Environmental Factors of Diarrhoea-related Diseases in the Nyong River Plateau of Akonolinga, Cameroon

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INTRODUCTION

- The One health is a multidisciplinary and integrated approach that aims to sustainably balance and optimize health of people, animals and ecosystems.
- Pathogen development and transmissions occur through climatic conditions, water pollution, agriculture, hygiene and organic matter decomposition.
- Human interference with animals and ecosystems can cause numerous infections creating hotspot for health outbreaks.
- This is peculiar to the Nyong et Mfoumou Division which is characterized by a hot and humid climate with agriculture and fishing as principal economic activities.
- These activities take place along the Nyong River which the population use for drinking, cooking and laundry.
- Prevalence estimates are needed for appropriate resource allocation and to plan control strategies.
- In many countries, such as Cameroon, health systems face difficulties in the proper collection and reporting of water-borne and water-related diseases.
- The main purpose of this study was to investigate on diarrhoea-related diseases affecting the population.

OBJECTIVE

- Investigate the Socioeconomic of environmental factors causing diarrhoea-related diseases.

METHODS AND MATERIALS

- The study was conducted in Akonolinga which is a health district, located 100 km East of Yaounde. It was choosen because of its proximity to the Nyong River.
- Its main dry season takes place from mid-December to mid-March and its main rainy season occurs during the August to November period.
- The survey was conducted during the period of the 13th to 22nd November and the inclusion criteria consisted of the presence of a water collection point together with localities that were less than 10 to 15 km to the main roads.
- A total of 134 households and 122 water points were sampled from 6 villages and 3 hamlets.
- A structured questionnaire of 32 questions developed with Kobokollect (based on WHO/UNICEF Joint Monitoring) was used and water samples were collected using Aquagenx field test kits and the participants were residents identified as the head of household or spouse of the head of the household.
- This survey was based on a priori hypothesis of biologically or socioeconomically plausible risk or protective associations and data on number of consultations were collected at Akonolinga Hospital.
- The considered demographic factors in the models were age and gender of head of household, educational level attained by head of household (primary or under, secondary, and tertiary), household size, average household budget over the year, and a household having any child <5 years old (yes vs. no).
- For WASH practice we considered the main source of drinking water, alternative water source, time taken to fetch water, type of toilet, share of latrine with other households, self-reported handwashing with soap (yes vs. no).
- To examine factors associated with the outcome variables, two multivariate logistic regressions were performed individually for two variable blocks which estimated the effect of socio-economic and WASH/behavioural factors due to the dichotomous nature of the dependent variable.
- Variables which were significant at p-value 0.05 level and 95% CI were considered to be determinant factors of diarrhoea.
- Below is an illustration on how the water supply points were sampled.

Figure 1: Illustration of the sampling of water supply points.

RESULTS

- We successfully interviewed 134 respondents of which 50% were male and 50% were female farmers.

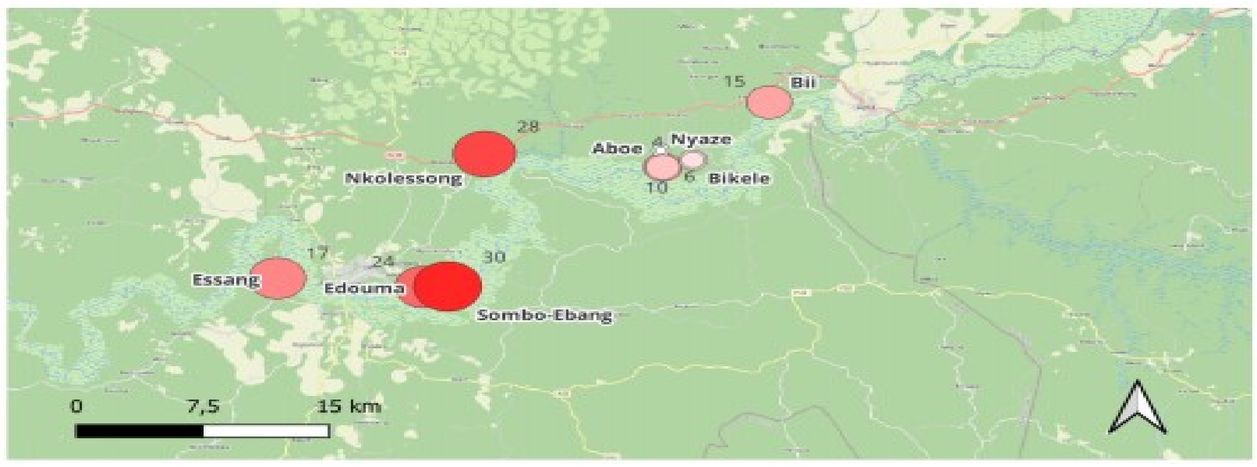

Figure 2: Number of households enrolled by village.

- The major economic activities were Agriculture and Fishing. Approximately 63% of the sample were farmers and 6% were fishermen.
- For the level of sanitation, 98% of the respondents had an unimproved service level of sanitation and 74% had a hand washing facility with soap and water.
- About 49% of the overall households used basic drinking water facilities.
- This can be seen in the figure below.

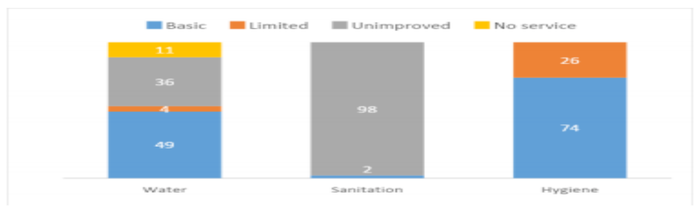

Figure 3: Level of household's access to water, sanitation and hygiene (WASH) services.

- For diarrhoea, 42% had at least one household member who witnessed symptoms.

Figure 4: Proportion of episodes of diarrhoea for at least one member of the family in the last month by village.

- The environmental risk factors associated with these symptoms were farming, fishing, family size of 5 to 10 people and availability of drinking water.
- Of all the water samples collected, 77% contained Coliforms.
- The figure below shows the percentage of coliforms per village. Bars in blue represent positive in coliforms while bars in orange represent negative in coliforms.

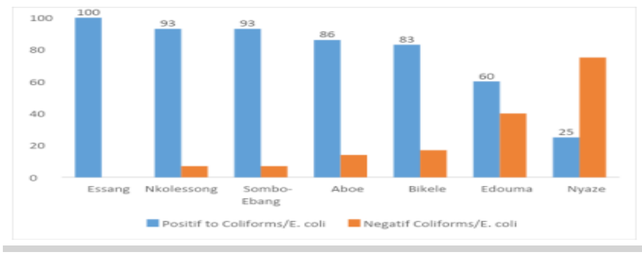

Figure 5: Coliforms and E.coli detection rates of water stored samples per villages.

CONCLUSIONS

- It is therefore imperative to improve economic conditions of the studied population.
- Behavioural patterns of water usage and portability exposing households should be tackled correctly using community inclusion techniques like Participatory Rural Appraisal (PRA).
- With local community engagement, the provision of medical infrastructures, extension services and the diversification of revenue streams through the implementation of development projects will better the quality of life, promote healthy, safe communities and environments.

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