Impact of vaccination on the socioeconomic risk factors for cholera in an endemic setting of Bangladesh

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Background: Cholera continues to be a threat in many developing countries. Socioeconomic factors play an important role in transmitting the disease. Killed whole-cell oral cholera vaccines (OCV) are now considered an important tool to control cholera. This study aims to investigate the impact of vaccination on the socioeconomic risk factors of the disease.

Methods: The study was conducted in Dhaka, Bangladesh. The study area was divided into 90 geographic clusters; 30 in each of the three arms of the study: vaccine (VAC), vaccine plus behavioural change (VBC) and a non-intervention arm. Socio-demographic data of each individual were linked to vaccination and cholera surveillance using a unique ID given to each individual in the study population. The data were analysed for the three populations: 1) recipients of two-doses of OCV in the intervention arm (VAC and VBC arms) 2) OCV non-recipients within the intervention arm and 3) all participants in the non-intervention arm. A generalized estimating equation with logit link function was used to estimate the risk for cholera among these different populations adjusting for household level correlation in the data.

Results: Vaccine was associated with significant protection of cholera. A total of 528 cholera and 226 cholera with severe dehydration (CSD) cases in 268,896 participants were observed in the two-year follow-up. For population 1, no socioeconomic factors were found to be risk for cholera; however, CSD was less likely among participants living in a household having ≤4 members (aOR=0.55, 95% CI=0.32-0.96). Among population 2, younger people and individuals having diarrhoea during baseline census were more likely to have cholera than their counterpart. In this population, females and individuals with diarrhoea at baseline census were at increased risk of CSD. Among population 3, participants living in a household without a concrete floor, or in an area with high population density, or closer to the icddrb hospital, or not treating drinking water were at significantly higher risk for cholera and CSD.

Conclusion: A cholera vaccination eliminates the risk for cholera due to socioeconomic disparities among population in an economically disadvantage setting.

Speaker Biography

Dr Amit Saha is an epidemiologist with special interest in the epidemiology of vaccine-preventable diseases and promoting the implementation of vaccines in resource-poor settings. He is a medical graduate and holds Master of Medicine (M.Med.) in Infection and immunity from the University of Sydney. Amit is an Associate Scientist in the group of Infectious Disease Division at icddr,b in Bangladesh and currently a doctoral candidate with the School of Public Health and Community Medicine, UNSW. He has over fifteen years of professional experience in a wide range of fields in infectious diseases epidemiology and large field-based clinical studies on enteric vaccines in low and middle income countries.

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