ORIGINAL RESEARCH PAPER

VOLUME-6 | ISSUE-5 | MAY - 2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PREVALENCE OF DIARRHOEA BETWEEN ROTAVIRUS IMMUNIZED AND NON-IMMUNIZED UNDER FIVE CHILDREN

Community Medicine

Dr. NESAMONY MANEKSH KUMAR ASSISTANT PROFESSOR, COMMUNITY MEDICINE, Dr. SOMERVELL MEMORIAL CSI MEDICAL COLLEGE, KARAKONAM, THIRUVANANTHAPURAM- 695504

Dr. DELINDA LINU SWORNILA Associate Professor, Physiology, Dr. Somervell Memorial CSI Medical College, Karakonam, Thiruvananthapuram- 695504

Miss. SRUTHI.S 2013 Batch, MBBS student, Dr. Somervell Memorial CSI Medical College, Karakonam, Thiruvananthapuram- 695504

ABSTRACT

Background: Annually, 4.6 million children die due to dehydration caused by diarrhoea. The World Health Organization (WHO) initiated the diarrheal disease control programme in 1980. In 2012, each day 1600 under five children died due to diarrhoea. It accounts for 9% of all under-five deaths. In India, acute diarrheal disease accounts for 8% death in under- five age group.

Objective: To find the prevalence of diarrhoea among Rotavirus immunized and non-immunized under- five children.

Materials and Methods: Hospital based cross sectional study conducted on 100 parents of children under- five years of age attending Paediatric services, in a tertiary care centre, South Kerala. Data was entered in excel and analysed using SPSS- version 16 software. Chi Square test was used. A p-value < 0.5 was considered statistically significant.

Result: The study included 100 respondents, of which 74% children were immunized against Rotavirus and 26% were non- immunized. Out of the immunized children, 53 (71.6%) children didn't have further episodes of diarrhoea after vaccination. The study revealed that, out of the 26 non vaccinated children, 21 children's parents were unaware of the Rotavirus vaccine ie, 80.7% of the respondents. This indicates that the Rotavirus vaccine is not that popular among the rural population.

Conclusion: Rotavirus vaccine was found to be effective in reducing the burden of diarrhoea among under- five children. Based on this study we can recommend that Rotavirus vaccination of infants be included in all National immunization programmes.

KEYWORDS:

Under-five children, diarrhoea, Rotavirus vaccination, Immunized, Non-immunized

INTRODUCTION

Diarrhoea is the passage of loose, liquid or watery stools more than 3 times a day as defined by Park (2015). The World Health Organization (WHO) initiated the diarrheal disease control programme in 1980, approximately 4.6 million children used to die each year due to diarrhoeal dehydration. Diarrhoea is still a major killer of children under five. It killed more than 1600 under-five children every day in 2012. It accounts for 9% of all under five deaths (P.221-227). Ghai (2015) states that, comparing estimates of the current global burden of the diarrheal disease with previously published estimates highlights that the incidence of diarrhoea has not changed much, although overall diarrheal mortality has declined. In India, acute diarrheal disease accounts for 8% death in under-five age group. Diarrheal disease causes a heavy economic burden on the health services. Much attention has been given to acute diarrheal disease and its management over the last decade, which is dominated by advance in Oral Rehydration technique and through Integrated Management of Childhood Illness (IMNCI). These changes in treatment recommendations and preventive measures have subsequently lead to monitorable treatment and diarrhoea prevention (P.198).

Pathogen frequently identified in children with acute diarrhoea in treatment centres in developing countries are viruses like Rotavirus (15-25%), bacteria like Enterotoxigenic E.coli (10-20%) and protozoan Cryptosporidium (5-15%). In developing countries, diarrhoea is almost universally infectious in origin. Diarrheal disease is the second leading cause of death in under-five children killing 7, 60,000 children annually. It is also leading cause of malnutrition in children.

According to Anthanarayan & Panikers (2013), epidemiologic studies indicate that rotavirus is responsible for 6-45% of diarrheal illness requiring hospitalization in Indian children (P.560). A database study by Annmarie etal on impact of Rotavirus vaccination in below 5 Australian children (2013), revealed that there was an overall reduction in hospitalization due to rotaviral vaccines.

This study was done to assess the prevalence of diarrhoea in under-five children who have been immunized with Rotaviral vaccine with that of non-immunized in our locality, which is a rural tertiary care centre, South Kerala.

OBJECTIVES:

1) To find the prevalence of diarrhoea between Rotavirus immunized and non-immunized under- five children.
2) To prove that Rotavirus vaccination reduces diarrhoea in under-five children.

MATERIALS AND METHODS:

Hospital based cross sectional study conducted on parents of 100 children aged under- five years, attending outpatient and inpatient services of Department of Paediatrics, a rural tertiary care centre, South Kerala. Parents were enrolled by convenient sampling method and consent was obtained. Parents of children with chronic diseases were excluded. The investigator carried out one to one interview using pre-tested semi-structured questionnaire. Data was entered in excel and analysed using SPSS- version 16 software. Chi Square test was used. A p-value < 0.5 was considered statistically significant.

RESULTS

Out of the 100 children aged under- five, 74 were immunized with Rotavirus vaccination and 26 did not have the vaccine.

Table:1 Distribution of children based on prevalence of diarrhoea

	Diarrhea(+)	Diarrhea(-)
Immunized (n=74)	21(28.4%)	53(71.6%)
Non immunized (n=26)	24(92%)	2 (8%)
P < 0.5		

Prevalence of diarrhoea among immunized and non-immunized children is shown in table 1. Out of the 74 vaccinated children, 53(71.6%) children did not gave diarrhoea and 21 (28.4%) had episodes of diarrhoea. On the contrary, 24 (92%) of the non-immunized children continued to have diarrhoea while only 2 (8%) were free of it. This shows that Rotavirus vaccination helps in reducing the prevalence of childhood diarrhoea.

Table:2 Distribution of children based on the feeding practices

	Breast feeding	Other milk(within 6 months)	Purification of water
yes	92%	39%	93%
no	8%	61%	7%

Feeding practices of the children enrolled are shown in table 2. Even though a relatively higher proportion (92%) of children were breast fed, 61% had consumed other milk in the first 6 months. 93% of the parents used techniques to purify water.

Table:3 Distribution of non-vaccinees (26) based on knowledge about Rotavirus vaccine

Unaware	Didn't feel necessary
21(80.8%)	5 (19.2%)

Out of the 26 parents of non-immunized children, 21(80.8%) were unaware of the availability and advantages of Rotavirus vaccine. 5 parents (19.2%) ignored the vaccine.

DISCUSSION

In this study, we have found the prevalence of diarrhoea among rotavirus immunized and non –immunized under 5 children. This study shows that rotavirus vaccine has significantly reduced the episodes of diarrhoea in under 5children.Among the 100 children studied, 74 children are vaccinated against Rota viral diarrhoea and out of the 74 immunized children, 53 (71.6%) children didn't have further attacks of diarrhoea after vaccination. Thus, the rotavirus vaccine is expected to deliver a considerable public health benefit. However, it is lower than that observed in developed countries. This finding is consistent with findings from other studies of live oral vaccines, such as the oral polio vaccine the cholera vaccine, oral typhoid vaccine, whose efficacy is also reduced in developing countries than the developed countries.

Also the study has shown that of the 26 non vaccinated children, 21 children's parents are unaware of the Rotavirus vaccine ie, 80.7% of the respondents. This indicates that the Rotavirus vaccine is not that popular among the rural population.

The study also gives information on the breast feeding practices of the surveyed population since early weaning has a significant role in diarrhoea among infants. It shows that 92% children were breastfed for 6 months.

The WHO's Global Advisory Committee on Vaccine Safety has reviewed the safety of the currently licensed Rotavirus vaccines. The meta analysis reinforces that the introduction of the vaccine reduces hospitalisations and reduces the frequency of severe rotavirus episode in under 5 children. Overall, our finding shows a decrease in the proportion of diarrhoea in the post vaccines and provides further evidence that rotavirus vaccinations are associated with reduction in diarrhoea morbidity. This study findings strongly recommend that Rotavirus vaccination of infants should be included in all National immunization programmes, in conjunction with other proven interventions for diarrheal disease.

CONCLUSION

Rotavirus diarrhoea is a significant health problem in under- five children of India both in hospital and community setting. It is found that Rotavirus vaccination has reduced further incidence of diarrhoea among majority of the immunized children, which indicate that the vaccine against Rotaviral diarrhoea will be successful in reducing the morbidity associated with diarrhoea. Since rotavirus is the leading cause for diarrhoea among under-five children, it is important to analyse the efficacy of the vaccine. Our study has shown that vaccine is effective in control of diarrhoea among under- five children in a rural area of South Kerala.

QUESTIONNAIRE

Name: **Age:** **Sex:**
Informant:

a) Any episode of diarrhoea since birth?
1. yes 2.no

b) If yes, how many episodes?
1. <3 2.>3

c) Whether the child immunized for age
1. yes 2.no

d) Whether the child has taken rotavirus vaccine
1. yes 2.no

e) If yes, then schedule
1. 6, 10, 14wks 2.other schedule

f) Any episodes after vaccination
1. not yet 2.yes

g) Was the child admitted to hospital for the same
1. yes 2.no

h) If yes, then treatment
1. ORS 2.IV drip

i) Symptoms of the child
1. only diarrhoea 2.diarrhea and vomiting

j) Child was exclusively breastfed for
1. <6 months 2.6 months

k) Complementary feeding started at
1. <6 months 2.>6months

l) Was the child given any other milk
1. yes 2.no

m) Mode of purification of water
1. boiling\water purifier 2.not purified

n) Is there any other children with similar complaints (<5 yrs) in the house
1. yes 2.no

o) If not vaccinated against Rotavirus, then why?
1. unaware 2.didnt feel necessary

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