Implementation Research in Health Campaign Effectiveness: A Retrospective Study on Immunization-Related Campaign Integration in Bangladesh

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Key Messages

- The study showed that the co-delivery or collaboration of campaigns is effective and efficient in achieving desired health goals, is cost-effective, and is preferred in low- and middle-income countries.

- Through the integrated campaigns, the national Expanded Programme on Immunization (EPI) in Bangladesh achieved huge success, sustainability, and community trust, which can be utilized for other health campaigns.

- Multisectoral collaboration, engaging the community through local leaders, and microplanning are vital to integrated health campaigns and other health programs as well.
Introduction and Background

Mass vaccination campaigns have been central to controlling and eliminating infectious diseases in low- and middle-income countries [1]. Since 1995, Bangladesh has a history of successful mass campaign programs for the control of vaccine-preventable diseases through its national Expanded Programme on Immunization (EPI). These campaigns gained momentum during the National Immunization Days (NID) for polio eradication, which was supported by the Global Polio Eradication Initiative spearheaded by the World Health Organization (WHO), the Bill & Melinda Gates Foundation, Rotary International, the US Centers for Disease Control and Prevention, and the United Nations Children’s Fund (UNICEF) [2-4]. No wild polio cases have been reported since 2006, and Bangladesh achieved polio-free status by successfully conducting 21 NIDs between 1995 and 2014 [5]. The government of Bangladesh used this popular platform of NIDs—consisting of government workforces, donors, partners, NGOs, and volunteers—by integrating the National Vitamin A-Plus Campaign and anthelmintic treatment. This is a remarkable example of campaign integration with co-delivery of oral polio vaccine (OPV) with vitamin A capsules and deworming tablets. This platform is also used for other disease campaigns, such as measles-rubella and oral cholera vaccine campaigns, and COVID-19 vaccination campaigns that share resources, volunteers, infrastructure, logistics, community engagement methods, training, advocacy, and meetings [6]. This integrated campaign strategy in Bangladesh resulted in high coverage for OPV, measles-rubella, and vitamin A and deworming over the years.

In the NIDs, vitamin A and deworming campaigns have had OPV delivery integrated. NIDs are no longer being conducted, however; both vitamin A supplementation and deworming campaigns have now been established as separate entities using this highly successful platform and share a few components of NIDs. Although this integrated campaign strategy was very successful, the huge tacit knowledge of these campaigns—including the reasons for its success, effectiveness, and lessons learned—will be lost if they are not effectively captured and disseminated. Future campaigns and other health programs of Bangladesh and other low- and middle-income countries can benefit from these knowledge assets produced by these integrated campaigns over the decades. Therefore, this study aims to develop findings regarding the success and challenges of these integrated campaigns along with the best practices, lessons learned, and recommendations about strengthening future public health interventions through integrated campaigns, which will benefit policy makers and implementers. These findings are expected to support and sustain integrated partnerships for introducing new vaccines in the future in Bangladesh, such as the COVID-19 vaccination.

Research Questions

1. What were the contexts that led to Vaccine Preventable Disease vaccination campaigns to be integrated with other health campaigns?
2. What were the facilitating and hindering factors of integrated health campaigns with other health campaigns?
3. What were the negative and positive effects of integrated health campaigns on service delivery outcomes?
4. What are the components of integrated health campaigns that can be applied to strengthen future health programs in Bangladesh?
Methods

This study used a sequential explanatory mixed-method design to obtain the successes and challenges of integrated health campaigns in Bangladesh along with best practices, lessons learned, and recommendations. The study had four steps of data collection:

1. As a first step, a group of four researchers conducted a scoping literature review to map the existing evidence on integrated health campaigns in the field of immunization from low- and middle-income countries. Peer-reviewed journal articles were identified using three search engines (PubMed, Scopus, and Google Scholar). A grey literature review was also conducted, selecting institutional websites for publication, especially for Bangladesh. Full-text articles using any study design and across any time frame were included in the review. Data were extracted following a predefined matrix, analyzed deductively based on pre-decided themes and subthemes, and presented in a narrative synthesis. The findings of the review were used to guide the quantitative and qualitative tool formation.

2. As a second step, a stakeholder workshop was held to discuss the study objectives, for guidance on the project’s future steps and facilitate quantitative and qualitative tool formation. Government officials from EPI Headquarters, Communicable Disease Control, Institute of Public Health Nutrition, civil surgeons, and chief health officers were present. Officials from WHO, UNICEF, BRAC University, Rotary International, and retired government officials involved with NID also participated in the workshop. They shared their experiences and thoughts on the research questions. Data from the workshop were extracted and analyzed following a predefined matrix, and analyzed deductively based on themes and subthemes.

3. As a third step, the quantitative survey was conducted with individuals (identified through snowball sampling) directly involved in NID activities in Bangladesh for six or more months between 1995 and 2014. The survey gauged participants’ impressions about the campaign integration’s Reach, Effectiveness, Adoption, Integration, and Maintenance (RE-AIM framework) (Annex 4), and provided an opportunity to identify potential participants for key informant interviews and in-depth interviews. The survey was conducted in the Rajshahi division as a high-performing area, Chattogram division as a low-performing area, and Sylhet as a middle-performing area according to the Coverage Evaluation Survey 2014 (Annex 1,2). One district and one city corporation were selected from each division for the survey. The survey was also conducted in Dhaka, where participants were selected through snowball sampling. Quantitative data were analyzed in Stata 13 for descriptive analysis.

4. As a fourth step, key informant interviews and in-depth interviews were conducted among respondents identified from the survey data, considering their experience and expertise in integrated campaigns and persons nominated by several survey respondents. The participants included those who were involved in the NIDs for at least six months or more in Bangladesh from 1995 to 2014. They were (current and retired) field-level, managerial-level, and policy-level government employees of EPI, Communicable Disease Control, Institute of Public Health Nutrition, WHO, UNICEF officials, and officials from representatives from local NGOs who were directly involved in NIDs. The survey questionnaire (Tool 1) and interview guidelines (Tool 2, 3) were designed, and the data were analyzed based on the RE-AIM framework (Annex 4).
The quantitative and qualitative data were then combined, and the findings were triangulated. During data analysis, triangulation of the quantitative and qualitative data was performed to compare and contrast the findings obtained from the survey with the information collected through the interviews.

Ethical approval of this study was obtained from the Institutional Review Board of BRAC James P. Grant School of Public Health, BRAC University. All the participants took part in the survey and interview after signing the informed written consent (Tool 4, 5).

Results

Scoping review: Thirty-four articles (22 academic, 12 grey) were included in the final review. The most common health service that was integrated with any kind of immunization campaign found in this review was vitamin A supplementation. This review also suggested that the integration of health care services, including vaccines, increases the overall coverage of immunization campaigns. This was achieved mainly through NIDs, also evident in remote areas, and through school-based platforms when the target population was specific to school-going children. Integration of immunization with another service of varying acceptance increased uptake of the lower-accepted health service; the more accepted service worked as a vehicle for greater shared coverage or created additional demand for the integrated service. For example, when maternal, newborn, and child health services were integrated with less accepted child polio vaccination in conflict-affected and polio endemic areas of Pakistan, the coverage and uptake of the OPV went up by 8.5% [7]. The same was also observed in cases of culturally sensitive health services. This review found that integration of services for a public health issue that needs multiple and multidimensional interventions was both effective and feasible as an implementation solution. In some cases, integration was specifically implemented as a cost-effective approach to reach underserved populations in rural areas, especially when a strong bond had already been established between service providers and the community.

Several common challenges were also identified. In particular, there is an initial cost to integrating two or more services, which may not be feasible for some low- and middle-income countries in the short term. Furthermore, integration often saddles staff in the field with additional responsibilities, for which sufficient training and logistical support is not always accounted for while planning an integrated health campaign. Bangladesh observed continued integration from its second NID in 1996 until 2014, with integrated services of vitamin A supplementation, deworming, OPV and breastfeeding awareness, and measles-rubella campaign. In recent years, not many such examples were found that met the scope of our review despite the benefits of implementation.

Survey and interviews: Through the survey, 272 responses were received (Annex 3a), mostly representing field-level health staff. We conducted a total of 18 key informant interviews with national and district officials who worked in integrated campaigns and 32 in-depth interviews representing field-level staff (Annex 3b).

Reach

The government of Bangladesh started integrating campaigns nationally to target the under-five population to make the country polio-free and improve vitamin A and deworming coverage. Almost all survey respondents (n= 269, 98.9%) at the policy, managerial, and field levels agreed that the implementers could reach the target population by providing OPV, vitamin A, and deworming tablets.
We observed similar findings from qualitative interviews. According to respondents, the national high coverage of NIDs (above 95%, Coverage Evaluation Survey) illustrates the huge success of those campaigns. Moreover, according to study participants, the NID campaigns increased coverage for vitamin A and deworming and most children got the vitamin A capsule and deworming tablets.

Although the campaigns were implemented widely and the government of Bangladesh, with help from other stakeholders, took several strategies to reach children, some children were often missed in those national campaigns. The qualitative interviews revealed that one day of fixed site distribution, followed by four days of child-to-child searching by canvassing each household, and providing OPV drops in the household was an effective strategy to reach the missed population during NIDs [8,9]. The canvassing strategy was conducted as follows by field-level workers. On the first day, vaccination was held only from a fixed booth. Then, four days of child-to-child searching was added to offer OPV to each child missed. Each ward is divided into four blocks and those four were again divided into eight sub-blocks. For searching, each sub-block was divided into two. The team consisted of two members who visited each single household to find any missed children. There was a system of marking the visited house with chalk. With that marking, we would understand when it was held, how many under-five children were there, how many were vaccinated, and how many were left.

A list of searching was made for the next supervisor so that he could understand which house was already searched and could feed the child vaccine according to the list. —Field-level worker, key informant interview

The study found that initial hesitancy and misconceptions about the vaccine and lack of access in hard-to-reach areas, including haor (shallow wetlands) and hilly areas and for people living in informal urban settlements and migratory population, were the main reasons that children were left unvaccinated children even after routine immunization and campaigns. Special strategies (described later) were taken to reach them.

**Effectiveness**

- Most (n=249, 91.5%) survey respondents were satisfied with the integration of health campaigns as it was effective. The in-depth interviews stated that OPV coverage increased so much that we managed to stop the polio transmission since the year 2000. Since 2006, no cases of polio have been found. The survey found that the integrated campaigns were effective as they allowed easy accessibility of the beneficiaries (n=182, 73.7%), improved health-related knowledge (n=172, 69.6%), and saved time (n=113, 45.8%) for beneficiaries as more than one intervention was given at the same time (Annex 5). In contrast (n=23, 8.5%) respondents identified challenges related to workload (n=13, 56.5%), human resource shortages (n=10, 43.5%), and complicated campaign characteristics (n=6, 26.1%) in implementing multiple interventions at the same time (Annex 6).

- Most of the survey respondents mentioned “organizational context” (n=33, 60%) and “social context” (n=30, 54.6%) as the two main reasons why the campaigns ran. The key informant interview respondents stated that the NIDs were integrated with other health campaigns due to increasing immunization coverage. The integration of vaccine-preventable diseases with health campaigns was also noted by the respondents for reducing operating costs, minimizing the workload of field-level workers, and providing multiple services concurrently.
All respondents recognized integrated campaigns as effective because they are cost-effective, provided one-stop service of multiple interventions at a time in one place, and save the time of the health care providers and beneficiaries. According to respondents, the whole-hearted endeavor of the field staff, efficient training, community engagement, powerful means of communication, publicity of the program, teamwork, and dedication to one’s duties are the frequently cited reasons for why integrated campaigns are effective.

**Adoption**

- Overall, 117 (43%) out of 272 survey participants mentioned the adoption in integrated health campaigns over time of recruiting volunteers (n=88, 75.2%), providing additional training to the EPI staff and volunteers (n=67, 57.3%), and microplanning (n=59, 50.4%) (Annex 7, 8).

- The qualitative interviews showed that in the initial NIDs, there was a lack of human resources at field level, lack of training, and lack of communication from the central level to the field. After the initial NIDs, the government of Bangladesh trained and mobilized millions of community volunteers, including teachers, religious and local political leaders, students, and various NGO members to reach the community. The volunteers were given training on providing oral vaccines, controlling the crowd, and organizing the queue for the children (Annex 9).

- Though the initial rounds of NID campaigns were highly successful, there were missing children in each round [8]. The same pattern was seen in hard-to-reach areas as well. To vaccinate the targeted huge number of children (20 million according to key informant interviews), child-to-child searching was added to the strategy to identify and vaccinate (with OPV) those children who could not be reached or vaccinated during the day of NID. This plan included a four-day child-to-child search followed by the fixed-site day to vaccinate all the children who had been unreached.

- The respondents also informed that NID campaigns were designed such that the routine EPI was never harmed. Usually, routine immunization is provided two days a week and the NIDs are conducted on the rest of the days. For hard-to-reach areas and special populations, the number of campaign days was increased. In those cases, the NID campaign was held in the EPI center. The health assistant did the routine EPI work and the volunteers did the NID-related work.

**Implementation**

- Out of 55 policy-level respondents, most (n=48, 87.3%) mentioned the government was at the forefront in implementing activities related to the integrated health campaign at all levels (from policy to field level). In addition, respondents mentioned that WHO (n=44, 80%), UNICEF (n=44, 80%), GAVI (n=34, 61.8%), and BRAC (n=24, 43.6%) were the other major players in the implementation.

- The interviews found that committees at the central and field levels were formed to coordinate the policy-level stakeholders with the mid-level and field-level stakeholders. The central-level committee worked at the management levels, whereas the policy-level stakeholders discussed the target population and other plans of the campaign implementation through meetings, and
the field level worked at the logistics level. Before the campaign, the central level calculated the quantity of the vaccines, issued the letter, assigned staffing, and sent the vaccines to the field.

- Results showed that the government of Bangladesh and development partners made significant efforts for capacity building and training of the staff and volunteers from the national to the field level. EPI, with the help of the development partners, developed training manuals regarding vaccine administration and adverse effects following immunization and provided training for social mobilization, volunteer orientation, cold chain maintenance, and implementation of NIDs. The managerial level health personnel received training of trainers from the central level. The health inspectors and health assistants trained the volunteers. The survey showed that over 90% of respondents (n= 256, 94.1%) mentioned there was specific training designed for the integrated health campaign, including vaccination session management (n=232, 90.6%), community engagement (n=182, 71.1%), and recordkeeping and reporting (n=166, 64.8%) (Annex 9).

- NIDs were conducted mostly in the schools as fixed sites and then house-to-house visits according to the microplanning. The field workers marked the houses during the child-to-child search to track them. Microplanning was done to reach all communities, special populations, and hard-to-reach areas. Even the volunteers checked and gave OPV to children in buses, cars, and other transportation. Boats, even military helicopters, were used to reach certain hard-to-reach areas, and the number of campaign days there were increased.

- In urban areas, NIDs were conducted through local NGOs, and the coverage was lower than in rural areas because of the different health infrastructure.

- The NIDs were inaugurated by the honorable Prime Minister or the Health Minister. During NIDs, some families volunteered to take polio drops for their children to reduce fear in the community. Noticeable actions made NIDs seem like a festive day in the country, and massive social mobilization occurred. Mobile announcements through loudspeakers from decorated bicycles, announcements in mosques, street music, television and radio and appeals by influential people (cricketers, actors), jingles, and dramas were used to attract people. Community volunteers were given snacks to keep them motivated. Banners, posters, Moni flags, particularly around the vaccination sites, decorations, countdown during the campaign, and disseminating important messages through press conferences were also done.

- To monitor the implementation activities, the implementers used mainly checklists (n=232, 85.3%), reported to the higher authorities directly (n=107, 39.3%), and did campaign-based monitoring (n=83, 30.5%) (Annex 10, 11). The government of Bangladesh assigned independent observers to monitor the NIDs. The implementers used tabulation and a tally sheet to record how many children were vaccinated.

**Maintenance**

- Most (n=202, 74.3%) survey respondents mentioned that the NIDs were implemented according to the initial planning. Policy makers (n=35, 63.6%) mentioned that NIDs were continued because of the community support and acceptance (n=18, 51.4%), cost-effectiveness (n=18, 51.4%), and political support (n=16, 45.7%) as the major influencers (Annex 12).
• The NIDs were discontinued, according to respondents, due to the achievement of polio-free status, strengthening routine EPI, rumors being spread due to incorrectly attributing illness to vaccine reception problems due to different storage systems of multiple vaccines, and lack of collaboration between different ministries.

• The survey respondents mentioned that health campaigns should continue to integrate in the future (n=170, 62.5%) because it will enable health campaigns to reach more of the target population (n=118, 80.3%), reach underserved populations (n=101, 68.7%), and will be cost-effective (n=68, 46.3%) (Annex 13, 14).

• Furthermore, we explored the respondents’ recommendations in an interview regarding future integration of health campaigns, such as digitalizing the programs, increasing publicity, providing proper training, disseminating correct information, increasing financial allowance, coordinating more effectively, and collaborating between the ministries.

Promising Practices

• **Multisectoral collaboration**: Campaign implementers should consider early on the political commitment, program ownership by government, inter-ministerial collaboration, technical support from development partners and NGOs, and mainstreaming of the campaign activities within the EPI.

• **Engagement of the community**: Involve religious leaders and other leaders in the community as well as to provide examples in order to enable the community to be aware of, and engaged in, the campaign and the population to be reached.

• **Microplanning**: Plan for a thorough microplanning activity whereby the field workers prepare to reach every community and find unvaccinated children, even in hard-to-reach areas and by going door-to-door, as appropriate.

• **EPI platform**: Embed the campaign within the EPI program/platform, which is trusted, and include the strategies, workforce, and infrastructure that are within EPI.

Lessons Learned

Through this study, we have learned some valuable lessons regarding integrated campaigns of Bangladesh that can inform the implementation of future health programs, such as:

• The implementers should embrace strategic planning at all levels, microplanning, community engagement and communication for integration and to reach the target population.

• Strong political commitment and collaboration of different sectors of the government, partners, and NGOs to make the campaign effective should be maintained.

• For adoption of the integrated campaign, awareness and motivation of both implementers and beneficiaries needs to be created.
• Implementation factors including the context, flexible program planning, proper workforce integrated training, and monitoring should be considered.

• Sufficient resources, especially workforce, logistics, and funds, should be delivered.

• Supportive leadership and coordination should be encouraged among relevant sectors for sustainability.

These lessons learned were also applied during other campaigns, such as the measles and COVID-19 vaccination campaigns, to make the programs successful.

Implications for Policy, Practice and Future Research

Respondents suggested many areas for future research, such as:

• To assess the cost-effectiveness of integrated campaigns.

• To explore the implementation of an integrated campaign in hard-to-reach areas of Bangladesh (border areas, hilly areas, haor and char areas).

• To see and learn from the current COVID-19 campaign’s success.

Acknowledgements

We acknowledge the Task Force for Global Health’s Health Campaign Effectiveness Program and Bill & Melinda Gates Foundation, EPI Bangladesh Government for their continuous support. We are also grateful to all of our study participants for their immense effort and valuable time.

The Health Campaign Effectiveness Coalition (HCE) thanks the following content reviewers: Tabitha Kibuka, Michaela Bonnett, Fina Tams, and Hemant Shukla. HCE team members are acknowledged for contributing to the research brief template, web page design, award management, and editing of the brief, including Hallelujah Anteneh, Eva Bazant, Jessica Cook, Ahmed Haji-Said, Vivek Patel, Cindy Reeh, Aimee Rivera, Kristin Saarlas, Allison Snyder, and Lucia Wetherell.

This work was supported by the Bill & Melinda Gates Foundation (Grant Number INV-01076) to the Task Force for Global Health’s Health Campaign Effectiveness Program. Under the Foundation’s grant conditions, a Creative Commons Attribution 4.0 Generic License has already been assigned to the Author Accepted Manuscript version that might arise from this submission.

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