Burden of prolonged diarrhea and its risk/associated factors among under-five children: a case-control study in Bangladesh

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Background

Prolonged episodes (ProD, duration 7–13 days) of acute diarrhea are common problem in the hospitalized children in Bangladesh. The epidemiology & risk or associated factor of ProD is not clearly known.

Methods

An analysis was carried out on data collected between 1996-2014 in a hospital-based Diarrhoeal-Disease-Surveillance-System (DDSS) in the Dhaka-Hospital of icddr,b. The DDSS enrolls a 2% systematic sample, regardless of age, sex, and diarrhea severity. The data included information on socio-demographic factors, environmental history, clinical characteristics, immunization status, feeding practices, and diarrhea pathogens.

Results

Relevant information of 21,566 children aged <5-years were available who admitted with ≤ 13 days duration of diarrhea & they comprised the study sample. Of them, 1,645 children admitted with ProD & considered as cases. The rest 19292 children, were admitted with < 7 days duration of diarrhea (acute diarrhea; AD), & they were considered as controls. In the ProD cases & AD controls the mean $\pm$ SD age was 12.6 ± 9.5 vs. 15.1 ± 11.8 months ($p < 0.001$), weight-for-height z-score (WHZ) was -1.36 ± 1.40 vs. -1.11 ± 1.39 ($p < 0.001$), height-for age z-score was -1.62 ± 1.43 vs. -1.43 ± 1.45 ($p < 0.001$), & case fatality rate was 0.3% ($n=5$) vs. 0.1% ($n=22$) ($p < 0.001$) respectively. Backward logistic regression analysis revealed that mucoid &/or bloody stool, admission with abdominal pain, suffering from diarrhea within last one mo, not receiving DPT & Polio vaccines, monthly family income < 10,000 BDT (1 US \$ = 70 BDT, average during the study period), & wasting (WHZ < -2) were the associated/ risk factors of ProD. Compared the AD, children with ProD less often had >10 stool frequency/24 hours. Case fatality rate was a bit higher in ProD than AD (0.5 vs. 0.1 respectively. $p=0.001$).

Table risk or associated factors of prolonged diarrhea by backward logistic regression analysis

	Adjusted Odds ratio	p value
Mucoid or/and bloody stool	2.329	<0.001
Abdominal pain	1.352	0.004
Had diarrhea in last one month	1.652	0.001
Did not receive DPT and Polio vaccines	1.817	0.009
Monthly family income < 10,000 BDT (1 US \$ = 70 BDT, average during the study period)	1.350	0.015
Weight for height z-score < -2	1.434	<0.001
Dehydration on admission	0.697	0.001
>10 stool/24 on admission	0.730	0.002
Measles within last three months (among > 1 yr old children)	1.406	0.080
Constant	0.035	<0.001

Figure 1. % of children required inpatient admission

Figure 2. % of children with ProD & AD required hospital stay for >3 days

Conclusions

The above mentioned associated or risk factors of ProD in under-five children would help to differentiate prolonged diarrhea from acute diarrhea who usually does need better care.

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