Measurement, Learning and Evaluation Impact Analysis of the Nigerian Urban Reproductive Health Initiative Baseline and Endline Surveys:

NURHI Program Effects on Modern Contraceptive Use
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Summary

The Nigerian Urban Reproductive Health Initiative (NURHI) program activities had a positive and significant impact on women's use of modern family planning (FP) methods in the six cities where the program operated from 2009 to 2014. In particular, seeing/hearing FP messages on TV, the radio, at community outreach events, seeing a health provider wearing an "Ask me about FP" badge, living within 1km of a NURHI program facility or a health facility with an FP outreach program all significantly increased the likelihood that a woman would use a modern family planning method. Other NURHI program activities such as print media and decreased stock-outs of FP methods in facilities were not found to have a direct impact on family planning use in this analysis.

Methods

This note presents estimates of the impact of NURHI program activities on women's modern contraceptive use in the six program cities (Abuja, Benin City, Ibadan, Ilorin, Kaduna and Zaria). Our results draw on baseline and endline longitudinal women, household and health facility survey data and include measures for NURHI demand-generation and supply-side activities. It is well known that relying on respondent recall can introduce bias into the measurement of program impact since individuals can have differential levels of recall. For example, if highly motivated individuals are both more likely to recall a specific exposure and choose to use contraception, program impact could be overstated. It is also well known that if a program is targeted to underserved areas, simple impact assessment methods may understate program impacts.

We take advantage of the longitudinal data by using an impact modelling strategy that addresses these potential statistical complications (for more information on longitudinal versus cross sectional data see appendix 2). Specifically, we apply fixed effects regression to the pooled samples (baseline and endline) in order to control both for possible recall bias for the exposure variables and program targeting to underserved areas. A description of program measures used in the analysis can be found in Table 1 and multivariate impact results are presented in Table 2. The full model results are found in appendix 1.

Table 1 outlines the specific program exposure measures that we include in our analysis. Demand side indicators draw on the pooled baseline and endline survey data from women and households while supply-side program indicators come from the pooled facility baseline and endline survey data. All supply-side measures are linked to women using geographical information about where the women lived at baseline and endline and are created using a 1km buffer radius around the women's location at each time period. Many different buffer distances were explored before we settled on 1km based on observed results and the fairly dense settlement patterns of program cities in Nigeria.

Results

In Table 2, we examine the impact of NURHI program activities on modern contraceptive use (mCPR). The first two columns provide the percentage of women at baseline and at endline exposed to NURHI-specific and general family planning program activities. The NURHI-specific program exposure variables included were only measured at endline as the NURHI activities had not begun yet as of baseline data collection. The measures of FP messages on television, IEC materials, FP outreach programs and stock-outs of FP methods in health facilities were measured at both baseline and at endline.

The second three columns in Table 2 show the impact results, expressed as marginal effects of 100% program exposure on modern FP use, from fixed effects regression applied to the pooled longitudinal sample of women interviewed at baseline and endline. The marginal effect expresses the average expected percent increase in mCPR for each program activity in a 'perfect' scenario where 100% of the sample is exposed to that activity. The marginal effect of a given program activity is a useful way to understand the average potential impact of that activity on the population.

Focusing on the impact results, six of the nine exposure variables are positively and significantly associated with modern contraceptive use. These factors are: a) seeing an FP message on the TV, b) hearing an FP message on the radio through a NURHI radio drama, spot, jingle or slogan, c) exposure to FP messages at a community outreach event (e.g., association/group meetings; naming ceremonies; freedom ceremonies; graduation events; Christmas/Eid; or weddings), d) seeing a health provider wearing an "Ask me about FP" badge, e) living within 1km of a NURHI program facility, and f) living within 1km of a health facility with an FP outreach program. The marginal effects, or, the average change in predicted contraceptive use achieved by moving women from non-exposure to exposure to a given activity range from a low of 1.31 percentage points (for living within 1km of a NURHI facility) to 4.28 percent points (for hearing NURHI FP messages on the radio).

Limitations

The results presented here have a few limitations worth highlighting. While the models include numerous measures of NURHI demand and supply-side activities, the complete set of program exposure indicators asked of women are not included in the model for various reasons. In a sense, the variables included here serve to represent and explain a related suite of program activities' impact on women's modern contraceptive use. Due to the integrated nature of the NURHI program, it is often a challenge to disentangle a singular activity's impact on mCPR such as is the case with one particular slogan or message. That slogan may have been used on a TV spot, a radio drama, printed on a billboard and also featured on a community workers T-shirt at an event. This model is the cleanest set of distinct program impact measures we are able to include without introducing statistical complications (e.g. multicollinearity) into the analysis. It is also important to note that the demand side exposure variables are measured for each individual woman based on her responses in the baseline and endline surveys. The supply side variables are simply a measure of whether she has access within 1km to a NURHI facility or a facility with an FP outreach program. Given the dense supply side environment in these Nigerian cities, we were not able to survey all the facilities that respondents may have visited. It is interesting that when we included an indicator for access to non-NURHI facilities, we found no effect on mCPR. However, it is most likely the case that our supply side results understate NURHI program impact.

We are in the process of conducting a separate facility level analysis that will examine the effects of NURHI program activities on new acceptors of mCPR at the facility level. This analysis will use a matched sample of facilities surveyed at baseline and endline and provide information on the impact of program activities on use of services over the follow-up period.

Table 1: Program exposure measures used in final impact analysis

Category	Exposure measure	Exposure components
Demand	FP messages on TV	• Heard FP messages on TV in the last three months[1]
	NURHI radio	• Ever heard of or listened to NURHI radio dramas • Ever heard radio drama played at a meeting • Ever heard a NURHI slogan on a radio drama[2] • Ever heard a NURHI radio spot/jingle[3]
	NURHI community outreach	• Heard FP info at any life event[4] • Heard FP at a group or club meeting
	NURHI provider badge	• Seen a provider wearing a badge/button "Ask me about FP" in the last year
	NURHI print media	• Saw "Be Beautiful" card in the past year • Saw "Be Successful" card in the past year • Saw any NURHI slogan on a billboard in the past year
Supply	NURHI health facility	• Number of NURHI facilities within 1km of the woman
	IEC program at health facility	• Presence/absence of observed IEC materials at least one health facility within 1km of the woman
	FP outreach program at health facility	• Presence/absence of a health facility with an FP outreach program within 1km of the woman
	Stock-out(s) of modern FP method in last 30 days	• Presence/absence of a stock-out of any modern FP method in the last 30 days at any facility within 1km of the woman

[1] General exposure to FP messages on TV is highly correlated with a composite variable of NURHI-specific TV exposure and thus is used as a proxy measure.
[2]NURHI slogans include "Get it together"; Know, Talk, Go"; "No Dulling"; and Yoruba and Hausa local language slogans.
[3]NURHI spots/jingles include naming ceremony; hair salon/barber shop; service provider talking about FP; couple talking about FP; FP testimonial.
[4]Life events include naming ceremony, freedom ceremony, graduation; Christmas/Eid, Wedding

Table 2. Impact of NURHI program activities on modern family planning use among women interviewed at baseline and endline

	Percentage of women exposed to NURHI program activities		Marginal effects of 100% program exposure on modern FP use		
	Baseline	Endline	Increase in CPR due to program exposure (%)	Std. Err. (%)	P
FP messages on TV	33.98	52.34	1.98	0.82	0.016
NURHI radio programs	0.00	73.77	4.28	0.99	0.000
NURHI community outreach/events	0.00	34.97	3.48	1.08	0.001
NURHI provider badge	0.00	22.85	3.24	1.31	0.014
NURHI print media	0.00	35.68	-0.31	1.17	0.790
NURHI health facility (within 1km)[1]	0.00	45.88	1.31	0.57	0.023
IEC program at health facility (within 1km)	71.77	71.86	0.79	1.27	0.534
FP outreach program at health facility (within 1km)	48.36	53.34	2.66	1.01	0.008
Stock-out(s) in last 30 days (within 1km)	43.55	34.04	0.06	0.80	0.946

Note: All results are unweighted

[1]The continuous version of this variable was used in the analysis

Appendix 1. Fixed effects regression demonstrating the impact of NURHI program activities on modern family planning use among women at baseline and endline

	Coef.	95% CI
Marital status		
In union	-0.068***	(-0.103 - 0.033)
Seperated/divorced/widowed	-0.155***	(-0.211 -0.098)
Never married (ref)	-	-
Religion		
Muslim	-0.006	(-0.055 - 0.044)
No religion	-0.022	(-0.152 - 0.108)
Christian/other Christian/other (ref)	-	-
Education		
No education/Quaranic only (ref)	-	-
Primary	-0.007	(-0.043 - 0.029)
JSS	0.010	(-0.033 - 0.054)
SSS	-0.001	(-0.042 - 0.040)
Higher	0.037	(-0.011 - 0.086)
Age group		
Age 15-19 (ref)	-	-
Age 20-24	0.130***	(0.100 - 0.161)
Age 25-29	0.165***	(0.121 - 0.209)
Age 30-34	0.180***	(0.127 - 0.233)
Age 35-39	0.197***	(0.136 - 0.258)
Age 40-44	0.231***	(0.161 - 0.302)
Age 45+	0.144***	(0.064 - 0.224)
Wealth		
Poorest	0.010	(-0.025 - 0.044)
Poor	0.014	(-0.018 - 0.046)
Middle	0.014	(-0.016 - 0.044)
Rich	0.009	(-0.017 - 0.036)
Richest (ref)	-	-
Language most commonly spoken at home		
Hausa (ref)	-	-
Yoruba	-0.027	(-0.091 - 0.036)
English/Pidgin English	-0.024	(-0.071 - 0.024)
Other languages	-0.045^{+}	(-0.092 - 0.002)
Program exposure		
FP messages on TV	0.019*	(0.004 - 0.036)
NURHI radio programs	0.043***	(0.023 - 0.062)
NURHI community outreach/events	0.035**	(0.014 - 0.056)
NURHI provider badge	0.032*	(0.007 - 0.058)
NURHI print media	-0.003	(-0.026 - 0.020)
NURHI health facility	0.013*	(0.002 - 0.024)
IEC program at health facility	0.008	(-0.017 - 0.033)
FP outreach program at health facility	0.027**	(0.007 - 0.046)

Stock-outs in last 30 days	0.001	(-0.015 - 0.016)

+p<0.10, *p<0.05, **p<0.00, ***p<0.000

Note: Baseline city was also controlled for in the model but omitted due to lack of variation across survey waves.

Appendix 2: Longitudinal and Cross Sectional Data

Cross sectional data are ideally suited to measuring change in mCPR at the population level since they gather independent, representative samples each survey round. These data are less well suited to measuring the causes of the change since many programs are targeted to certain groups (the poor, for instance) and many program exposure variables are based on individual recall which may be selective (more motivated individuals may be more likely to recall an exposure). Longitudinal data provide a representative sample at baseline but the sample ages and some individuals are lost in later survey rounds. Therefore, it is not well suited to measuring population level changes. However, by following the same individual through time we are able to allow each individual to act as her own control in a manner that is similar to the pre-test/post-test experimental design. Longitudinal data are thus ideally suited to studying the causal impact of program exposure on mCPR.