Influence of Exposure to Family Planning Messages on Modern Contraceptive Methods Use among Men and Their Partners in Urban Nigeria

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Abstract
The importance of men's involvement in a couple's fertility choices and use of family planning (FP) has often been overlooked by researchers and program experts but is a vital factor in the prevention of unintended pregnancies and unsafe abortions. This study uses midterm evaluation data from the Measurement, Learning & Evaluation (MLE) project for the Nigerian Urban RH Initiative (NURHI) funded by the Bill and Melinda Gates Foundation. The objective is to assess whether men's exposure to a FP program is associated with their reported use of modern contraceptive methods with their female partners in two cities in Nigeria, Ibadan and Kaduna. The results presented indicate that certain NURHI demand generation activities were significantly associated with men's reported FP use at midterm with some differences noted across cities. In addition, greater intensity of program exposure was found to be associated with use of modern contraceptive methods.

Introduction
With the 2015 deadline of the Millennium Development Goals (MDGs) fast approaching, many stakeholders including researchers and policy makers are assessing the progress made so far. The fifth MDG (MDG 5), which is to improve maternal health, has two main targets: a) to reduce by 75% the maternal mortality rate from 1990 – 2015; and b) to achieve universal access to reproductive health (1). Family planning (FP) is pertinent to achieving MDG 5 through the prevention of unintended pregnancies and unsafe abortion (2-4). However, many people do not have access to FP services. According to the most recent estimates from 2013, approximately 222 million women have an unmet need for modern FP i.e. they are sexually-active but do not want to get pregnant in the next two years and are not using a modern contraceptive method (5). To increase FP use and decrease the unmet need for FP, many FP programs and research projects are currently underway. FP research has largely focused on women, most times ignoring the role of men. However, the importance of men's involvement in fertility regulation cannot be overstated. A recent study using Demographic and Health Survey (DHS) data from couples from three West African countries (Benin, Burkina Faso, and Mali) found that in about a third of couples had an unmet need for FP with 15-23 percent of the unmet need reported by the husbands (6). The objective of this paper is to assess whether men's exposure to a FP program is associated with their reported use of modern FP methods with their female partners in two cities in Nigeria, Ibadan and Kaduna.

Theory
This study is informed by the Health Belief Model, which has been used to assess health behavioral adoption (7). The theory posits that an individual is likely to adopt a health behavior depending on the balance between the perceived threat or susceptibility to a health condition, benefits and barriers of adopting the health behavior that will prevent the health condition, the belief in the ability to carry out the behavior, and frequent reminders to maintain the adopted behavior (7). Hence, the constructs of the theory are perceived threat, perceived benefits, perceived barriers, cues to action, and self-efficacy. The health behavior in this study is the current use of modern contraceptive method either by the man or his partner. The program being evaluated, the Nigerian Urban Reproductive Health Initiative (NURHI), implemented radio programs and community events that are hypothesized to increase men's perceived threat, benefits and self-efficacy and to decrease perceived barriers to FP use while the NURHI program slogans, logo, and buttons serve as cues to action. Figure 1 shows the theorized associations in this study. We controlled for sociodemographic factors and any exposure to other FP messages that are not specific to the NURHI program.

Data & Methods
The program
The Urban Reproductive Health Initiative (Urban RH Initiative) is a five-year family planning project funded by the Bill & Melinda Gates Foundation with the goal of increasing the contraceptive prevalence rate in select cities in four

countries – Nigeria, Kenya, Senegal, and India. The Measurement, Learning & Evaluation (MLE) project is the evaluation component of the Urban RH Initiative. The Nigeria program – Nigerian Urban RH Initiative (NURHI) – is being implemented in six cities: Abuja, Benin City, Ibadan, Ilorin, Kaduna, and Zaria. The MLE project conducted baseline surveys in 2010 after which NURHI activities commenced. Approximately two years after the program onset, the MLE project conducted the midterm surveys and is currently collecting data for the endline survey. More information about NURHI and the MLE project are detailed elsewhere (8).

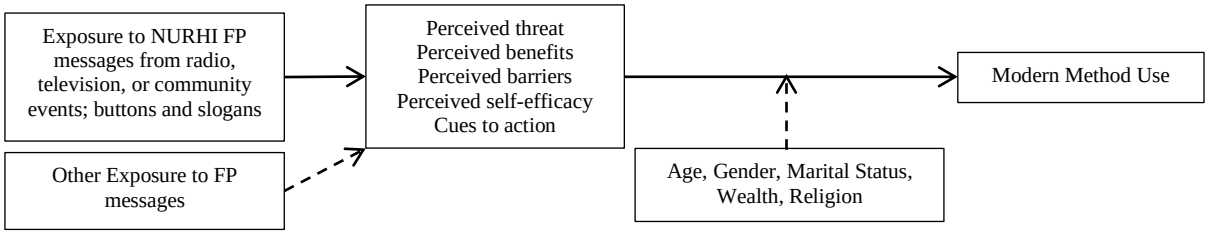

Figure 1: Association between Exposure to NURHI program and Use of Modern Contraceptive Methods

→ Association tested - - → Association controlled for

One of NURHI's objectives is to generate and sustain demand for family planning. Key themes, informed by the data collected at baseline, were developed for local language messages, entertainment education programs, social mobilization, and mass media advertising. Several logos and English and local language slogans were also created to serve as symbols of FP. The message themes included promoting smaller families, child spacing, and use of modern contraceptive methods and are expected to influence behavior change by encouraging FP discussion and reducing barriers, myths, and social stigma around FP use.

This analysis uses midterm data collected among men in Ibadan and Kaduna to assess the effects of the demand generation activities on men's use of modern contraceptive methods. In each city, a multi-stage cluster sampling design was used to select a representative sample of men (15-59 years) at the household level. A total of 2358 men were surveyed; we include only those who had no missing information on the key variables in this analysis (N=2312; weighted N=2311). The outcome variable is the use of modern contraceptive methods, defined as the man's report of he or his partner using any of the following methods: daily pills, injectables, implant, IUD, male or female condoms, male or female sterilization, gels, foams, vaginal ring, emergency pills, lactational amenorrhea method (LAM), and standard days method (SDM). The outcome variable is coded as '1' if the man answered 'yes' to any of the modern methods and '0' otherwise. The exposure variables include the demand generation variables which are shown in Table 1.

Table 1. NURHI Family Planning (FP) demand generation variables

Description	**Variable type**
Have heard or seen the word "NURHI" in the past year	Binary – yes or no
Listened to any NURHI local language radio program (i.e. "Ireti Eda" in Ibadan or "Komai Nisan Jifa" in Kaduna)	Binary – yes or no
Heard any NURHI English slogans (i.e. "Get it Together", "Know. Talk. Go.", "No dulling") or saw someone wearing a T-shirt with "Get it Together" in the past year	Binary – yes or no
Heard any NURHI local language slogans (i.e. "Se o jasi", "Mo ti feto si – Iwo nko?", "Ki la siri ewa re. Ifeto somo bibi lasiri ewa mi", "Ko ku gane, tazaran haihuwa") in the past year	Binary – yes or no
Have seen any NURHI logo in the past year	Binary – yes or no
Have seen a health provider wearing a button that said "Ask me about FP?" in the past year	Binary – yes or no
Have received FP information at an association meeting, naming ceremony, freedom ceremony, graduation, Christmas/Eid, or at a wedding in the past year	Binary – yes or no

We controlled for variables known to be associated with modern contraceptive use. These control variables are grouped into two categories – sociodemographic factors and media exposure to general FP messages (not specific to NURHI). The sociodemographic factors include: the respondents' age, educational attainment, marital status, religious affiliation, household wealth index, and city. The media exposure to general FP messages included the following: in the last three months, saw or heard FP messages in 1) magazine or newspaper; 2) radio; and 3) television. The categorization and the description of these control variables are shown in Tables 2 & 3 respectively. Descriptive statistics, bivariate and multivariate logistic regression models were performed using Stata statistical

software version 13 (9). We adjusted for clustering of men within sampling units and used survey weights to control for the survey design. Ethical approval for the study protocol and informed consent process was obtained from the University of North Carolina at Chapel Hill Institutional Review Board and from the National Health Research Ethics Committee (NHREC), Nigeria.

Results

The socio-demographic distribution of the sample is shown by city in Table 2. In general, a majority of the men are aged between 15 and 34 years, have secondary education, are married or cohabiting with a partner, and are Muslim. About 43 percent were using a modern method at the time of survey with more men in Ibadan (51%) than in Kaduna (34%) reporting use of modern methods (see Table 3). In the total men's sample, the most commonly used modern methods are male condoms (50%) followed by injectables (25%), and SDM (7%). The top three methods differ by city: in Ibadan, they are male condoms (60%), injectables (21%), and IUD (6%) while in Kaduna, they are injectables (33%), male condoms (32%), and SDM (13%).

Table 4 shows the distribution of the exposure to general FP messages in the media and to NURHI demand generation activities. About a quarter of men in Ibadan and a third of men in Kaduna reported seeing FP messages in print media (newspaper/magazine) in the last three months. The proportion who heard FP messages on the radio in the past three months were similar in both cities – about two-thirds. And those who reported seeing FP messages on television were more in Kaduna (65%) than in Ibadan (42%). About 83% of all men were exposed to at least one NURHI demand generation activity; more men in Kaduna (90%) reported NURHI exposure than those in Ibadan (76%). Looking specifically at the individual NURHI activities, we found that, in the past year, 22% saw/heard the word "NURHI"; 22% listened to any of the local language radio programs; 34% saw/heard any of the English language slogans; 54% saw/heard any of the local language slogans; 26% saw any of the logos; 32% saw a health provider wearing a button that said "Ask me about FP"; and 26% received FP information at one of the NURHI community events. Exposure to the NURHI local language slogans, button, and community events were not statistically different across the cities ($p>0.05$); the prevalence of exposure to the other NURHI activities was statistically different at the city-level with men in Kaduna having more exposure than those in Ibadan ($p<0.05$).

The logistic regression results are shown in Table 5. Model 1 is the unadjusted model while Models 2 and 3 are the adjusted models. We present results of the full models (Models 3) for the full sample and then by city. In general, only three of the NURHI demand generation activities retained statistical significance in the full model. In the full sample, those who listened to a NURHI local language radio program were less likely to be using a modern method compared to those who did not listen to the program (OR: 0.7; 95% C.I. 0.5-0.9). However, this association was not observed at the city-level. Additionally, in the full sample, men who saw a health provider wearing a button that said "Ask me about FP" were 70 percent more likely to report using a modern method compared to those who did not see the button ($p<0.05$). This association was also observed at the city-level (OR: 1.6 in Ibadan and 1.8 in Kaduna; $p<0.05$). Also, in Kaduna, men who saw/heard any of the NURHI English slogans were approximately twice as likely to report modern method use as those who had not seen or heard the English slogans (OR: 1.9; 95% C.I. 1.1-3.3). This association was not observed in Ibadan or in the full sample. We assessed the summative effect of exposure to the NURHI demand generation activities and found that the more activities the men are exposed to, the more likely they are to use a modern method (OR: 1.2; 95% C.I. 1.1-1.3). Similar results were found at the city level. For example, we found positive summative effects of exposure to NURHI demand generation activities in both Ibadan (OR: 1.1; $p<005$) and Kaduna (OR: 1.4; $p<0.05$).

Discussion & Conclusion

The results presented indicate that certain NURHI demand generation activities were significantly associated with men's reported use of modern methods at midterm. In addition, a potential program activity dose effect was also found. Men exposed to more NURHI programs were significantly more likely to use FP. It is notable that the NURHI local language radio programs exposure were associated with less method use; this may be related to recall bias such that those men who are against FP or not intending to use are more likely to remember these programs. The other factor that may be misleading is the effect of the NURHI button on family planning use; those men who were exposed to a health provider wearing the button were significantly more likely to use FP. This may reflect men accompanying their wives to a health facility for maternal, child, or family planning services; these men may be more likely to use FP unrelated to the program. Finally, in Kaduna, men exposed to the NURHI English language slogans were more likely to use. Overall, in Kaduna, there was greater exposure to NURHI program activities and

greater increases in FP use at midterm. This may reflect more latent demand in Kaduna or possibly stronger programmatic efforts of the NURHI team in this site (or a combination of these two).

It is important to note that this study is based on a cross-sectional sample of men in the two study cities and thus cannot control for time-related changes in population characteristics or for potential recall bias of respondents. These results reflect NURHI program impact among men only after two years of potential program exposure. The endline evaluation results may show additional changes and associations between NURHI activities and modern method use given more time for roll-out of activities and increases in exposure levels across the study cities.

The results presented here are somewhat similar to the results found for women (data not shown). In particular, among women, we found that exposure to NURHI demand generation activities was associated with modern method use. However, the specific factors that influenced women's use were different. That said, among both women and men, greater intensity of program exposure was associated with modern FP use indicating an additive effect of the program for both women and men; this is a key theory of the NURHI program implementation team.

To conclude, programs need to consider the role of men in influencing FP behaviors of women and couples. This paper takes a first step to present NURHI program impact results for men at the two-year midterm evaluation in two urban sites of Nigeria. Findings from this analysis are important for informing future program activities that seek to engage men and bring them to the table as equal partners in FP adoption and continuation. Program activities should be tailored not just by gender but also by geographic context as results from this study indicate some differences by city. It is these types of gender comprehensive and context-specific programming that are likely to be the most successful in the long-term at meeting the Millennium Development Goals.

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Table 2: Sociodemographic characteristics of men aged 15-59 years in urban Nigeria by city, 2012			
Characteristics	**Total (%)**	**Ibadan (%)**	**Kaduna (%)**
Age			
15-24	26.8	27.6	25.9
25-34	30.6	29.1	32.2
35-44	22.9	23.2	22.6
45+	19.7	20.1	19.3
Education*			
Primary or less	14.9	16.5	13.2
Secondary	53.5	56.8	49.7
Higher	31.6	26.7	37.1
Marital status			
Single/divorced/widowed	42.6	41.0	44.4
Married/living together	57.4	59.0	55.6
Religion			
Christian	47.0	49.1	44.7
Muslim	53.0	50.9	55.3
Wealth index			
Poorest	20.0	18.4	21.9
Poor	19.8	21.3	18.2
Middle	20.0	20.4	19.4
Rich	20.5	21.0	19.9
Richest	19.7	18.9	20.6
City			
Ibadan	52.4	--	--
Kaduna	47.6	--	--
Unweighted N	**2312**	**1208**	**1104**
Weighted N	**2311**	**1211**	**1100**

City differences statistically significant at *p<0.05; **p<0.01; ***p<0.001
All analysis are weighted

Table 3: Modern contraceptive use as reported by men aged 15-59 years in urban Nigeria by city, 2012			
	Total (%)	**Ibadan (%)**	**Kaduna (%)**
Current modern method use***			
Yes	42.7	50.8	33.8
No	57.3	49.2	66.2
Unweighted N	**2312**	**1208**	**1104**
Weighted N	**2311**	**1211**	**1100**
Type of modern method [a] ***			
Male condom	49.7	60.2	32.4
Male sterilization	0.0	0.0	0.0
Female sterilization	1.4	0.5	3.1
Daily pills	4.8	3.5	6.9
Injectables	25.4	20.6	33.2
Implant	1.5	0.9	2.5
Intrauterine device	5.6	6.3	4.4
Female condom	0.1	0.1	0.0
Emergency pills	3.1	3.9	1.8
Diaphragm/gel/foams	0.0	0.0	0.0
Lactational amenorrhea method	1.9	1.3	2.8
Standard days method	6.5	2.7	12.9
Unweighted N	**913**	**603**	**310**
Weighted N	**986**	**615**	**371**

a among modern method users
City differences statistically significant at *p<0.05; **p<0.01; ***p<0.001; All analysis are weighted

Table 4: Exposure to family planning messages among men aged 15-59 years in urban Nigeria by city, 2012			
	Total (%)	**Ibadan (%)**	**Kaduna (%)**
Exposure to FP messages (may include FP programs other than NURHI)			
Saw FP messages in magazine or newspaper in the last 3 months***			
Yes	30.4	26.7	34.5
No	25.1	17.3	33.7
Don't know/missing/did not read magazine/newspaper	44.5	56.0	31.8
Heard FP messages on radio in the last 3 months			
Yes	63.8	65.0	62.5
No	25.0	25.1	24.9
Don't know/missing/did not listen to radio	11.2	9.9	12.6
Saw FP messages on television in the last 3 months***			
Yes	52.9	42.4	64.5
No	38.3	45.4	30.4
Don't know/missing	8.8	12.2	5.1
Exposure to NURHI demand generation activities			
Saw/heard the word "NURHI" in the past year**			
Yes	22.4	16.5	28.7
No	77.6	83.5	71.3
Listened to any NURHI local language radio program in the past year***			
Yes	22.3	11.0	34.7
No	77.7	89.0	65.3
Saw/heard any NURHI English phrases/slogans in the past year***			
Yes	33.7	22.9	45.7
No	66.3	77.1	54.3
Saw/heard any NURHI local language phrases/slogans in the past year			
Yes	53.9	52.6	55.5
No	46.1	47.4	44.5
Saw any NURHI logo in the past year***			
Yes	25.6	18.6	33.2
No	74.4	81.4	66.8
Saw a health provider wearing a button that said "Ask me about FP" in the past year			
Yes	32.1	29.6	34.8
No	67.9	70.4	65.2
Received FP information at NURHI community events in the past year			
Yes	26.2	29.2	22.8
No	73.8	70.8	77.2
Exposed to at least one of the NURHI demand generation activities in the past year***			
Yes	82.7	75.8	90.2
No	17.3	24.2	9.8
Unweighted N	**2312**	**1208**	**1104**
Weighted N	**2311**	**1211**	**1100**

FP – family planning
NURHI English phrases/slogans = "Get it Together", "Know. Talk. Go.", "No dulling"
NURHI local language phrases/slogans = "Se o jasi", "Mo ti feto si – Iwo nko?", "Ki la siri ewa re. Ifeto somo bibi lasiri ewa mi", "Ko ku gane, tazaran haihuwa"
NURHI local language radio programs = "Ireti Eda" in Ibadan or "Komai Nisan Jifa" in Kaduna
NURHI community events = association meeting, naming ceremony, freedom ceremony, graduation, Christmas/Eid, or at a wedding
City differences statistically significant at *p<0.05; **p<0.01; ***p<0.001; All analysis are weighted

Table 5: Logistic regression models for current modern contraceptive use among men aged 15-59 years in urban Nigeria by city, 2012

	Total			Ibadan			Kaduna		
In the past year,	**Model 1 OR (95% CI)**	**Model 2 OR (95% CI)**	**Model 3 OR (95% CI)**	**Model 1 OR (95% CI)**	**Model 2 OR (95% CI)**	**Model 3 OR (95% CI)**	**Model 1 OR (95% CI)**	**Model 2 OR (95% CI)**	**Model 3 OR (95% CI)**
Saw/heard the word "NURHI"	1.9*** (1.4-2.6)	1.6** (1.2-2.3)	1.3 (0.9-2.0)	1.5 (1.0-2.2)	1.3 (0.8-2.0)	1.3 (0.8-2.1)	3.2*** (2.0-5.0)	1.5 (0.9-2.5)	1.0 (0.5-1.9)
Listened to any NURHI local language radio programs	0.8 (0.5-1.3)	0.8 (0.6-1.1)	0.7* (0.5-0.9)	1.0 (0.7-1.6)	0.8 (0.5-1.3)	0.7 (0.4-1.1)	1.0 (0.6-1.7)	0.8 (0.6-1.3)	0.7 (0.4-1.1)
Saw/heard any NURHI English slogans	1.2 (0.9-1.6)	1.4 (1.0-1.9)	1.3 (0.9-1.8)	1.1 (0.8-1.5)	1.0 (0.7-1.4)	1.0 (0.6-1.5)	1.9* (1.2-3.0)	1.9* (1.1-3.5)	1.9* (1.1-3.3)
Saw/heard any NURHI local language slogans	1.0 (0.7-1.3)	1.0 (0.8-1.2)	0.9 (0.7-1.2)	1.4* (1.1-1.8)	1.2 (0.9-1.7)	1.2 (0.9-1.7)	0.7 (0.4-1.0)	0.8 (0.6-1.3)	0.8 (0.5-1.3)
Saw any NURHI logo	1.7** (1.2-2.2)	1.5* (1.1-2.1)	1.2 (0.8-1.8)	1.3 (0.8-1.9)	1.1 (0.7-1.8)	1.0 (0.6-1.6)	2.9*** (1.9-4.3)	1.5 (0.9-2.5)	1.2 (0.6-2.4)
Saw a health provider wearing a button that said "Ask me about FP"	2.0*** (1.5-2.8)	1.8*** (1.3-2.4)	1.7** (1.3-2.3)	1.7** (1.2-2.5)	1.5* (1.1-2.2)	1.6* (1.1-2.3)	2.8** (1.6-4.8)	2.0* (1.2-3.5)	1.8* (1.1-3.0)
Received FP info at NURHI community events*	1.6*** (1.3-2.1)	1.2 (1.0-1.7)	1.1 (0.8-1.4)	1.3 (1.0-1.7)	1.1 (0.8-1.5)	1.0 (0.7-1.3)	2.0** (1.4-2.9)	1.2 (0.8-1.9)	1.1 (0.7-1.8)
NURHI program exposure (continuous)	1.2 (1.1-1.3)***			1.1 (1.1-1.2)***			1.4 (1.2-1.6)***		

Model 1 – unadjusted (bivariate) logistic regression
Model 2 – adjusted logistic regression i.e. one NURHI program exposure variable + all non-specific FP exposure variables + all sociodemographic variables
Model 3 – adjusted logistic regression i.e. all NURHI program exposure variable + all non-specific FP exposure variables + all sociodemographic variables
Sociodemographic variables include respondents' age, education, marital status, wealth, and religion (ORs not shown)
Non-specific FP exposure variables include saw FP info on newspaper/magazine, heard FP info on radio, and saw FP info on TV (ORs not shown)
Groups statistically different at *p<0.05; **p<0.01; ***p<0.001; All analysis are weighted