International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

Effect of Hand Washing Practice & Attack Rate of Acute Diarrhoeal Diseases among Pre-Primary School Children

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Received: 03/07//2014 *Revised: 04/07/2014* *Accepted: 04/08/2014*

ABSTRACT

Introduction: Malnutrition and infectious diseases both occur in the same Unfortunate children and together they play a major role in causing the high morbidity and mortality in them. Among the infectious diseases, acute respiratory infections (ARI) and acute diarrhoeal disease (ADD) are leading cause for childhood mortality and morbidity.
Objectives: To find out attack rate of diarrhea in pre-primary school children & effect of hand washing practices among their mothers on it. Method: A Descriptive follow-up study was conducted among pre-primary school children and followed for 3months period after baseline data collection to find out effect of hand washing practice on attack rate of diarrhea.
Results: Total attack rate was 78% among which 56% of private pre-primary school children & 100% of anganwadi children were found suffering from one or more episode of diarrheoa during 3months period. After health education session attack rate was drastically reduced among both the groups.
Conclusion: Education to the mother and other members of the family on improvement of domestic and peridomestic sanitation along with proper hand washing practices.

Keywords: Diarrhoea, Pre-primary school children, private, Anganwadi, hand washing

INTRODUCTION

Malnutrition and infectious diseases both occur in the same Unfortunate children and together they play a major role in causing the high morbidity and mortality in them. [1] The period below 5 years among the children is the most crucial period and if any infection occurs during this period, will affect the growth and development of child because maximum growth and development occur in this period. Among the infectious diseases, acute respiratory infections (ARI) and acute diarrhoeal disease (ADD) are leading cause for childhood mortality and morbidity. [2]

Out of all the childhood illnesses, acute respiratory tract infections, diarrhoeal diseases and malnutrition are the principle causes of illness and death in the developing countries. [3] Diarrhoeal diseases (DD's) are reported to be the 2nd leading cause of child morbidity and mortality. [4]

Most of diarrhoeal diseases (88%) are attributed to unsafe water Supply, inadequate sanitation and hygiene. Measures like improvement in water supply and sanitation helps in reducing diarrhoeal disease morbidity (6% to 9.25% and 32%). A simple act of washing hands at critical times can reduce the number of diarrhoeal cases by up to 45%. [5] Diarrhoeal diseases and acute respiratory infections are regarded as the leading proximate causes of death among children in low income setting. It has been shown that children who suffer from repeated or severe episodes of diarrhoea are also at higher risk of acute respiratory infections. Diarrhoeal disease is an established risk factor for acute weight loss, mal nutrition and stunting. [6-8]

A study was organized to find attack rate of diarrhea in pre-primary school children & hand washing practices among their mothers.

MATERIALS & METHODS

A Community based descriptive follow-up study was carried out among the preprimary school children (3-5yrs) in Private pre-primary schools of urban area and Anganwadis of urban slum area of Karad town district Satara, Maharashtra. The incidence of acute respiratory infection in past study was 11%, [9] and considering 5% error, sample is calculated as,

$n = (1.96)2 \times p \times q/L2$

which comes to around 150, considering the chances of drop outs during the course of the study, extra 5% samples were added into it & that comes to around 157. This sample was taken from private preprimary school and same sample was taken from anganwadi. There were total 10 private pre-primary schools and 25 anganwadis under Karad Municipality. At the beginning of the study (Baseline data collection), selection of preschool was done by the lottery method.

Baseline information was obtained with in a period of 1 month regarding general particulars of the parents and children (cross checked from records), environmental history, hand washing practices among mothers and anthropometric measurements of the child, general and systemic examination of each subject was carried out. The information was collected from mother/guardian and class teacher/anganwadi worker and they were informed about the signs and symptoms of Diarrhoeal disease so that they can deliver proper history and note it down whenever episode occurs. Follow-up was done after 3months of baseline data collection to record any events of diarrhoea during this gap period.

Health education session to mothers was conducted after 1st follow up which included signs & symptoms of ADD, effects of ADD on child development & WHO guidelines for hand washing method for the period of 1month with regular intervals for one month. After H.E session again follow up was done for the period of 3months for occurrence of diarrhea.

Attack rate was calculated by number children affected with diarrhea during the period of 3months and total number of children enrolled at the time of baseline data collection and expressed in terms of percentage. Chi-square test was applied to find association with environmental factors & hand washing practices before & after health education session. Institutional Ethics Committee clearance & informed consent from parents/guardians/teachers was obtained prior to the study.

RESULTS

Total 314 children were enrolled for the study among which 157 from private and 157 from anganwadi children were enrolled during baseline data collection. Among

these 53% of private school children were boys & remaining 47% were girls whereas 62% of anganwadi children were boys & remaining 38% were girls.

Among these children 88 from private & all 157 from anganwadi were found suffered from one or more episodes of diarrhea during 1st follow up.

Attack rate: 56% of private pre-primary school children & 100% of anganwadi children were found suffering from one or more episode of diarrheoa during 3months period. Total attack rate was 78%.

Mean episode of diarrhea among private pre primary school children was 0.36±0.4 per child and among anganwadi children's 0.45±0.4 per child.

Past h/o Diarrhea in last 1months at the time of baseline data collection was 10% among private & 47% among anganwadi children was observed.

Table I: socio-demographic distribution of children suffering from Diarrhoea during first follow up.

	Private (88)		Anganwadi (157)		Total (245)		X^2 value (p value)
	No.	%	No.	%	No.	%	
Gender							
Boys	48	54.5	98	62	146	59.5	1.44 (0.28)
Girls	40	45.5	59	38	99	40.5	
Age							
3-4yrs	24	28	60	39	84	35	2.53 (0.11)
4-5yrs	64	72	97	61	161	65	
Occupation							
Working	03	03.5	134	85	137	60	150.0 (0.001)*
House wives	85	96.5	23	15	108	40	
Type of family							
Nuclear	54	61	75	48	129	52.6	3.65 (0.05)*
Joint	34	39	82	52	116	47.4	
Education							
Illiterate	00	00	94	60	94	38.4	---
Literate	88	100	63	40	151	61.6	
* significant							

Proportion of boys & age group 4-5yrs was more in both groups but this difference was not found statistically significant. Whereas significantly more number of mother were working in anganwadi group and staying with joint family compared to private group. All mothers in private group were literates whereas only 40% of anganwadi group were found literate as shown in table I.

Table II: distribution of children suffered from diarrhea according to environmental factors.

	Private (88)		Anganwadi (157)		Total (245)	
	No.	%	No.	%	No.	%
Water supply						
Protected	88	100	70	45	158	64
Not protected	00	00	87	55	87	36
Refuse disposal						
Dumping discriminately	00	00	95	60.5	95	39
Public dust bin	88	100	62	39.5	150	61
Toilet facility						
Sanitary latrines	88	100	67	43	155	63
Open air	00	00	90	57	90	37

Table II shows distribution of children suffered from diarrhea according to environmental factors like protected water supply, sanitary disposal of refuse and use of

sanitary latrines. According to above table maximum proportion of anganwadi children family practice dumping refuse discriminately around house, open air defecation and go for open air defecation. Whereas all the families of private school children had protected water supply, practice sanitary disposal of refuse and use of sanitary latrines.

Table III: comparison of hand washing practices among mothers of diarrhea suffered children

	Private (88)		Anganwadi (157)		Total (245)		X^2 value (p value)
	No.	%	No.	%	No.	%	
Before preparation of food							
Yes	73	83	44	28	117	47.8	66.0 (0.001)*
No	15	17	113	72	128	52.2	
Before feeding to kids							
Yes	62	70	37	23.6	99	40.5	45.5 (0.001)*
No	26	30	120	76.4	146	59.5	
After defecation							
Yes	88	100	124	79	212	86.5	---
No	00	00	33	21	33	13.5	
* significant							

According to table III significantly higher proportions of mothers anganwadi children suffered from diarrhea don't practice hand washing before preparation of food, before feeding to kids but do practice after defecation whereas majority of mothers of private school children use to practice hand washing before preparation of food, before feeding to kids & after defecation.

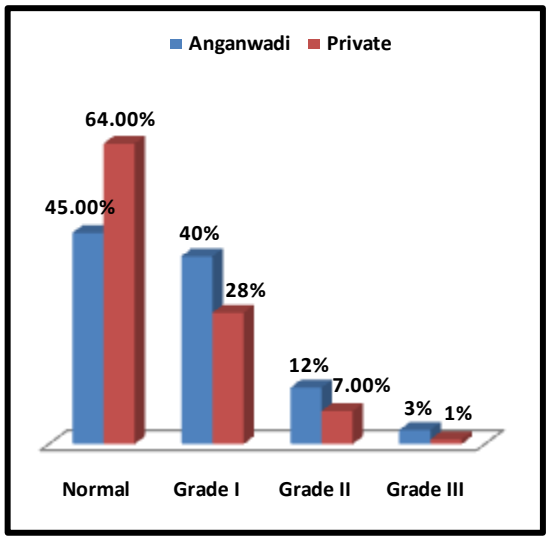

Figure I: distribution of diarrhea suffered children according to IAP classification of malnutrition.

Figure I shows majority of anganwadi children were found to be in grade I & II malnutrition according to Indian Academy of Paediatrics (IAP) guidelines compared to private school children.

An intensive health education session was given to the mothers of all children's after 1st follow up which included signs & symptoms of ADD, effects of ADD on child development & WHO guidelines for correct hand washing method was taught with practical demo for the period of 1month with regular intervals. After H.E session again follow up was done for the period of 3months for occurrence of diarrhea.

Attack rate was drastically reduced to 15% among private pre-primary school children & 55% among anganwadi children with total attack rate of 36%. Mean episode of diarrhea was also reduced among private pre primary school children t0 0.09±0.2 per child and among anganwadi children's 0.28±0.4 per child.

DISCUSSION

In the current study even though protected water supply and sanitary refuse disposal methods are followed more than half of DD's affected children & had sanitary toilet facilities in total, whereas in

studies of Girma R et al [10] and EI-Gilany A.H. et al, [11] found only 24.5% of the ADD affected children were having sanitary toilet facilities and 79% of the affected children were not having the sanitary toilet facilities. Whereas even though there is sanitary toilet facilities DD's was commonly seen in children in study of Siziya Seter et al, [12] this poor sanitary facilities leads to soil, water and food contamination and thus results in DD's.

Significantly higher proportion of mothers of ADD affected anganwadi children not practicing washing of their hands with soap and water before preparation of food, before feeding their children & after defecation in comparison to mothers of private pre-primary school children, similarly in the study of Ray SK et al [13] in urban slum area 98% washed their hands with soap after defecation; Only 36%, 16% and 2% washed their hands with soap before meal, before serving food and before cooking respectively. However, it was observed that 69% used soap and water for hand washing after cleaning the child's faeces. In rural area 71% used soap and water after defecation while 26% used mud or ash.

To recommend education should be given to the mother and other members of the family on improvement of domestic and peridomestic sanitation along with proper hand washing practices.

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How to cite this article: Tondare MB, Raje VV, Ganganahalli P et. al. Effect of hand washing practice & attack rate of acute diarrhoeal diseases among pre-primary school children. Int J Health Sci Res. 2014;4(9):31-36.

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