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Knowledge, attitude and practices of mothers of under-five children about Rotavirus diarrhoea and vaccine in a tertiary-care hospital of Northeast India

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Abstract **Original Research Article**

Childhood diarrhoea is one of the leading causes of hospitalization and death among under-five children. Rotavirus is one of the most important causes of severe diarrhoea because it has a propensity to cause rapid dehydration. Also, the profound vomiting that occurs in rotavirus-caused diarrhoea limits the scope of oral rehydration therapy. Vaccines are now being introduced in immunization schedules in a phased manner over the country. A descriptive, cross-sectional study was done to assess the level of knowledge of mothers about rotavirus and various attitudes and practices regarding its vaccination in a tertiary-care hospital of Northeast India. Convenience sampling technique was employed to interview 700 mothers of under-five children using a pre-designed, structured interview format. Descriptive statistics and suitable tests like Chi-square test were used to ascertain association between variables. A *P-value < 0.05* was considered statistically significant. Only about 2% of the total respondent mothers knew about the rotavirus and the vaccine. And among them, about half had satisfactory knowledge. The association of knowledge with educational level, occupation and age of the respondent's child was found to be statistically significant. Though the government's initiatives in introducing the vaccine in the national immunization schedule are definitely laudable, dissemination of information about its importance needs to be scaled using health education activities to improve the general awareness of the disease and acceptability of the vaccine.

Key words: Childhood diarrhoea, rotavirus, vaccine, mothers, under-five, awareness.

INTRODUCTION

Globally, diarrhoea is one of the major causes of morbidity and mortality among young children, second to acute respiratory infections [1]. Worldwide there are about 1.7 billion cases of childhood diarrhoea and 760,000 deaths every year [2] and it is estimated that 9% of all deaths among the under-fives occur due to diarrhoea [3]. A significant chunk of these cases is in developing countries like India [2]. The World Health Organization (WHO) suspects that there are >700 million episodes of diarrhoea annually in children < 5 years of age in developing countries [4]. It is striking that the overall incidence of diarrhoea remains unchanged at about 3 episodes per child per year over the decades, even though there has been a global improvement in general hygiene and sanitation levels [1]. Rotavirus is one of the commonest causes of severe diarrhoea in under-fives and is characterized by its propensity to cause rapid dehydration. It infects the mature villous enterocytes (intestinal epithelial cells) of the upper small intestine [5]. In India alone, more than 120,000 deaths are annually attributed to rotavirus. In fact, a staggering one-third of all diarrhoeal deaths are caused by rotavirus. It is responsible for 450,000 hospitalizations, 5 million clinic visits and 25 million diarrheal episodes in under-five children in India [6] emphasizing that rotavirus diarrhoea is an important cause of public health concern. Over the last decade, there has been an increasing trend towards isolation of rotavirus among children hospitalized with diarrhoea with rates as high as 39.2% [7-9]. Being relatively resistant to commonly used disinfectants, the virus poses a unique challenge as far as prevention of diarrhoeal diseases is concerned. It survives for long periods on hard surfaces, in contaminated water and on hands [10]. Immunization is therefore the natural choice

in this scenario. Immunization is the most cost-effective, convenient, practically feasible method of controlling communicable diseases like rotavirus infections. The World Health Organization in 2013 recommended that rotavirus vaccines be included in all national immunization programmes. It should especially be a priority particularly in countries with high rotavirus gastroenteritis (RVGE) associated fatality rates, such as South and Southeastern Asia and sub-Saharan Africa. Two live-attenuated rotavirus vaccines, Rotarix (RV1) and RotaTeq (RV5) have been proposed to be used [11]. The Indian Academy of Paediatrics, in 2012, had proposed the administration of Rotavirus vaccines in its immunization schedule at 6, 10 and 14 weeks of age [6] The Government of India finally decided to incorporate it into its Universal Immunization Programme in a phased manner. The Rotavirus vaccine was first introduced in four states namely Haryana, Himachal Pradesh, Andhra Pradesh and Odisha in March 2016 and then expanded to five more states of Assam, Tripura, Madhya Pradesh, Rajasthan and Tamil Nadu by 2017 [12,13].

The knowledge and awareness of mothers about consequences of rotavirus diarrhoea and the vaccination is a key factor that determines the morbidity and mortality associated with rotavirus because mother is the primary care-giver of a child. The present study was therefore carried out to throw more light on this matter and delve into various factors behind it.

MATERIALS AND METHODS

A hospital-based, descriptive cross-sectional study was carried out under the Department of Paediatrics, Agartala Government Medical College and G.B. Pant Hospital, Agartala, Tripura over a period of two months from May 2013 to June 2013. Mothers of under-five children visiting the Paediatric Out-Patient Department of the college were included as participants for the study. Those who were not willing to participate and those who had children above five years of age were excluded.

A total of 700 mothers were interviewed with the aid of a pre-designed and structured interview schedule. They were inquired about rotavirus diarrhoea, its consequences and different aspects of rotavirus vaccines. The targeted sample size of 700 was covered over a 2-month (8 weeks) period by interviewing around 90 mothers per week. Over six working days of the week, first fifteen (15) registered mothers who met the selection criteria were interviewed in a one-by-one, face-to-face manner. Convenience sampling method was employed to select the cases. Approval was obtained from the institutional ethics committee prior to the study. Informed consent was taken from every respondent before starting the interview and information thus obtained was dealt with confidentiality. The data thus obtained was entered in computer using SPSS version 13 software. Descriptive statistics and suitable statistical tests like Chi-square test were applied. A *P-value* < 0.05 was considered statistically significant.

RESULTS

The knowledge of mothers about rotavirus and the disease caused by it, and the awareness levels about rotavirus vaccine has been shown in Table 1. It also shows the proportion of mothers who had actually got their child vaccinated and also the reasons for non-compliance among those who hadn't.

Table-1: Knowledge, attitude and practices of mothers about rotavirus infection and rotavirus vaccine

Whether respondents knew about rotavirus (n = 700)	
Yes	18 (2.57%)
No	682 (97.43%)
Knowledge about the symptoms of rotavirus infection (n = 18)	
Diarrhoea	10 (55.56%)
Fever	4 (22.22%)
Abdominal pain	1(5.56%)
No idea	3 (16.67%)
Whether respondents knew rotavirus vaccine (n = 700)	
Yes	14(2%)
No	686 (98%)
Knowledge about the age and duration of administering rotavirus vaccine (n = 14)	
Adequate	7 (50%)
Poor / Absent	7 (50%)
Whether respondents had got their child vaccinated (n = 14)	
Yes	8 (57.14%)
No	6 (42.86%)
Reasons for non-administration of rotavirus vaccine (n = 6)	
No government supply	2 (33.33%)
Cost	1(16.67%)
No clear knowledge about utility	3 (50%)

The various sources from where knowledge of the vaccine was disseminated have been depicted in Figure 1.

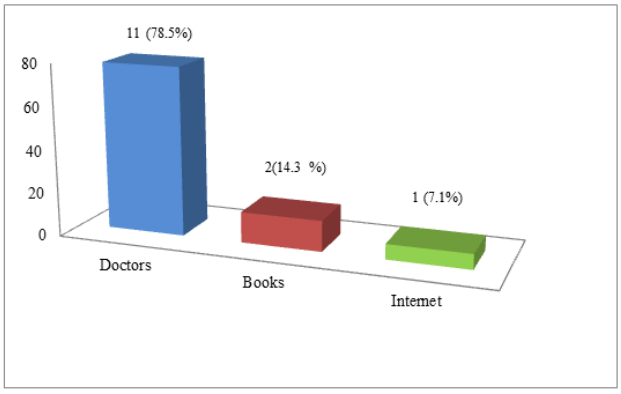

Fig-1: Sources of knowledge about rotavirus vaccine (n = 14)

The various determinants of the knowledge of rotavirus diarrhoea and the vaccine have been shown in Table 2. The association of knowledge with educational level, occupation and age of the respondent's child was found to be statistically significant.

Table-2: Association of knowledge of rotavirus diarrhoea and vaccine with various factors

Determinants	Knowledge of rotavirus diarrhoea and vaccine				Total
	Satisfactory knowledge		Poor / No knowledge		
	Number	Percentage	Number	Percentage	
Distribution of the respondents according to educational level [a]					
Illiterate	0	0 %	114	16.52 %	114
Primary educated	0	0 %	318	46.09 %	318
Secondary educated	2	20 %	225	32.61 %	227
Graduate and above	8	80 %	33	4.78 %	41
Total	*10*	*1.43 %*	*690*	*98.57 %*	*700*
Distribution of the respondents according to occupation [b]					
Housewife	3	30 %	564	81.74 %	567
Office-goer	0	0 %	45	6.52 %	45
Teacher	1	10 %	4	0.6 %	5
Nursing Staff	6	60 %	1	0.14 %	7
Unskilled labour	0	0 %	53	7.68 %	53
Shop keeper	0	0 %	23	3.33 %	23
Total	*10*	*1.43 %*	*690*	*98.57 %*	*700*
Distribution of the respondents according to age of their child [c]					
Less than 1 month	5	50 %	93	13.48 %	98
1 month to 1 year	5	50 %	304	44. 06%	309
1 -5 years	0	0 %	293	42.46 %	293
Total	*10*	*1.43 %*	*690*	*98.57 %*	*700*

[a] P-value = 0.001, [b] P-value = 0.000, [c] P-value = 0.000 , by chi-square test

DISCUSSION

The morbidity and mortality with the rotavirus is considerably higher because use of oral rehydration therapy is difficult in cases of rotavirus diarrhoea due to the severe vomiting while the same has been very effective in hospitalizations due to bacterial and parasitic causes [14]. One has to therefore rely strongly on vaccination. Studies have documented that following the introduction of the vaccine, there is a substantial decline in rotavirus diarrhoea hospitalizations [15, 16]. Our study highlights the poor awareness levels about rotavirus diarrhoea and the rotavirus vaccine among the mothers of under-five children, even though it is an important contributor to deaths due to childhood diarrhoea [6] further compounding the problem.

About 2% of the total respondent mothers knew about the rotavirus and the vaccine. And among them, about half had satisfactory knowledge about the disease and age and duration of the administration of the vaccine. A little over 1% of the total respondent mothers had actually got their child vaccinated (Table 1). This contrasts with a longitudinal study in Canada, where 49% of the participating mothers had heard of rotavirus. Among them, near-about two-thirds perceived its severity to be "ill" and around one-third to be "very ill". At 6-months of follow-up, 42% of the mothers had got their child vaccinated [17]. A study from Saudi Arabia found that around half of the interviewed mothers having children less than 6 months of age knew about the rotavirus disease and vaccine [18]. A study from Tamil Nadu, India reported that 34.2% mothers were aware about Rotavirus vaccine and

17% had got their children vaccinated [19]. It also revealed that doctors were the major source of information, which is very similar to our study (Figure 1).

In our study, lack of knowledge about its utility was cited as the commonest reason for non-compliance among those who knew about it, but didn't get their child vaccinated. A study in US also found that lack of adequate information about rotavirus disease and the vaccine were found as barriers to receiving the vaccine among parents [20]. A Canada-based multi-centre study reported that the various reasons behind non-compliance among the parents were "child was receiving enough vaccines", "the vaccine was not useful" and "the vaccine was not included in the free public vaccination program", [17] underlining the lack of awareness and the cost-issues associated with the rotavirus vaccine. Similar reasons were also reported by authors in studies from different areas of the country. [19, 21- 24] A study from Karnataka revealed that around two-thirds of the mothers didn't get their child vaccinated [21]. A study from Karnataka revealed that around two-thirds of the mothers didn't get their child vaccinated [21]. Fear of side-effects was reported as a cause in a study from Tamil Nadu by 8.3% of the mothers [19].

Knowledge levels were found to be significantly better among those who were higher educated, among nurses and whose children were within one year of age (*P-value* < *0.05*, Table 2) in the present study. Quite understably, those who were better educated or employed as nursing staff have better access to information on this subject. The last point can be explained by the fact that the vaccine began grabbing global attention only towards the end of the last decade. The Indian Academy of Paediatrics, in 2012, had recommended the usage of the vaccine at 6, 10 and 14 weeks of age. Therefore, it would be of limited significance to mothers of children beyond one year of age. Higher educational level and socioeconomic status was found to be significantly associated with better knowledge and practices towards rotavirus vaccination in various similar studies [18, 19, 21,24].

CONCLUSION

Our study reaffirms the fact that levels of awareness of mothers of under-five children about rotavirus diarrhoea and vaccine is low, in spite of the fact that rotavirus is a very important contributor to hospitalizations and deaths due to diarrhoea. The government's initiatives in a phased incorporation of the vaccines in the universal immunization programme are definitely praiseworthy. To further supplement this laudable initiative, public outreach on this subject needs to be scaled up. Health education in various formats like digital, non-digital as well as person-to-person individual interaction can be of benefit in this regard.

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REFERENCES

1. Park K. Park's textbook of preventive and social medicine. Preventive Medicine in Obstet, Paediatrics and Geriatrics. 2005.
2. World Health Organization. Diarrhoeal disease. 2013. Retrieved from World Health Organization. Avaialable at: http://www. who. int/mediacentre/factsheets/fs330/en. 2015.
3. UNICEF. Committing to Child Survival: A Promise Renewed, Progress Report 2013, UNICEF. New York. 2013.
4. DeBaun MR, Vichinsky E. Nelson textbook of pediatrics.2008
5. Biomedical center BMC Infectious Diseases 2008, 8:103 http://www.biomedcentral.com/1471-2334/8/103. Accessed on 13.11.2011.
6. Parthasarathy A. IAP Textbook of pediatrics. Jaypee Brothers, Medical Publishers Pvt. Limited; 2019 Feb 4.
7. Banerjee I, Ramani S, Primrose B, Moses P, Iturriza-Gomara M, Gray JJ, Jaffar S, Monica B, Muliyil JP, Brown DW, Estes MK. Comparative study of the epidemiology of rotavirus in children from a community-based birth cohort and a hospital in South India. Journal of clinical microbiology. 2006 Jul 1;44(7):2468-74.
8. Bahl R, Ray P, Subodh S, Shambharkar P, Saxena M, Parashar U, Gentsch J, Glass R, Bhan MK. Incidence of severe rotavirus diarrhea in New Delhi, India, and G and P types of the infecting rotavirus strains. Journal of Infectious Diseases. 2005 Sep 1;192(Supplement_1):S114-9.
9. Kang G, Arora R, Chitambar SD, Deshpande J, Gupte MD, Kulkarni M, Naik TN, Mukherji D, Venkatasubramaniam S, Gentsch JR, Glass RI. Multicenter, hospital-based surveillance of rotavirus disease and strains among Indian children aged< 5 years. The Journal of infectious diseases. 2009 Nov 1;200(Supplement_1):S147-53.
10. American Public Health Association. Rotaviral Enteritis. In: Heyman DL, editor. Control of Communicable Diseases Manual. 19th ed. Washington DC: American Public Health Association; 2008. p. 253-6
11. World Health Organization. Introduction of Rotavirus Vaccines. July 2013.
12. PANT S. Ministry of health and family welfare.
13. CONSIDERING SH. PRESS INFORMATION BUREAU GOVERNMENT OF INDIA.
14. Ahmed FU, Karim E. Children at Risk of Developing Dehydration from Diarrhoea: A Case-

control Study. Journal of tropical pediatrics. 2002 Oct 1;48(5):259-63.
15. Patel MM, Steele D, Gentsch JR, Wecker J, Glass RI, Parashar UD. Real-world impact of rotavirus vaccination. The Pediatric infectious disease journal. 2011 Jan 1;30(1):S1-5.
16. Bar-Zeev N, King C, Phiri T, Beard J, Mvula H, Crampin AC, Heinsbroek E, Lewycka S, Tate JE, Parashar UD, Costello A. Impact of monovalent rotavirus vaccine on diarrhoea-associated post-neonatal infant mortality in rural communities in Malawi: a population-based birth cohort study. The Lancet Global Health. 2018 Sep 1;6(9):e1036-44.
17. Dubé E, Bettinger JA, Halperin B, Bradet R, Lavoie F, Sauvageau C, Gilca V, Boulianne N. Determinants of parents' decision to vaccinate their children against rotavirus: results of a longitudinal study. Health education research. 2012 Aug 19;27(6):1069-80.
18. Mohammed RGA. Assessing Mother's Knowledge Regarding the Importance of Rotavirus Vaccine for their Children. International Journal of Novel Research in Healthcare and Nursing 2017; 4(1): 204-211.
19. Muppidathi S, Boj J,Deivanayagam S. Knowledge on rotavirus and pneumococcal vaccines among mothers of under five children. Int J Contemp Pediatr 2017;4:1739-42.
20. Patel MM, Janssen AP, Tardif R, et al. A qualitative assessment of factors influencing acceptance of new rotavirus vaccine among health care providers and consumers. BMC Pediatr 2007; 7: 32.
21. Gollar L, Avabratha K. Knowledge, attitude, and practice of mothers of under-five children regarding diarrheal illness: A study from coastal Karnataka. Muller Journal of Medical Sciences and Research. 2018 Jul 1;9(2):66-.
22. Ambike D, Tambade V, Poker F, Ahmed K. Parental knowledge on the optional vaccines and the barriers in their use: A rural hospital-based study. Ind J Child Health. 2017;4(1):88-90.
23. Manjunath U, Pareek RP. Maternal knowledge and perceptions aboutthe routine immunization programme--a study in a semiurban area in Rajasthan. Indian journal of medical sciences. 2003 Apr;57(4):158-63.
24. Mukherjee R, Arora M, Kotwal A, Hooda P. Awareness and attitudes of mothers towards new vaccines in the childhood vaccination programme in delhi state: a cross sectional study. International Journal Of Community Medicine And Public Health. 2017 Sep 22;4(10):3859-63.