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Prescription Patterns in Management of Acute Watery Diarrhea among Under-5 Children in the First Visit In a Tertiary Care Hospital

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Abstract: *Diarrhea is still a major killer disease in under-5 children and responsible for 13% of all under-5 deaths in India. ORS and zinc has been recognized to be the mainstay of the treatment of acute watery diarrhea, whereas antibiotics are reserved for only specific cases only. Often prescriptions with unnecessary medications increase both the cost of therapy and side-effects. The present study was attempted to analyze the prescription patterns among admitted under five children for a year in a tertiary care setting. The bed head tickets of all children under 5 years of age with a diagnosis of acute gastroenteritis were collected and demographic, clinicalparameters, treatment outcome including prescription pattern was noted. The data was analyzed using MS Excel software. A total of 792 under five children were diagnosed with acute gastroenteritis, out of which 84 childrenhad dysentery. Zinc was given to 94% (744)children and all received ORS. Explicit dietary advice was received by 12% patients. Antibiotics were prescribed to 86% under-5 children. Ceftriaxone-amikacin combinationwas most prevalent(12%) among parenteral antibiotics, while fluroquinolones among oral ones (18.2%). ORS and Zinc were used in almost all the cases, explicit dietary advice was not given in most of the cases. Despite universal use of probiotics, a gap was found in adopting rational practice of antibiotic use. In future, well organized studies may bridge these gaps.*

Key Words: *Acute watery diarrhea, antibiotic, rational use, current trend*

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I. Introduction & Literature Review:

It has not been without going through much pain stricken hard-work that we have reached a significant decline in under-5 childhood mortality from a staggering 119.2 per thousand in the 90' to 49 per thousand under 5 children in 2013. (1) This is achieved by working in the areas like vaccines for preventable disease, effective case management of under 5 children suffering from major killer diseases like Acute Diarrhea and Pneumonia, efforts in improving sanitation and safe drinking water supply, etc. However, the last leg of the journey has been proving to be progressively difficult and to reach the millennium development goal appears an exceedingly uphill task. Despite ongoing efforts, to improve purified water, increase immunization coverage and further improving case management of acute diarrhea and pneumonia still requires constant attention. Diarrhea alone in under -5 children are responsible for 13% of all under-5 deaths in India. (2) And despite ongoing training of the health care workers at all levels, use of ORS for treatment of diarrhea has remained at a meagre 39% in India as per UNICEF data. (3) On the contrary, it has become a standard practice to use antibiotics in almost every case of diarrhea in children. Although, several national and international studies have revealed the most common pathogen involved in these age-group to be viruses like Rotavirus (48 %), Adenovirus(around 12%), Astrovirus, Calcivirus, Norwalkvirus, etc. Around 30% cases of acute diarrhea and dysentery are caused by Bacterial pathogens. Amoeba like entamoeba is responsible for only a tiny number of cases of gastro-intestinal infections. So this indiscriminate use of antibiotics to treat under-5 diarrhea may be due to lack of adopting proper rational practice, despite accesses to proper knowledge.(4)Our present study is intended to detect the current prescribing pattern among under-5 children with diarrhea in a tertiary care setting.

II. Materials And Methods:

A descriptive, secondary data based epidemiological study was carried out for 12 months from January 2015 to December 2015. The study was done by analyzing the bed head tickets (BHT) from the medical records department of the concerned hospital. The hospital is a tertiary level setting and gets financial assistance from

the state government. Therefore, the set up had attracted patients from nearby sub urban areas and referral from primary and secondary health care settings including private clinics.The bed head tickets of all under 5 children admitted in the diarrhea treatment and Training Unit (DTTU) under Department of Pediatrics at College of Medicine & JNM Hospital, Kalyani was collected from the Hospital Record section, with written permission from the Medical Superintendent of the institution. A pre designed proforma was made by the investigators for collection of data. Content validity of the proforma was done with suggestions from two esteemed health-care professionals, one senior pediatrician and one pharmacologist. The form was finalized after incorporating their suggestions. The relevant data were recorded by a thorough review of BHTs. High confidentiality of data was maintained. The bed head tickets with a discharge diagnosis with acute gastroenteritis were collected. The BHTs of all children under 5 years of age were segregated. Each of the bed head tickets are noted carefully and, the age of the child, diagnosis (dysentery, acute watery diarrhea, etc.), presence of dehydration, use of medications including Zinc, ORS, IV fluids, antibiotics-if any, were noted. A written advice for diet of the child, such as continuing breast feed in breast feed children under the age of 2 years, continuing normal feeding with added calories such as oils were given explicitly in the BHT's or not was noted. Treatment outcome for each of the cases were also recorded in the data collection proforma.The recorded data was analyzed using Microsoft Office Excel spreadsheets and tabulations. The following operational definitions were used in the study. 1. Acute watery diarrhea: passage of three or more loose stools per day or a sudden consistency of stool. 2. Dysentery:infection of the intestines resulting in severe diarrhea with the presence of blood and mucus in the feces.

III. Results:

A total of 1044 children were admitted to the Diarrhea ward during the study period (Jan- Dec' 2015) as evident from the hospital record section. A total of 1044 patients were admitted in the said ward with symptoms of acute diarrhea, among them 792 children were under 5 years of age (75% of total acute diarrhea admission) and 84 children had dysentery. The male children were more commonly affected than female (475 vs. 315).No deaths were reported due to diarrhea during this period whereas 12 children left against medical advice and 2 children absconded. Data analysis revealed that, 94% of under 5 children (744 out of 790, as data from 2 BHTs could not be retrieved) were treated with zinc and all the patients received ORS. Explicit dietary advice however was given only in 12% of the children (96, out of 790 patients).Out of 790 children, 684 (86%) children with acute diarrhea received antibiotics in the first visit to hospital. The antibiotics used for these patients varied widely and were used often in combinations. Injectable antibiotics comprised of inj ceftriaxone &injAmikacin (12%, 96 out of 790) with or without inj metronidazole (24 cases), injcefotaxime and inj amikacin (12 cases) and injAmikacin (12 cases). Fluro-quinolones (Ofloxacin, Norfloxacin) were also used with antiamoebics (Ornidazole or Tinidazole) or as a single agent in 144 cases (18.2%). Nearly half of the patients received cotrimoxazole (54.6%, 432 of 790 patients). A few patients were also treated with cefixime (4.5%, 36 out of 790) and Colistin (3%, 24 out of 790). Rest of the patients was given other antibiotics like rifaximine, metronidazole etc.

Table.1.1. Distribution of children according to diagnosis (N=1044)

Diagnosis	Frequency(%)
Acute watery diarrhea	960 (92.0)
Dysentery	84 (8.0)

Table.1.2. Children in different age groups with acute watery diarrhea (n=960)

Age groups	Frequency (%)
Under 5 children	792 (82.0)
>5 yrs to 12 yrs	168 (18.0)

Table.1.3. Distribution of under 5 children according to treatment (n=790)*

Treatment pattern	Received (n, %)	Not received (n, %)
ORS	790,100.0	0,0.0
Zinc	744, 94.2	46, 5.8

***(data could not be retrieved from 2 BHTs)**

Table.1.4. Explicit dietary advice (n=790)

Explicit dietary advice	Frequency (%)
Given	96 (12.2)
Not given	694 (87.8)

Fig. 1.1. Probiotics use among under 5 children with acute watery diarrhea (n=790)

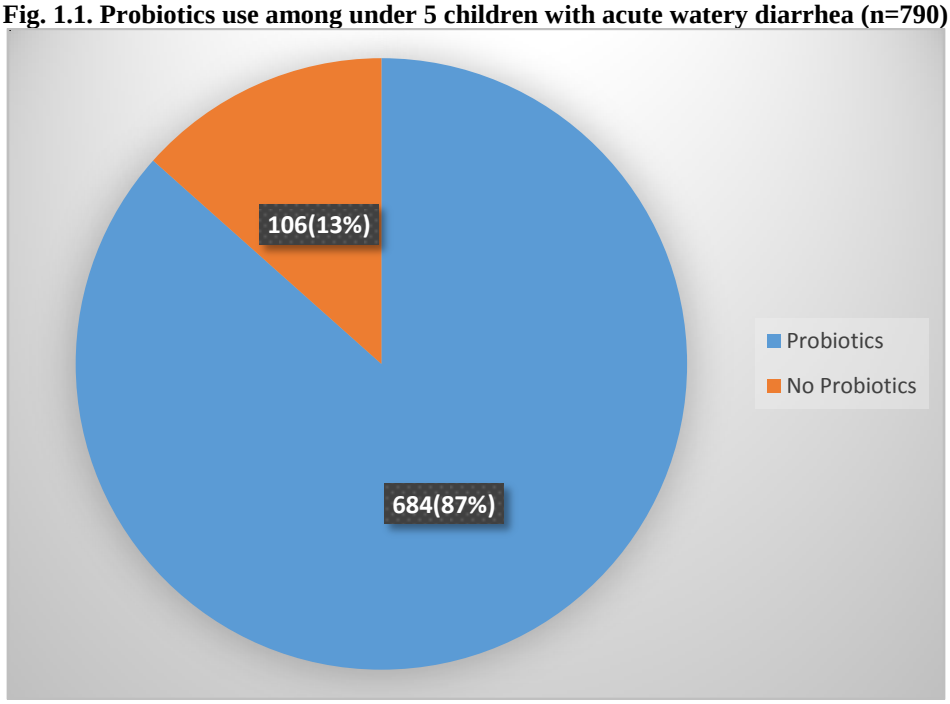

Table.1.5. Antibiotics use (n=790)

Antibiotics	Frequency (%)
Received	684 (87.0)
Not received	106 (13.0)

Table.1.6. Prescription pattern in using antibiotics (n=684)*

Prescription pattern of antibiotics	Frequency
Inj Ceftriaxone +injamikacin	96
Inj ceftriaxone +injAmikacin+injMeronidazole	24
InjCefotaxime	12
InjAmikacin	12
Ofloxacin+Ornidazole	84
Norfloxacin+Tinidazole	24
Cefixime	36
Cotrimoxazole	432
Colistin	24
Others	10

***n overlaps**

IV. Discussion:

There have been widely accepted recommendations for using antibiotics in under 5 children with acute diarrhea. A child with diarrhea is prescribed antibiotics in such a cases as *i)* where the children has dysentery, i.e. passage of blood mixed stool *ii)* in infants <3 months of age, presuming sepsis, iii*)* in children with severe malnutrition(grade iii & grade iv), presuming sepsis iv*)* in children with Cholera (i.e., h/o contact, acute rice watery stool, profuse effortless vomiting with very rapid onset of dehydration and if lab facility available hanging drop preparation showing darting motility) and v*)* in cases of Parenteral diarrhea (Diarrhea due to coexisting infection in distant foci like middle ear or pneumonia, etc). The effective management of Diarrhea cases both in home and hospital settings have been in the focus of the investigators for long. One study from the state of Jammu and Kashmnir in 2006 showed a much lower rate of ORS use in hospital setting (24.4 and 8.4% respectively), for past and current episodes, respectively. The rate of antibiotic use was however shown to be high (77.9%) in that study [(5)].There have been more or less comparable results shown in studies across the developing nations of the worlds. One study from Egypt, by Gilany AH et al. in 2005, showed, in diarrheal episode, only a quarter (25%) had received ORS, whereas, 75% have received antibiotics.[(6)]Zodpey et al. form

Nagpur, (1998) conducted a case control study on risk factorsfor dehydration and showed, a significant number of children was not given ORS during diarrheal episodes, and it was a significant risk factor for development of dehydration in these cases. [(7)]In this present study, it was seen that, almost all the children with acute watery diarrhea in under 5 children were treated with ORS and Zinc. However, explicit dietary advice was not given in the majority of cases, despite the fact that, proper diet with increased calorie density and small frequent aliquots (by adding oil, sugar etc) during an episode of acute diarrhea is very important for rapid recovery and prevention of malnutrition. It is also noted that, antibiotics in varied combinations were administered in the large majority of cases and often with no valid recommendations. It is also noteworthy that, despite no consensus regarding use of probiotics in acute diarrhea in children the large majority of children (86%), received probiotics in varied forms and formulations.

V. Conclusions:

It can be concluded that, there may have been lacunae in certain areas in treatment of acute diarrhea in under 5 children. Although, ORS and Zinc were used in almost all the cases, explicit dietary advice was not given in most of the cases. There has been a gap in adopting rational practice of anti-biotic use, despite availability of accessible literature. There also appears to be a universal use of probiotics, despite any consensus about its effectiveness and amounting to significant economic burden imparted in treatment of acute diarrhea cases in children. To change the scenario, it is very urgently required to detect the areas of gaps in Knowledge attitude and practice in treating acute childhood diarrhea in this age group. Several large well organized studies are necessary for this purpose and urgent necessary steps are required to bridge these gaps.

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