



## Original Research Article

## Knowledge and practices of mothers of under-five children regarding Zinc supplementation in childhood diarrhea

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## ABSTRACT

**Background:** Diarrhoea continues to plague the developing world resulting in morbidity of 1.7 billion and mortality of 5.25 lakhs in under-five children. In India diarrhea is 3<sup>rd</sup> most common cause of death among under-five children with morbidity of 11.6 million and mortality of 1300 deaths and thus causing 8% of deaths per year. Zinc has a major role in prevention of diarrhea.

**Aim:** To assess the knowledge and practices of mothers of under-five children regarding zinc supplementation for prevention of childhood diarrhea, to find out the reasons for not supplementing Zinc during diarrhoeal episodes, to find out association between socio-demographic factors and awareness of zinc supplementation.

**Materials and Methods:** Hospital based cross sectional analytical study was conducted among 200 mothers of under-five children in outpatient department of Paediatrics of a tertiary care hospital. The data was entered in pre-designed semistructured questionnaire. Data was analysed by EPI INFO 7 software.

**Results and Conclusion:** Only 18(9%) mothers were aware about use of Zn supplementation to the under-five children in childhood diarrhoea. Only 10 mothers administered zinc supplementation in childhood diarrhea. Unawareness regarding Zn supplement was common reason mentioned for not giving Zn supplementation. Association was found between religion, type of family and awareness of Zn supplementation. There is a need to increase awareness of mothers regarding zinc supplementation by conducting health education sessions.

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### 1. Introduction

Diarrhoea continues to plague the developing world resulting in morbidity of 1.7 billion and mortality of 5.25 lakhs in under-five children.<sup>1,2</sup> In India diarrhea is 3<sup>rd</sup> most common cause of death among under-five children with morbidity of 11.6 million and mortality of 1300 deaths and thus causing 8% of deaths per year.<sup>3</sup>

Zinc is a micronutrient which is essential for cell growth, cell differentiation, DNA synthesis, healthy immune system.<sup>4,5</sup> Zinc is believed to improve absorption of

water and electrolyte by the intestine, faster regeneration of gut epithelium, increased level of enterocyte brush border enzyme and enhanced immune response leading to clearance of pathogens from gut in episode of diarrhea.<sup>6</sup> Zinc has associated with 20% reduction of acute diarrhea, 30% reduction in volume of stools, 40% reduction in treatment failure and deaths in persistent diarrhea.<sup>7</sup>

The world health organization (WHO) and united nations international children emergency fund (UNICEF), recommended the use of low osmolarity oral rehydration solution and 10-20 mg of zinc for 14 days as treatment for all episode of diarrhea (10 mg per day for infants under 6 months).<sup>8</sup> It has been said that with use of this combination

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up to 88% of deaths due to diarrhea can be prevented.<sup>9</sup> In view of all these benefits, Zinc therapy was incorporated in the integrated management of childhood illness guidelines and WHO list of essential drugs for use in diarrhea, in 2005.<sup>10</sup> Nearly 15 years passed since introduction of zinc in national health programme, still level of awareness was found to be poor among population.<sup>1,8</sup>

So the present study was intended to assess awareness among mothers of under-five children regarding zinc supplementation, reasons for not supplementing zinc and to find out socio-demographic factors associated with it.

## 2. Objectives

1. To assess practices of mothers of under-five children regarding zinc supplementation for prevention of childhood diarrhea.
2. To find out the reasons for not supplementing Zinc during diarrhoeal episodes
3. To find out association between socio-demographic factors and use of zinc supplementation

## 3. Materials and Methods

1. **Study design:** hospital based cross sectional analytical study
2. **Study Area:** Outpatient department of Paediatrics of a tertiary care hospital.
3. **Study duration:** 4 months.
4. **Study population:** Mothers of children from six months to five years attending Pediatrics OPD.
5. **Inclusion criteria:** Mothers of under five children who are willing to participate.
6. **Sample size:**  $N = \frac{4pq}{L^2}$ , where  $p =$  proportion of knowledge of zinc supplementation<sup>8</sup>  
 $p=2$ ,  $q=100-p=98$ ,  $L=\text{error}=\pm 2$   
 Sample size calculated is 196. Two hundred mothers were included in the study ( $n=200$ ).
7. **Sampling technique:** Convenient sampling (nonprobability sampling)
8. **Statistical analysis:** EPI INFO7 software. Quantitative data was analyzed by calculation of proportion, mean, standard deviation and range. Association was tested by chi square test.

After taking permission from institutional ethics committee, study was started. A hospital based cross sectional study was conducted among mothers of under-five children attending Pediatrics OPD in a tertiary care hospital. Informed consent of mother was obtained. Confidentiality of data was maintained. The data was entered in predesigned semi-structured validated questionnaire.

Information about socio-demographic data such as religion, education, occupation, type of family and family income was asked and entered in the questionnaire. Modified BG Prasad's Scale was used to assess Socio-

economic status of family. A detail of knowledge regarding Zinc supplementation, practices of zinc supplementation during recent episode of diarrhea (last 6 months) was enquired. Among the mothers who have not supplemented zinc to the children during recent episodes, reasons for not supplementing zinc was asked.

Each day five mothers of under-five children were interviewed for consecutive 40 working days till sample size of 200 was covered ( $n=200$ ). The data was entered in excel sheet. The statistical analysis was done by using EPI INFO 7 software. Data was analyzed by calculating range, proportions, mean and standard deviation. Chi-square test was used to find out association between level of knowledge and socioeconomic status.

Mothers with good level of knowledge and who were following practice of zinc supplementation were appreciated and advised to continue the practice. Mothers with poor level of awareness about zinc supplementation were counseled and motivated for use of Zinc supplementation for future prevention of diarrhea.

## 4. Results

Total 200 mothers participated in the study. The age range of mothers was from 19 to 38 years. More than 70% mothers were in the age group of 21- 30 years. 2(1%) mothers were illiterate, 65(32.5%) were graduates and 15(7.5%) were postgraduates. 32.5%(65) mothers were working. Hundred (50%) mothers belonged to nuclear family and 93(46.5%) belonged to joint family.

### 4.1. Awareness regarding zinc supplementation among mothers

Out of total 200 mothers, only 18(9%) mothers used zinc suspension during past diarrheal episodes. Out of 18 mothers, 14(77.8%) mothers reported doctors as source of information for zinc supplementation. Only one mother knew about correct duration of treatment i.e.14 days. Eight (44.44%) mothers were aware regarding correct frequency of taking tablets. Only 7(39%) were aware that zinc should be given as early as possible in treatment of diarrhea. Ten mothers were aware regarding giving ORS and zinc at same time. Ten (56%) mothers were unaware that all episodes of diarrhea should be treated with zinc. Only 10 (56%) mothers administered zinc supplementation during recent episodes of diarrhea.

### 4.2. Reasons for non-administration of zinc

Lack of awareness was the common reason mentioned for non-administration of zinc (50%) followed by reasons such as not advised by doctors, cost of tablets and not needed.

### 4.3. Association between socio-demographic factors and awareness among mothers

No association was found between age, occupation and awareness among mothers but statistically significant association was found between religion, type of family and awareness regarding zinc supplementation among mothers of under five children.

**Table 1:** Awareness regarding zinc supplementation

S.No.	Question (n=18)	Frequency	percentage
1	First source of information regarding zinc supplementation		
A	Doctor	14	77.8
B	Nurse	4	22.2
2	Duration of zinc supplementation in days		
A	3	4	22.22
B	5	4	22.22
C	8	4	22.22
D	10-14	1	5.56
E	Don't know	5	27.78
3.	Schedule of tablet		
A	Once a day	4	22.22
B	Twice a day	8	44.44
C	Thrice a day	3	16.67
D	Don't know	3	16.67
4.	Stage of diarrhea when tablets are advised		
A	As early as possible	7	38.89
B	After stoppage of diarrhea	4	22.22
C	Don't know	7	38.89

Prevalence of using zinc supplementation among Hindu mothers was found better (12.21%) as compared to mothers from other religion (2.89%). Difference was found to be statistically significant. Prevalence of use of zinc supplementation among mothers from nuclear family was found to be more (13%) than mothers from joint family (5%).the difference was found to be statistically significant. Association was found between religion, type of family and use of zinc supplementation.

No association was found between age, occupation of mother and use of zinc supplementation.

## 5. Discussion

Out of total 200 mothers, most were of age group of 26-30 years followed by age group of 21-25. Most of the mothers were educated up to graduate and only 1% mothers were illiterate. 67.5% were housewife and rest were working, 50% belonged to nuclear family.

**Table 2:** Association between various socio-demographic factors and awareness regarding zinc supplementation

S. No	Factor	Awareness		Chi-square value	P value
		Present	Absent		
1.	age			0.054	0.816
	≤ 30	13	136		
	>30	5	46		
2.	religion			4.78	0.029
	Hindu	16	115		
	other	2	67		
3.	occupation			0.201	0.654
	housewife	13	122		
	working	5	60		
4.	Type of family			3.907	0.048
	nuclear	13	87		
	Joint	5	95		

When knowledge of mothers of under-5 children regarding Zn supplementation was assessed only 9% mothers were aware about Zn supplementation during episodes of diarrhea. Among these 9% mothers; in 77.9% mothers 1<sup>st</sup> source of information was from doctors and in rest from nurses; only 5.56% has a correct knowledge of duration of zinc supplementation (10-14 days); 44.44% knew correct dose of Zn supplementation (twice a day); 38.89% mothers had correct knowledge of the stage of diarrhea at which Zn should be given (as early as possible); 55.56% mothers had a knowledge to give ORS and Zn at same time and 44.44% of mothers agreed that all episodes of diarrhea should be treated with zinc.

49% mothers gave history of episodes of diarrhea in their children in last 6 months. Among these 49% mothers, 45.9% mothers administered zinc supplementation and rest 54.1% mothers didn't. When these mothers were asked the reason for not giving Zn supplementation, most of the mothers (54.7%) stated that they were unaware regarding Zn supplementation followed by other reasons such as drug was not prescribed by doctor/health worker, side effects and drug not needed.

Only 9% mothers were aware of zinc supplementation, which is slightly higher as compared to other similar study conducted by Dipak Kumar Dhar, Nilratan Majumder, and Debashish Paul<sup>8</sup> which showed awareness among 1.9%. In a Study conducted by Sadasiba padhy, Rajesh Kumar Sethi, Narendra Behera<sup>1</sup> awareness was found to be 1%. In a study conducted in rural western Kenya,<sup>11</sup> caretakers who used zinc recently were found to be more aware regarding zinc supplementation than zinc non users. In a study conducted in Ethiopia,<sup>12</sup> awareness was found to be more in urban area as compared to rural area. Present study was conducted near urban area may be the reason for study finding. Association was found between religion, type of family and awareness

of zinc supplementation.

## 6. Conclusion

Health education sessions should be conducted regularly to increase awareness regarding zinc supplementation among mothers

## 7. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

## 8. Source of Funding

None.

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