

# Modeling the burden of gastroenteritis among hospitalized children under-five years of age in Ghana

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## Background

In Ghana, previous studies showing the reduction of gastroenteritis disease burden after the introduction of the Rotavirus vaccine were mainly hospital-specific with no national estimates.

The District Health Information Management System (DHIMS) database of the Ghana Health Service is the country's database on health delivery. We estimated the national burden of gastroenteritis among hospitalized children <5 years using DHIMS data.

## Method

We conducted secondary data analysis using routine administrative inpatient health data. Fourteen variables were extracted from DHIMS II database for 2012-2017. Data cleaning and analysis was in STATA12.

A multivariable Poisson Regression model was used to determine the explanatory variables associated with the number of patients hospitalized for gastroenteritis. The model included year, region, sex and child's age. All variables were categorical.

## Results

Out of 2,915,936 records extracted, total gastroenteritis cases were 172,965 (5.9%), of which 55,601 (32.1%) were children under the age of five. The majority were aged 1 year (35,239; 63.2%) and male (31,310; 56.3%). The median duration of admission was 2 days (25th and 75th percentiles: 2 and 3).

The regression model showed that gastroenteritis admissions in 2013 (RR:1.97; 95%CI:1.93,2.00; P<0.001) doubled compared to 2012. It decreased in 2014 and was similar in 2015 (RR:1.11; 95%CI:1.11,1.34; P<0.001). It however increased in 2016 (RR:1.22; 95%CI:1.21,1.24; P<0.001) and 2017 (RR:1.35; 95%CI:1.33,1.37; P<0.001).

The estimated relative rate of admission of children aged 3 years was 1.48 times greater than of children aged 1 year (95%CI:1.45,1.51; P<0.001). The estimated relative rate of admission of female patients is 0.8 times lower than of male patients (95%CI:0.79,0.80; P<0.001).

## Conclusion

This analysis shows an increase in the gastroenteritis burden among hospitalized under-five children but predominant among 3year olds.

We conclude that the DHIMS II database is resourceful for national estimates of disease burden.