



Diarrhea Alleviation through Zinc-ORS Therapy (DAZT) program: Findings of concurrent monitoring from Western India

Mihir Prafulbhai Rupani¹, Gneyaa Shirish Bhatt¹, Narayan Timmanna Gaonkar¹

Abstract

Introduction: Diarrhea Alleviation through Zinc and ORS Therapy (DAZT) project was started in six demonstration districts of Gujarat in 2011. The aims of the research were to understand prescription practices for childhood diarrhea, assess knowledge and practice about zinc therapy among health care providers in the government/private sectors and among caretakers.

Methodology: It was a cross-sectional study conducted in six DAZT demonstration districts of Gujarat. Information was collected on structured questionnaires by interviewing 127 care providers & 43 care takers in six districts. In addition, case records were reviewed for 228 prescriptions – all from the government sector.

Results: Government functionaries dispensed ORS in 97% & Zinc in 90% cases of diarrhea while, private providers prescribed it in 79% & 71% respectively. Antibiotics were prescribed in 24% & 59%, anti-amoebic in 20.2% & 64.7% in public and private sectors respectively. Knowledge of dosage and duration of zinc therapy was better among public sector providers than private sector ones. Amongst caretakers, 74.4% gave correct dose of zinc to their children but was given for 14 days in 67.4% of cases.

Conclusions: For all the parameters studied, responses were better amongst government providers than those from the private sector.

Keywords: national health programs; diarrhea; epidemiological monitoring; public health surveillance; proprietary health facilities; public facilities; caregivers

Introduction

Globally as well as nationally, diarrhea is the second leading cause of death among the under-five children. According to the World Health Statistics 2014 report, diarrhea accounted for 11% of deaths among children under five years of age in India in the year 2012 [1]. The report also highlighted that only 26% of those suffering from diarrhea in India received Oral Rehydration Therapy (ORT) [1]. As the country with the highest disease burden for pneumonia and diarrhea, India loses 400,000 children before their fifth birthday every year [2].

Diarrhea Alleviation through Zinc and ORS Therapy (DAZT) project was started in six demonstration districts of Gujarat in

2011 to implement, scale-up and saturate the use of the high impact intervention of Zinc-ORS in childhood diarrhea management. It involves the public as well as private health sectors for promoting ORS and Zinc through various agencies. In addition to poor feeding/hygiene practices of caretakers, an inappropriate prescription from providers and inadequate use of Zinc-ORS were the challenges in diarrhea management.

UNICEF supported the activity of concurrent monitoring of the DAZT project. We conducted this study to understand prescription practices for childhood diarrhea, assess knowledge about zinc therapy among health care providers and caretakers in the government/private sectors and assess knowledge about additional information to be provided to caretakers among health care providers and its practice among caretakers.

Materials and Methods

During the concurrent monitoring of DAZT project, information was collected

on three structured questionnaires by interviews of healthcare providers and caretakers in six districts. The current study includes the concurrent monitoring findings from April 2012 to December 2013. The healthcare providers included Medical Officers, Female Health Workers (FHWs), Accredited Social Health Activists (ASHAs), Anganwadi workers (AWWs), MBBS doctors, Paediatricians, Registered Medical Practitioners (RMPs) and AYUSH doctors (mainly Ayurvedic and Homeopathic doctors). Caretakers were a parent/attendant of a child treated for diarrhea in government facilities. A total of 127 care providers and 43 caretakers in six districts were interviewed. In addition, case records were reviewed for 228 prescriptions – all from the government sector. Data collected were entered and analyzed using Excel. The distribution of the samples among the six demonstration districts is given in table 1.

Results

The following are the results from the concurrent monitoring of six DAZT

¹UNICEF State Office for Gujarat, Plot no. 70, Road no. 4th B, Opp. Punit van, Sector 19, Gandhinagar - 382019, Gujarat (India).

Address of Correspondence

Dr. Mihir Prafulbhai Rupani
B-23, Meghna Society, Opp. Maninagar Society,
Manjalpur, Vadodara – 390011, Gujarat, India.
Email: mihirrupani@gmail.com

Table 1: Distribution of the samples among the 6 demonstration districts

District	Government health care providers	Private health care providers	Total health care providers	Caretakers
Banaskantha	7	2	9	6
Patan	5	3	8	4
Sabarkantha	22	5	27	14
Surenranagar	22	12	34	13
Panchmahal	13	8	21	4
Dahod	24	4	28	2
Total	93	34	127	43

demonstration districts of Gujarat. Table 2 highlights the patchy implementation of IMNCI in Gujarat. Although the health care providers were trained in IMNCI, very few were actually filling the IMNCI forms in the field, thereby affecting the referral to higher centers. Only 14% Anganwadi workers, 10% Female Health workers and none of the Medical Officers had filled the IMNCI forms.

Table 3 illustrates the prescription practices of government and private healthcare providers in children being treated with diarrhea. Based on records/interviews, government functionaries dispensed ORS in 97% and zinc in 90% cases of diarrhea while private providers prescribed it in 79%

sectors respectively. The reasons given for not prescribing Zinc in the government sector were not being aware of the use of Zinc (3), not available in the market (2), denial/refusal of the patient (2), no stock of Zinc (4) and forgot to write in prescription (2). The reasons for not prescribing Zinc in the private sector were not being aware of the use of Zinc (3) and aware but not convinced about its effect, not available in the market (3). Knowledge of dosage and duration of zinc therapy was better

among public sector providers than private sector ones (Table 4). Out of 91 government providers, 70% had the correct knowledge about the dosage of Zinc, whereas out of 31 private providers, only 39% had this correct knowledge. When asked about the duration of Zinc therapy, 91% of government providers had the correct knowledge while only 41% of private providers knew the exact duration of Zinc. For additional information, such as advice on continued feeding, giving more than usual fluid, hand washing and when to return back to a health facility, the responses were better for government providers than private ones (table 5).

reasons for non-compliance were “improved condition” (answer given by 12 caretakers) and “no need to continue” (answer by 2 caretakers). Knowledge about the additional information elicited from the caretakers was also poor (table 6).

Discussion

Table 2: IMNCI implementation in the field

Designation	Total	Trained in IMNCI	Filling IMNCI forms	Having IMNCI chart booklet
Medical Officer	32	21 (66%)	0 (0%)	8 (25%)
Anganwadi worker	21	18 (86%)	3 (14%)	13 (62%)
Female Health Worker	22	19 (86%)	2 (10%)	11 (50%)

The present study aimed to assess the implementation of DAZT program in Gujarat. The findings of the study are extremely important for Government of Gujarat as this program have now been scaled up to the entire state. In the year 2013, globally diarrhea has become the fourth leading cause of death among under-five children accounting for 9% of deaths, while in India diarrhea contributes to 10% of deaths among under-five children [3]. In India, in the year 2013, only 26% children under-five years of age suffering from diarrhea received ORT and a meager 0.3% received Zinc tablets [2].

The present study found that government functionaries dispensed ORS in 97% of children suffering from diarrhea, while private practitioners prescribed it in 79% of cases of diarrhea. It was also encouraging to find that Zinc tablets were prescribed by 90% of government functionaries and 71%

Table 3: Prescription practices of government and private health care providers (multiple answers)

Drugs	Government health care providers (n=228)	Private health care providers (n=34)
ORS	221 (96.9%)	27 (79.4%)
Zinc	204 (89.5%)	24 (70.6%)
Antibiotics	55 (24%)	20 (59%)
Anti-amoebic	45 (20.2%)	22 (64.7%)
Anti-motility (Loperamide)	2 (0.87%)	2 (5.88%)
Anti-secretory (Racendotril)	2 (0.87%)	2 (5.88%)
Syrup Dicyclanide	5 (2.19%)	0 (0%)
Intravenous infusion	0 (0%)	5 (14.7%)

Table 4: Knowledge about dosage and duration of Zinc therapy among providers

Knowledge about dosage of Zinc	Government providers (n=91)	Private providers (n=31)
- Correct	63 (69.23%)	12 (38.7%)
- Partially correct	6 (6.59%)	2 (6.45%)
- Incorrect	12 (13.18%)	7 (22.58%)
- Not known	10 (10.98%)	10 (32.25%)
Correct knowledge about duration of Zinc (for 14 days)	83 out of 91 (91.2%)	12 out of 29 (41.37%)

Table 5: Additional information on diarrhea management given to caretakers by providers (multiple answers)

Additional information	Government providers (n=87)	Private providers (n=22)
Giving more than usual fluid	62 (71.26%)	9 (40.9%)
Continue feeding	69 (79.31%)	16 (72.72%)
Hand-washing before eating and after using toilet	30 (34.48%)	7 (31.81%)
When to return back	25 (28.73%)	6 (27.27%)

and 71% cases respectively. Antibiotics were prescribed in 24% and 59%, anti-amoebic in 20.2% and 64.7% in public and private

Amongst the caretakers, 74.4% gave correct dose of zinc to their children but was given for 14 days in 67.4% of cases; common

private practitioners. Kung'u JK et al. (2015) found similar results in their study stating

Table 6: Knowledge about dosage and duration of Zinc therapy among caretakers (n=43)

Correct knowledge about dosage of Zinc	32 (74.4%)
Correct knowledge about the duration of Zinc (for 14 days)	29 (67.4%)

Table 7: Additional information on diarrhea management given by providers elicited from caretakers (multiple answers)

Additional information on diarrhea management (n=42)	
Giving more than usual fluid	24 (57.14%)
Continue feeding	31 (73.8%)
Hand-washing before eating and after using toilet	6 (14.28%)
When to return back	13 (30.95%)

that 97.9% of government health workers were treating diarrhea with both ORS and Zinc in Nigeria [4]. A research by Omuemu VO et al. (2012) found that only one-in-three (35%) government functionaries were prescribing Zinc supplements to children suffering from diarrhea in Nigeria [5]. A study conducted in Uganda (Awor P e. al., 2012) reported that only 14.3% children with diarrhea were treated with ORS, and none of the children with diarrhea received Zinc tablets [6]. This research by Awor P et al. (2012) was conducted in private sector drug shops in two districts of Uganda to determine prescription practices of common childhood illnesses.[6] The current study highlighted that 70% government providers had the correct knowledge about the dosage of Zinc, whereas only 39% of private practitioners had this correct knowledge. Regarding duration of Zinc therapy, 91% of government providers had the correct knowledge while only 41% of private providers knew the exact duration of Zinc tablets. The study by Omuemu VO et al. (2012) reported 66.7% government providers having knowledge about the dosage and duration of Zinc supplements in Nigeria.[5] Their research also outlined that 85.6% of the healthcare workers (working in government set-up) had the knowledge of Zinc being an adjunct to ORS for management of diarrhea.[5] A recent study in Nigeria reported 97.9% of government health workers correctly mentioning the dosage of Zinc tablets.[4] A research conducted in Mali, West Africa (Winch PJ

et al., 2006) reported that 94.3% healthcare workers had correct knowledge about dosage and duration of Zinc therapy.[7] The present research found that antibiotics were prescribed in 24% and 59% in public and private sectors respectively, while a study in Nigeria found that 2.6% government health workers were prescribing antibiotics to children suffering from diarrhea in addition to ORS and Zinc supplements.5 Another study in Nigeria found that 31.3% government health workers were prescribing antibiotics to treat children with diarrhea.[4] The reason for the better over-all knowledge and prescription practices of the health care workers in Nigeria than in Gujarat might be the difference in the quality of training given to each in their respective states.

The study also found that three-fourths (74.4%) of the caretakers gave correct dose of zinc to their children but was given for 14 days in just above two-third cases (67.4%). Similar percentages (63.6%) of administration of Zinc at home by caretakers were reported in a study by Winch PJ et al. (2006) in Mali, West Africa [7]. Kung'u JK et al. (2015) in their study in Nigeria reported that 80.9% of the caregivers correctly mentioned the dosage of Zinc [4]. A study in Kenya by Simpson E et. al. (2013) found that 55% of the caregivers gave the correct dosage of Zinc to their children, while only 37% caregivers gave it for >10 days duration [8]. The present study found that the implementation of IMNCI in Gujarat needs to be revisited with supportive supervision and monitoring by the district and taluka officials. In spite of 66% Medical Officers been trained in IMNCI, none of them were filling the IMNCI forms. Only 14% AWW and 10% FHW were filling IMNCI forms in spite of 86% trained staff in each of this cadre. Similar percentages of training was reported by Bhatt RA et al. (2012) in Mehsana district of Gujarat but they did not assess the percentages for filling of IMNCI forms [9].

Conclusion: There is a lot of scope for improvement in the implementation of the DAZT program in Gujarat and its subsequent scale-up to the entire state. It would also act as an opportunity to revive the IMNCI program in the state. For all the variables included in this research, the responses were better amongst government

providers than those from the private sector. Knowledge and practices of caregivers regarding diarrhea management were also not very satisfactory.

Recommendations:

A training calendar for cascade training (district-level, block-level and up to frontline functionaries) for Zinc-ORS roll out in the scale-up districts should be developed, with a plan to monitor the quality of these cascade training at the district level. Supportive supervision and monitoring of Zinc-ORS rollout should be undertaken in the entire state by integrating it into block monitoring by District Child Survival Officers (DCSOs, UNICEF supported) and into Village Health and Nutrition Day (VHND) supportive supervision. It is of paramount importance to sustain Zinc-ORS communication for childhood diarrhea management along with IMNCI training and to train staff nurses on Zinc-ORS therapy during their pre-service training. New Diarrhea Management guidelines can be provided to private providers through Indian Academy of Pediatrics (IAP) or Indian Medical Association (IMA), which should stress upon usage of ORS and Zinc (along with dosage). The new guidelines should also include indications of antibiotics in case of childhood diarrhea and additional information to be given to caretakers during diarrhea. There is a pressing need for demand generation activities to improve practices amongst caregivers.

Acknowledgments:

We thank the Regional Child Survival Officers (RCSOs, UNICEF supported) for their technical support during the entire study period.

References

1. World Health Organization. World Health Statistics 2014 report. Geneva 2014. Available from http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf. Accessed on 09/06/2015.
2. John Hopkins School of Public Health (JHSPH). Pneumonia and Diarrhea Progress Report 2013. International Vaccine Access Centre 2014. Available from <http://www.jhsph.edu/research/centers-and-institutes/ivac/resources/IVAC-2013-Pneumonia-Diarrhea-Progress-Report.pdf>. Accessed on 09/06/2015.
3. World Health Organization. World Health Statistics 2015 report. Geneva 2015. Available from http://apps.who.int/iris/bitstream/10665/170250/1/9789240694439_eng.pdf?ua=1&ua=1. Accessed on 09/06/2015.
4. Kung'u JK, Owolabi O, Essien G, Aminu FT, Ngnie-Teta I, Neufeld LM. Promotion of Zinc Tablets with ORS through Child Health Weeks Improves Caregiver Knowledge, Attitudes, and Practice on Treatment of Diarrhoea in Nigeria. *J Health Popul Nutr.* 2015; 33: 9-19.
5. Omuemu VO, Ofuani IJ, Kubeyinje IC. Knowledge and Use of Zinc Supplementation in the Management of Childhood Diarrhoea among Health Care Workers in Public Primary Health Facilities in Benin-City, Nigeria. *Global Journal of Health Science.* 2012; 4: 68-76.
6. Awor P, Wamani H, Bwire G, Jagoe G, Peterson S. Private Sector Drug Shops in Integrated Community Case Management of Malaria, Pneumonia, and Diarrhea in Children in Uganda. *Am. J. Trop. Med. Hyg.* 2012; 87(Suppl 5): 92-96.
7. Winch PJ, Gilroy KE, Doumbia S, Patterson AE, Daou Z, Coulibaly S, Swedberg E, Black RE, Fontaine O. Prescription and administration of a 14-day regimen of zinc treatment for childhood diarrhea in Mali. *Am. J. Trop. Med. Hyg.* 2006; 74: 880-883.
8. Simpson E, Zwisler G, Moodley M. Survey of caregivers in Kenya to assess perceptions of zinc as a treatment for diarrhea in young children and adherence to recommended treatment behaviors. *Journal of Global Health.* 2013; 3: 010405.
9. Bhatt RA, Modi KV, Solanki A, Vyas MJ, Patel PG. Rapid assessment of Integrated Management of Neonatal and Childhood Illness (IMNCI) implementation in Mehsana district, North Gujarat, India. *Indian Journal of Maternal and Child Health.* 2012; 14: 1-15.

Conflict of Interest: Nil
Source of Support: None

How to Cite this Article

Rupani M P, Bhatt G S, Gaonkar N T. Diarrhea Alleviation through Zinc-ORS Therapy (DAZT) program: Findings of concurrent monitoring from Western India. *Indian J Med Sci* 2017 April - June;69 (2):11-14.