Research Paper Medical Science

Indicators of Management of Diarrhoea among Under-fives in Rural Field Practice Areas

* Dr Arshiya Masood ** Prof Zulfia Khan *** Dr Iqbal M Khan **** Dr M Salman Shah

* Assistant Professor, Department of Community Medicine, Government Medical College, Kannauj, UP

** Professor & Head, Deptt of Community Medicine, JN Medical College, AMU Aligarh (UP)

*** Associate Professor, Deptt of Community Medicine, JN Medical College, AMU Aligarh (UP)

**** Assistant Professor, Deptt of Community Medicine, JN Medical College, AMU Aligarh (UP)

ABSTRACT

Diarrhoea is the second leading killer of under-fives. Most common cause of death is dehydration. WHO-UNICEF has suggested a seven point plan to prevent most of the deaths. The plan has two packages 1. Treatment package which includes rehydration therapy with ORS or other fluids and use of zinc tablet to reduce duration and severity of diarrhoea. 2. Prevention package consists of immunization (measles and rotavirus), exclusive breast feeding, vitamin A prophylaxis, safe water, sanitation and hygienic practices. This study was carried out in the field practice areas of RHTC of the Department of Community Medicine, JN Medical College, Aligarh with the aims and objectives 1.To estimate the prevalence of correct treatment of diarrhoeal diseases using WHO-UNICEF plan.2.To estimate prevalence of preventive methods for diarrhoea. 3. To provide suggestive measures if required. This was a cross sectional study. We included 400 under-fives children by random sampling. Mothers of children with were interviewed using a pre-designed, pretested questionnaire.. Statistical analysis used was Percentages We found that use of ORS and zinc was around 50 per cent and 9 per cent respectively. Only around 38 per cent of children were given more fluid and continued feeding. Exclusive breast feeding was around 5 per cent. 71.36 per cent children received measles vaccine. Vitamin A prophylaxis was dismal. Conditions of hygiene, safe water and sanitation were not satisfactory. It was concluded that only around 9 per cent of children have taken treatment as recommended by WHO-UNICEF plan. A community based approach aimed at changing behaviour by informing, communicating and empowering people can circumvent the problem.

Keywords : Diarrhoea, Indicators, Under-fives

Introduction:

Diarrhoea, a preventable cause of illness and deaths, is the second leading cause of deaths accounting for 16 per cent[1] of all deaths among children under five globally. With the introduction of oral rehydration therapy in 1970s, the mortality from diarrhoea has declined over the past few decades from an estimated five million deaths among under-fives to 1.5 million deaths in 2004[2].

Diarrhoea is still a major burden of disease in developing countries. Today only 39 per cent children with diarrhoea in developing countries receive recommended treatment3. UNICEF-WHO has recommended a seven point plan[3] for comprehensive diarrhoea control. It consists of two packages, a treatment and a prevention package. Treatment package comprises 1. Fluid replacement to prevent dehydration 2. Zinc treatment. Prevention package includes 1. Rotavirus and measles vaccination 2. Promotion of early and exclusive breast feeding and vitamin A supplementation 3. Promotion of hand washing with soap 4. Improved water supply, quantity and quality including safe storage and handling 5. Community wide sanitation programme.

Much is known but little is being done. This study intends to assess the extent of management of cases of diarrhoea in the field practice areas of RHTC of Community Medicine department with the following objectives

- To estimate the prevalence of correct treatment of diarrhoeal diseases using UNICEF-WHO plan.
- To estimate prevalence of preventive methods for diarrhoea in the study population.
- To recommend suggestive measures for prevention and control.

Materials and Methods:

A cross sectional study was carried out from July 2011 to June 2012 in registered areas of Rural Health and Training Centre (RHTC) having a population of 17,643 in six villages. Based on a prevalence of 50 per cent cases of diarrhoea in under-fives, a sample size of 400 was estimated with 5 per cent permissible error and 95 per cent confidence interval. These 400 households were selected from 6 registered villages of the RHTC by Simple random sampling technique. Mothers of under-fives were interviewed in the field on four to five

days a week as per convenience. Data was entered on excel sheets and analysed using test of percentage. Mothers were interviewed using a predesigned, pre coded and pretested questionnaire after explaining the nature of study thereby getting implied and informed consent. After completion of interview they were educated regarding various health related issues where needed. Information on various variables like education, income, occupation, type of house, water facility, sanitary latrines, sanitary and hygienic practices, exclusive breast feeding, vitamin A prophylaxis, measles and rota virus vaccination and treatment taken during diarrhoea etc. were obtained. An episode of diarrhoea was defined as three or more loose/watery stools during last 24 hours of survey.

Results: Most of the families were of middle and low income group. Majority of them were labourer and skilled workers (44.25% and 18.75% respectively) followed by business (15.25%) and service (7.5%) class. Only 8.5% owned land and were agriculturist. Around 94% women were housewives. Around one-fourth (26%) men and two-third (62%) women were illiterate. Three fourth (73.50%) were Hindu; one fourth (26.50%) were Muslims. Majority of people belonged to general category, followed by OBC (23.50%) and SC/ST (21.0%). 55.5% families were nuclear and 44.5% were joint. Maximum numbers of people (44.75%) were residing in pucca houses and semi-pucca houses (35%). One fifth (20.25%) was living in katcha houses.

Chart I: Treatment package of diarrhoea

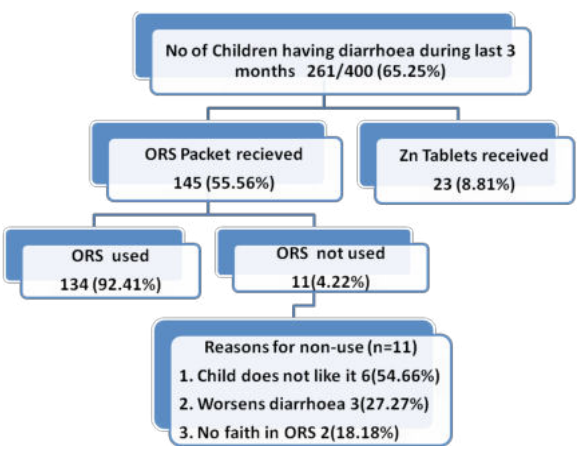

Chart I: 261 children had episodes of diarrhoea during last three months of survey. Place of treatment was village Quacks (43.68%), RHTC (21.46%), Private Doctors (21.84%), Government Hospital (6.51%), Medical store (3.45%), Home based (1.53%), AYUSH (1.53%). Only 55.56% received ORS. Out of these 11 children did not use it. Reasons were as follows; 6 children did not like the taste, 3 mothers felt that it worsens the diarrhoea, 2 mothers said that they have no faith in ORS, only medicines can cure diarrhoea. Zinc tablets were given to only 8.81 per cent of cases.

Table 2: Fluid intake and Feeding Practices during Diarrhoea

S.No.	Fluid & Food intake N=400	No. (%)
1.	Amount of Fluid/Feed	
a.	More	154 (38.50)
b.	Same as usual	170 (42.50)
c.	Somewhat less	65 (16.25)
d.	Much less	7 (1.75)
e.	None	0 (0.00)
f.	Don't know	4 (1.00)
2.	Sugar salt solution given	212 (53.00)
3.	Appropriate home based fluid	170 (42.50)
4.	Amount of Food/Feed	
a.	More	6 (1.50)
b..	Same as usual	145 (36.25)
c.	Somewhat less	206 (51.50)
d.	Much less	40 (10.00)
e.	None	1 (0.25)
f.	Don't know	2 (0.50)

Regarding fluid intake it was found that 38.50 per cent children were given more fluid during episodes of diarrhoea, 42.20 per cent were given the same fluid as usual. Fluid intake was restricted in 18 per cent of cases because of the fear that it worsens diarrhoea. Sugar salt solution was given to 53.50 per cent of children while 42.50 per cent children had some appropriate home based fluid like rice water, dal water and butter milk etc. Food restriction was very common. Half of the mothers (51.50 per cent) gave less food during diarrhoea. 10 per cent had given very little food while one mother had given no food during diarrhoea. 1.50 per cent children were given more food than usual. 36.25 per cent children were given same food as usual. So around 38 per cent children were given more fluid and continued feeding during diarrhoea as recommended. **(Table 2)**

Table 3: Some Preventive Measures for Diarrhoea

S. No.	Preventive Measures	No. (%)
1.	Measles Vaccination N=307 (>12 months)	219 (71.36)
2.	Rota virus Vaccination	00 (00)
3.	N=193 (0-24 months) Exclusive Breast Feeding for 6 month	9 (4.66)
4.	Vitamin A with Measles N=307	219 (71.36)
5.	Vitamin A Prophylaxis (9 doses) N=400	02 (0.50)

Table 3 revealed that 71.36 per cent of children were immunized against measles. Similar numbers of children were given Vitamin A with measles, however Vitamin A prophylaxis (9 doses) was dismal. No child was given rota virus vaccine. Only a small number of children (4.66 per cent) were exclusively breast fed although partial breast feeding was very common.

Table 4: Hand washing at appropriate times

S. N	Time	After defecation & handling faeces	Before preparing food	Before feeding to child
1.	By Mother			
		No. (%)	No. (%)	No. (%)
a.	Always	283 (70.75)	69 (17.25)	51 (12.75)
b.	Mostly	83 (20.75)	158 (37.00)	148 (37.00)
c.	Sometimes	24 (6.00)	121 (30.25)	118 (29.50)
d.	Occasionally	9 (2.25)	40 (10.00)	61 (15.25)
e.	Never	1 (0.25)	14 (3.50)	23 (5.75)

Table 4 shows that 70.75 per cent mothers always (10/10) washed their hand with soap and water after defecation, 20.75 per cent did it mostly (8/10), 6 per cent sometimes (4-

5/10), 2.25 per cent occasionally (2-3/10) and 0.25 per cent never (0/10) did the same. The same practice before preparing food was as follows; always (17.25%), mostly (37.00%), sometimes (30.25%), occasionally (10%) and never (3.50%) while before feeding to child only 12.25 per cent women always washed their hands, 37 per cent did it mostly, 29.50 per cent sometimes, 15.25 per cent occasionally and 5.75 per cent never washed their hands with soap and water.

Table 5: Water Storage & Handling

S.No		No. (%)
1.	Source of water (N=400)	
a.	Deep hand pump	35 (8.75)
b.	Shallow hand pump	336 (84.00)
c.	Others (Tap)	29 (7.25)
2.	Storage of water	147 (36.75)
3.	*If stored N=147	
a.	daily cleaning of utensils	136 (92.52)
b.	Covered with lid	116 (78.91)
c.	Ladle used	28 (19.05)
4.	Contamination likely to be present	
	N=109	55 (50.46)
	Mc Ardles Score	
	Excellent	37 (33.95)
	Satisfactory	17 (15.60)
	Suspicious	27 (24.77)
	Unsatisfactory	28 (25.69)

Shallow hand pumps were very common (84%) in study areas followed by deep hand pumps (8.75%) and tap water (7.25%). Of these 92 per cents cleaned there utensils daily, 78.91 per cent covered with lid. Use of ladle to draw out water from storing vessels was found to be only in 19.05 per cent. On testing the quality of water Mc Ardles score was found to be excellent for one third (33.95%) households, satisfactory for 15.60 per cent, suspicious for one fourth (24.77%) and unsatisfactory for one fourth (25.69%) households. **(Table 5)**

Table 6: Sanitary Practices

S. No.	Sanitary Practices N=400	No. (%)
1.	Latrines	
a.	Sanitary	164 (41.00)
b.	Service type	12 (03.00)
c.	Open field defecation	224 (56.00)
2.	If latrines in house	N=176
a.	Used regularly	166 (94.32)
3.	Stool disposal of child	N=400
a.	Child uses toilet	73 (18.25)
b.	Put/rinsed into toilet	63 (15.75)
c.	Buried	23 (5.75)
d.	Covered with mud	54 (13.50)
e.	Put/rinsed into drain	120 (30.00)
f.	Thrown into garbage	66 (16.50)
g.	Left in open	1 (0.25)
h.	Others	Nil
4.	Disposal of household waste	
a.	Indiscriminately	53 (13.25)
b.	Designated open place	320 (80.00)
c.	Designated closed place	27 (6.75)
5.	Open drains around house	359 (89.75)
6.	Abundance of flies/insects around house	369 (92.25)

As far as sanitary practices were concerned only 41 per cents of households had sanitary type of latrines, 3 per cents had service type of latrines, the rest 56 per cent were going to field for defecation. Those who had latrines in their households, regular use of these was found to be in 94.32 per cent of households. On exploring sanitary disposal of child's stool it was revealed that only about 42 per cent were disposing in a sanitary way (Child using toilet, put/rinsed into toilet or buried 18.25%, 15.75% and 5.75% respectively). Rest 58 per cent were observing insanitary practices. Regarding disposal of household waste only 6.75 per cent were disposing at designated closed place. Eighty per cent were disposing at designated open place and rest 13.25 per cent were throwing it indiscriminately. Open drains were present around 89.75 per cent of houses. Abundance of insects and houseflies was very prevalent (92.25%). **(Table 6)**

Discussion: In our study the period prevalence during last three month was reported to be 65.25 per cent. Of these 55.56 per cent children were given ORS and only 51.34 per cent used it. Most common reason for non-use was child didn't like the taste (54.55%) followed by mothers felt that it worsens diarrhoea (27.27%), the cause may be faulty technique of ORS making and no faith in ORS (18.18%). Some studies reported the use of ORS to be 39 per cent[3], 26[4](33% in urban and 24% in rural areas) and 46[5] per cent respectively. Giving fluid by mouth has been shown to save children's lives but have no effect on the length of time the children suffer with diarrhoea[6]. Zinc has been associated with 25 per cent reduction of acute diarrhoea as well as 40 per cent reduction in treatment failure and death in persistent diarrhoea[3]. Only 8.8 per cent children were given zinc tablets in study areas.

Fluid intake was increased only in 38.50 per cent. UNICEF reported that less than one quarter (22%) children drink more fluid in developing countries[3]. NFHS III found that only one in ten children who recently suffered from diarrhoea were given more fluid to drink. Food restriction was very common. About two third children received less, much less or no food at all placing them at risk of worsening nutritional status. UNICEF reported the same for 31 per cent children in developing countries[3]. NFHS III found that only 37 per cent children were given same food as usual during diarrhoea.

Measles is known to predispose diarrhoeal diseases secondary to measles induced immune deficiency. It is estimated that measles vaccine given to 45 to 90 per cent of infant prevent 44 to 64 per cent of measles cases, 0.6 to 3.8 per cent of diarrhoeal episodes and 6 to 26 per cent of diarrhoeal deaths among under-fives[7]. 71.36 per cent of the children in our study areas were given measles vaccine. NFHSIII has showed coverage of measles vaccination as 58.8 per cent in India and 37.7 per cent in Uttar Pradesh among children between 12-23 months of age. No child received rota virus vaccine as it is not given in our National Immunization Schedule.

Studies have shown that breastfed children under six months of age are 6.1 times less likely to die of diarrhoea than infants who are not breast fed.[8] UNICEF reported that only 37 per cent of children were being exclusively breast fed for six months[3]. Our study reported only 4.66 per cent exclusive breast feeding although the partial breast feeding was very common. The reason may be high level of female illiteracy and ignorance. Vitamin A deficiency in its subclinical form is a world health problem in young children[9]. Studies have shown mortality reductions ranging from 19 to 54 per cent in children receiving vitamin A supplements[10], most of the deaths due to diarrhoea and measles. It has also been shown to reduce duration and complication of diarrhoea[10]. All children (71%) have received vitamin A with measles vaccine but only two children have taken given all nine doses of vitamin A.

Some studies reported that promotion of Hand washing reduces diarrhoea incidences by an average of 33 per cent[11] and over 40 per cent.[12] In our study areas majority of the women (70.75%) always washed their hands after defecation

and handling faeces of children while only less than 20 per cent washed before preparing food or feeding it to child. Validity of this data may be questioned so it was also checked by a proxy indicator such as availability of soap in the household.

Eighty eight per cent of diarrhoeal deaths world-wide are attributable to unsafe water, inadequate sanitation and poor hygiene[13]. The proportion of population having access to improved drinking water sources has increased in the Asia-Pacific region, from 74 per cent in 1990 to 88 per cent in 2006[14]. In our study areas around 16 per cent households were using water from deep hand pumps and taps (8.75% & 7.25% respectively), rest 84 per cent were drinking water from shallow hand pumps which are liable to contamination. Water was stored in 36.75 per cent of household. Safe storing and handling of water was unsatisfactory. Majority (92.52%) were cleaning utensils daily, only three fourth covered with lid, use of ladle to draw out water was only in 19 per cent of households. On testing the quality of water Mc Ardles score revealed that quality was excellent or satisfactory only in 50 per cent of households.

Improving access to sanitation facilities has been associated with an estimated median reduction in all-cause child mortality of 55 per cent across reviewed studies[15]. A recent survey in British Medical Journal showed that their readers believed sanitation to be the most important medical milestone since 1840[16]. In our study sanitary latrines were found to be in 41 per cent of household, sanitary disposal of stool (child using toilet, rinsed into toilets, buried) in around 40 per cent of households. Only 6.75 per cent of households were disposing their household waste in a sanitary way i.e. at designated closed place. Open drains and abundance of flies/insects were reported to be in around 90 per cent of households.

Conclusion and Recommendation:

The complete treatment as recommended by WHO-UNICEF is taken by only 8.81 per cent of children as only around 55 per cent children have taken ORS and 8.8 per cent zinc tablet. Fluid restriction is found to be in 18 per cent children and food restriction in two-third children.

Exclusive breast feeding is around 5 per cent. 71.36 per cent children have received measles vaccine. Vitamin A prophylaxis with nine doses is dismal. Conditions of hygiene, safe water and sanitation are not satisfactory.

Mothers should be informed and empowered about proper management of diarrhoea at home, when to go to health facility and importance of rehydration therapy. They should be taught correct methods of making ORS, sugar salt solution, various appropriate home-based fluids and continued feeding during diarrhoea. ORS and zinc tablets should be made freely available at Aanganwadi Centre and with various grass root level workers like ANM, LHV etc. Mothers should be encouraged to avail these services and should be sensitized about various issues like why diarrhoea occurs, how it can be prevented, what adverse impact it may have on her child's growth and development. A need for training of grass root level workers in behaviour change communication and management of diarrhoea at home is also felt.

REFERENCES

1. WHO, Global Burden of Disease estimate 2004 update | 2. Boschi Pinto, C. Tomascovic L., Shibuya K.," The Global Burden of Childhood Diarrhoea" in: Ehiri, J.E.,M. Meremikwu, International Maternal and Child Health, 2009 | 3. WHO-UNICEF Report; Diarrhoea: Why Children are still Dying and what can be Done 2009;30 | 4. NFHS III 2004-2005 | 5. Rasania S. K., Singh D., Path S., Matta S., Singh S. "Knowledge and Attitude of Mothers about Oral Rehydration Solution in Few Urban Slums of Delhi", Health and Population; Perspectives and Issues 28 (2)2005;100-107. | 6. Lazzerini M, Ronfani L Oral Zinc for Treatment of Diarrhoea (Review), The Cochrane Library 2008; 3: 2 | 7. Feachem R.G.A., Koblinksy M.A.,"Interventions for the Control of Diarrhoeal Diseases among Young Children: Measles Immunization. "Bulletin of WHO 1983; 61; 641-52. | 8. Effect of breastfeeding on Infant and Child Mortality Due to Infectious Diseases in Less Developed Countries: A Pooled Analysis", Lancet March 2000; 25; 355; 1104. | 9. D Stephens, PL Jackson, Gutierrez Y Subclinical Vitamin A Deficiency: A Potentially Recognized Problem in United States: Paedtr Nurs 1996 Sept-Oct; 22(5):377-89,456 | 10. Barreto M. L. Santos L. M. Assis A. M., Araujo M. P.,Farenzena G. C., Santos P. A. ;Effect of Vitamin A Supplementation on Diarrhoea and Acute Lower Respiratory Infections in Young Children in Brazil', The Lancet, 1994; 344; 8917;228-31 | 11. Huttly, S. R.Morris S.S., and Pisani V.,"Prevention of Diarrhoea in Young Children in Developing Countries," Bulletin of World Health Organization 1997; 75: 163-74. | 12. Curtis V.,Cairncross S." Effect of Washing Hands with Soap on Diarrhoea Risk in the Community. A Systematic Review "The Lancet Infectious Diseases, 3;5, 2003; 275-281. | 13. Black, R. E. S. Morris and J. Bryce, 'Where and Why are Million Children Dying Every Year?', The Lancet 2003 June; 361(9376) 28 ; 2226-2234. | 14. 5th World Water Forum Document p-9 | 15. Keusch G. T., Fontaine O., Bhargava A., Boschio-Pinto C., Bhutta Z. A., Gotuzoo E. et al, Diarrhoeal Diseases. In: Jamison D.T., editor; Disease Control Priorities in Developing Countries, New York, Oxford University Press; 2006. P. 419; | 16. Ferriman, A.,'BMJ readers choose the "sanitary revolution" as greatest medical advance since 1840' British Medical Journal 2007; 334(7585); 111. |