 | 3.6 [1.6 - 8.1] | 0.003 |
| Anaemia | | | | |
| No | 29 (11.8) | 1 | | |
| Moderate anaemia (Hb<11g/dl) | 93 (23.6) | 1 | 1.7 [1.1 - 2.8] | 0.02 |
| Severe anaemia (Hb<5g/dl) | 39 (39.8) | 3 | 3.5 [1.9 - 6.4] | 0.000 |

*Adjusted OR - Reference: Lamarame Health Post (aOR) = 1.0



Supplement to

THE AMERICAN JOURNAL OF
***Tropical Medicine
and Hygiene***

Official Journal of the American Society of Tropical Medicine and Hygiene

Volume 83

November 2010

Number 5 Supplement

Abstract Book

American Society of Tropical Medicine and Hygiene
59th Annual Meeting



November 3–7, 2010

Atlanta Marriott Marquis

Hilton Atlanta

Atlanta, Georgia, USA

Supplement to

The American Journal of
Tropical Medicine and Hygiene