

Burden & differential features of cholera & non-cholera watery diarrhea among under-5 children: a case-control study in Bangladesh

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Background, Rationale and Objective

- Liquid or watery diarrhea (WD), either cholera or not is a universal health problem among infants & young children including Bangladesh.
- Data on epidemiology & differential features of cholera & non-cholera WD are limited & this information is helpful in proper management of WD to avoid &/or control the unethical use of antibiotic (that is indicated in cholera if there is significant WD & dehydration).
- This study aimed to assess the case load of cholera & non-cholera WD & what are the differential features between them.

Study Method

- This **study** was carried out using the data collected between 1996-2014 in a hospital-based Diarrhoeal-Disease-Surveillance-System (DDSS) in the 'Dhaka Hospital' of the International Centre for Diarrhoeal Disease Research, Bangladesh (**icddr,b**).
- The DDSS enrolls a **2% systematic sample**, regardless of age, sex, & diarrhoea severity.
- The DDSS of icddr,b has been **approved by IRB** of icddr,b.
- The data included information on socio-demographic factors, environmental history, clinical characteristics, nutritional status, & diarrhoea pathogens.

Results

- **Total 21,626 U-5 children were studied**
- Of them **20936 (96.8%)** children were admitted with features of WD (& their rectal swab/stool culture report were shigella negative), & their **data were analyzed.**
- **Mean±SD age: 14.8±11.6 months**
- **40.3% were girl**
- **2264 (10.8%)** children had **cholera** &
- **18672 (89.2%)** had non-cholera WD.



Logistic regression analysis

| | Sig | OR | 95% C.I. of ORs Lower - Upper | |
|--|-------|------|----------------------------------|------|
| Age > 12 months | 0.000 | 3.23 | 2.10 | 4.97 |
| Stool frequency > 10 during last 24 hrs | 0.001 | 1.98 | 1.33 | 2.93 |
| No abdominal pain | 0.011 | 0.57 | 0.37 | 0.88 |
| Some or severe dehydration | 0.000 | 3.39 | 2.26 | 5.08 |
| Predominant breast feeding up to 6 months (among > 6 months group) | 0.003 | 0.43 | 0.25 | 0.75 |
| In warmer months (April-September) | 0.039 | 1.53 | 1.02 | 2.29 |
| Illiterate mother | 0.060 | 1.57 | 0.98 | 2.52 |
| Mother works out of home | 0.016 | 1.85 | 1.12 | 3.04 |
| Constant | 0.000 | 0.02 | - | - |

Other non-significant variables in logistic regression model

- Liquid stool without mucous or blood in stool
- Fever on admission
- Wasting (WHZ <-2)
- Stunting (HAZ <-2)
- Family member had diarrhea within last 7 days
- Received antibiotic before hospital reporting
- No treatment of drinking water
- Illiterate parents
- Slum residence
- Not receiving vitamin A supplementation in last 6 mo (among 13-60 mo group)
- Used non-sanitary latrine
- History of diarrhea in last 30 days &
- History of cough or fever in last 30 days.

Summary

Associated or risk factors of cholera

- Age >12 months
- Stool frequency >10 per 24 hours
- Some or severe dehydration
- Warmer month (April-September) &
- Working mothers

Protective factors of cholera

- Absence of abdominal pain &
 - Predominant breast feeding during first six months of life were found
-
- Relatively more children with cholera needed:
 - Inpatient admission &
 - Intravenous fluid
 - Fatality rate was very low in both group:
 - 0% in cholera &
 - 0.1 % in non-cholera children



Summary

- ~ 11 % of all watery diarrhoeal cases in U-5 children are cholera and the rest (most common cause) 89% of diarrheal illness non-cholera WD.
- The above mentioned associated or risk factors in under-5 children would help to differentiate non-cholera WD (who does not need any antibiotic) from cholera
- That would help in reducing the rampant use of antibiotic & appropriate management of diarrhoeal illness in U-5 children.



Leaving the hospital, next day

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