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| **EPIDEMIOLOGICAL SURVEY OF GASTROENTERITIS DUE TO ROTA VIRUS: A HOSPITAL BASED STUDY** |
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| **One Health Institute**  **Chattogram Veterinary and Animal Science University**  **Chattogram-4225, Bangladesh**  **June 2020** |

A thesis submitted in partial fulfillment of the requirements for the degree of master’s in **Public Health**

**Authorization**

I, hereby, declare that I am the one and only author of this thesis. I authorize that Chittagong Veterinary and Animal Sciences University to lend this thesis to other institutions or individuals for the purpose of scholarly research.

I, the undersigned, and author of this work, declare that the electronic copy of this thesis provided to the CVASU central library is an accurate copy of the printed thesis.

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Dr. Fatematuz Zohra

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**Dr. Fatematuz Zohra**

**This is to certify that we have examined the above thesis and found it to be complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made.**

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**List of Abbreviations**

|  |  |
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| **Abbreviation** | **Elaboration** |
| RVA | Rotavirus Group A |
| CI | Confidence interval |
| COV | Cut-off value |
| CWASA | Chattogram Water Supply and Sewerage Authority |
| EIA | **Enzyme immunoassay** |
| ELISA | Enzyme-linked immunosorbent assay |
| ICT | Immunochromatographic technique |
| RT-PCR | Reverse transcriptase-polymerase chain reaction |
| Rt | Real time |
| VP | Viral protein |
| OR | Odds ratio |

**Summary**

Rotavirus has been considered to be one of the most common causes of infectious gastroenteritis among infants and young children under five. This virus not only infects humans but are also found among animals and transmission between the two are yet to be established. Since diarrhea with acute gastroenteritis is common among children in Bangladesh, an attempt was made to identify what percentage of these cases were infected by rotavirus. At the same time, a comparison between different factors were made to identify what factors contributed more to the development of rotavirus infections.The cross sectional survey was conducted at Chattogram district where data was collected over a period of six months(July 2019- Dec 2019) from two different hospitals.A total of 150 children with acute watery diarrhea were selected and information on their demographics, their parental education, contact history and the environment they lived in, were collected. Then the stool samples were collected and sent to laboratory for ICT. All the risk factors were evaluated based on rota-positive and rota-negative cases and a comparison was made between the two by univariable and multivariable logistic regression analysis. Among the respondents, prevalence of rotavirus infection was 46.7% (95% CI between 38.7-54.0). On analyzing variables to identify risk factors for rotaviral infections, it was found that the prevalence of rotaviral infection was least in the 1 to 6 months age group (32%) compared to the 7 to 12 months (52% OR=2.26) and above 12 months (49%, OR=2.05) age group. Despite the odds of having rotaviral infection more than twice in the above 6 months age groups, no statistically significant difference has been observed (p value>0.05). In case of gender, rotaviral infections were significantly (p=0.03) more prevalent in male children (53%, OR=2.08) compared to female children. In case of economic status, children of middle class parents had a slightly higher odds (OR=1.07) of being infected by rotavirus. Only two children were belonged to the upper economic class family and both were ICT positive for rotaviral infections. Regarding parents education, children of graduate parents had a lower chance of being infected by rotavirus(OR=0.33), and so were children living in apartment buildings (OR=0.53). On conducting a multivariable logistic regression, three variables, age, gender and number of family members were significantly associated with rotaviral infections (p-value less than or equal to 0.05).

In case of family size, children from large families (having more than 3 family members) had a significantly higher odds of having rotaviral infections (p=0.04). Surprisingly, children with a travel history (p=0.05), who attended large gatherings (p=0.03) and who visited restraunts (p=0.03) prior to illness also had significantly lower chance for rotaviral infections. Common symptoms of gastroenteritis in our study group were fever, nausea, vomiting and dehydration; and the least common were bloody stools followed by chills and sunken eyes. No significant differences in clinical signs were observed between rota-positive and rota-negative cases.

Findings in this study suggest that variables other than socioeconomic status, contact and environmental history play a significant role in the transmission of rotaviral infections. Although no significant differences were observed in clinical findings, some findings such as bloody stools were more common in rota-positive cases. Using this study as a guideline, further evaluation on the prevalence and clinical features of rota-positive cases can be done in other districts or in different locations within the same district so as to monitor the distribution of rotavirus infection among the human population of Bangladesh.