Child Vaccinations in Ghana: Which Children Benefit from the National Vaccination Days (NID) Campaigns?

To reduce child mortality rates, the government of Ghana conducts both routine and supplemental immunization activities. National Immunization Day (NID) campaigns aim to address gaps in routine child immunization coverage by providing vaccinations to children who were not reached by routine vaccination services. While vaccination coverage has improved considerably since the start of biannual NID campaign, these improvements have not been consistent. This implies that the NID campaigns – although invaluable – have not been able to completely fill the gaps in routine vaccination coverage.

This study analyzes data from the 2008 Ghana Demographic and Health Survey to examine the factors that affected participation in two recent NID campaigns. The results suggest that about one third of children aged 6-23 months participated in each campaign. However, children from wealthier backgrounds appear to have higher participation rates than children from more disadvantaged backgrounds.

Extended abstract

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Vaccination Coverage

Child vaccination coverage in Ghana has increased dramatically. Two decades ago, only 47% of Ghanaian children were fully vaccinated; in September 2008, 79% of Ghanaian children aged 12-23 months were fully immunized, with only 1% of children having received no vaccinations at all (GDHS 2008). However, progress in immunization coverage has not been consistent. Figure 1 shows trends BCG, penta3, OPV, and measles vaccination coverage for the period from 1995 to 2008. Coverage for all four vaccinations increased dramatically between 1995 and 2000. However, rates of immunization decreased between 2000 and 2002, and subsequently plateaued until the mid-2000s.

Figure 1 about here

For example, BCG dropped from near-universal coverage in 2000 to 92 percent coverage in 2002. Coverage stagnated at 92% until 2004, after which near-universal coverage was once again achieved. Coverage of DPT/HepB/Bib, OPV, and measles also declined from 88, 88, and 90% coverage in 2000 to 78, 78, and 80% in 2002, respectively. Despite slow improvements, coverage of all three vaccines stayed below 85% until 2006. In 2006 and 2007 the Government of Ghana and secondary sponsors organized supplementary immunization campaigns aimed to boost the number of children who received vaccines. The 2006 campaign focused on polio and measles; the 2007 campaign also include polio vaccination, but not measles vaccination. By 2007, coverage for all three vaccines increased to nearly 95%, but by 2008 measles vaccination coverage dropped again to 86%.

National Vaccinations Campaigns in Ghana

Mass immunization campaigns have been held in Ghana since 1974 (Belcher 1978), with National Immunization Days (NIDs) conducted since 1996 to prevent further spread of vaccine-preventable diseases. The campaigns offer vaccinations and other health services to attendees free of charge, and

often call upon community leaders like sub-chiefs and religious figures and opinion-makers to speak about the importance of multiple doses of vaccinations for maximum effectiveness (Bulletin of EPI and Surveillance, 2004). To increase mothers' awareness of the campaigns, much emphasis has been placed on social mobilization and pre-campaign promotion. At the district level, organizers used public address systems, community volunteers, van announcements, market announcements, village gong-bells and roof-top announcements. Print materials included informational pamphlets distributed to elementary school children to take home to their parents, and posters describing a variety of child health care recommendations. Sub-chiefs, religious figures, volunteers, and mother-to-mother support groups worked with organizers to increase awareness for the campaign (Summary of Supervisor's Reports, 2007).

Although Ghana has participated in several National Immunization Days campaigns, the scope and aim of the campaigns varies. In 2006, Ghana implemented an *integrated measles and polio campaign*. The campaign was implemented by the Ministry of Health and Ghana Health services aimed to immunize about 11 million children against the two diseases (MVDMF, xxxx). Under the theme "For Health Childhood, Lets Fight Measles, Polio and Malaria," the campaign aimed to combat malaria. The campaign was held from November 1 to 5 and included over 9,000 immunization points staffed by teams of health workers and over 28,000 volunteers (GhanaWeb 2006). The campaign cost $162 billion cedis, with $27,000 cedis spent on every immunized child (GhanaWeb 2006). The *November 2007 IMCI/Child Health Campaign* focused on the administration of polio vaccinations for children under five, vitamin A supplementation and deworming, distribution of bed nets, and birth registration. Unlike the 2006 campaign, measles vaccination was not included. The 2007 campaign was implemented from November 28-30. Under the theme of "Healthier mothers and children in Ghana's Golden Jubilee Year and beyond," – which refers to Ghana's 50th year of independence – the campaign staff visited over 67,000 households and vaccinated 195,762 children (Ghana Red Cross Society, 2008). Messages promoting the services were delivered nationwide, but there was a delay in receiving posters and banners in the Ashanti and Upper West regions. Consequently, in these districts information about the campaign was disseminated solely through messages from mobile vans equipped with megaphones and gong-gong beaters (Summary of Supervisor's Reports, 2007).

Data

This study analyses data from the 2008 Ghana Demographic and Health Survey, which contains data on a nationally representative sample of 4,916 women aged 15-49 (GSS, GHS, and ICF Macro, 2009). All women were asked about the vaccination status of their children under age 5 (N=1,636). We created a child file that includes a wide range of indicators, including the age and sex of the child, information about the socioeconomic and demographic characteristics of the child's mother and her husband, and whether or not the child received various recommended vaccinations. Bivariate and multivariate analyses are used to determine associations between background indicators and vaccination status. Because WHO recommends that children receive the complete schedule of vaccination before 12 months of age, the key target group for the campaigns consist of children aged 6-23 month of age.

Consequently, our analyses of participation in the 2006 and 2007 NID campaigns are limited to children who were aged 6-23 months old at the time of each campaign (N=755 and 782, respectively).

For children who received one or more vaccinations, women were asked if any of the vaccinations received during the two years prior to the survey were given during the national immunization campaigns. If so, there were asked to report during which campaign this happened (i.e. during the November 2006 Integrated Measles/Polio campaign and/or the November 2007 IMCI/Child Health Campaign). Our indicators of campaign participation consist of two dichotomous variables that indicate whether or not a child received vaccinations during each of the two campaigns.

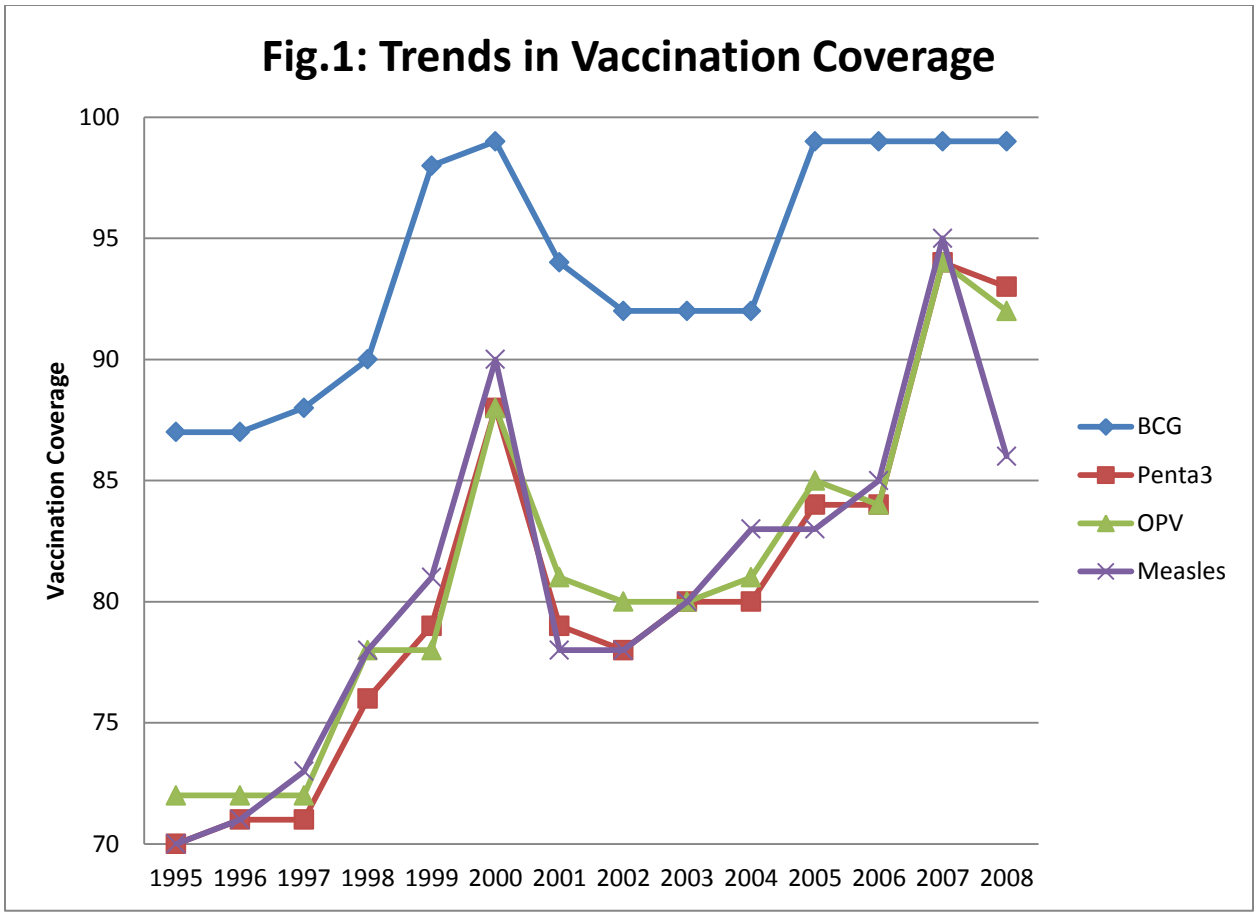
Preliminary Results

Coverage of WHO-recommended vaccines increased dramatically from 1995 until the year 2000 (Fig. 1). Then, rates of immunization decreased and plateaued until the middle of the decade. In an attempt to increase rates of vaccination, Ghana implemented a measles and polio NID campaign in November 2006 and a polio NID campaign in November 2007. After the 2006 campaign, immunization rates reached their highest levels to that date. However, after the 2007 campaign – which did not include measles vaccine – measles vaccination rates declined precipitously.

Table 1 shows that nearly one third (31.3%) of children aged 6-23 received one or more vaccinations during the 2006 NID campaign. Similarly, 35.3% received vaccinations during the 2007 NID campaign.

Preliminary bivariate analyses show that the percentage of children who received vaccinations during the 2006 NID campaign increases with indicators of socio-economic status (mother's education, wealth status, urban residence, and education of the mother's spouse). Ownership of a radio in the household (which would facilitate getting information about the campaign) only has a small effect on the likelihood that a child was vaccinated during the campaign, but TV ownership has a larger effect. Male children are slightly more likely than female children to have received one or more vaccinations during the 2006 campaign. The results for the 2007 campaign are similar.

These findings show that the NID campaigns are making a major contribution to child vaccination rates in Ghana. However, although the aim of the NID campaign is to fill the gap in routine vaccination coverage, our findings indicate that children from disadvantaged backgrounds are less likely than other children to benefit from these campaigns.



Source: UNICEF/WHO

Table 1: Percentage of children aged who received vaccinations during the 2006 and 2007 NID campaigns (children aged 6-23 months at the time of the campaign only).

	Received vaccinations during 2006 NID Campaign			Received vaccinations during 2007 NID Campaign	
	%	N		%	N
Mother's Education					
-None	27.7	267		34.1	273
-Primary	30.4	171		34.7	202
-Secondary	36.4	275		36.5	277
Place of Residence					
-Urban	38.5	244		36.8	266
-Rural	27.6	479		34.5	501
Wealth Quintile					
-Q1 (poorest)	23.6	225		31.4	236
-Q2	33.7	166		34.7	173
-Q3	29.2	130		39.2	130
-Q4	44.1	118		36.4	132
-Q5 (wealthiest)	32.1	84		39.6	96
Education of Mother's Spouse					
-Uneducated	20.8	202		31.9	216
-Educated	36.0	489		35.6	506
Household has radio					
-No	27.0	200		38.6	202
-Yes	32.8	515		34.1	557
Household has TV					
-No	27.6	490		34.8	512
-Yes	38.9	226		36.6	246
Gender of the Child					
-Male	29.8	373		34.0	385
-Female	32.9	350		36.6	282
Total	31.3	723		35.3	767