Abortion Incidence and Safety in Nigeria: Findings from a Population-Based Survey

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Background

In Nigeria, abortion is only legal to save a woman's life. Recent estimates extrapolated from facility-based abortion complication data indicate that there were approximately 33 abortions per 1,000 women aged 15 to 49 in 2012 (Bankole et al. 2015). This is equivalent to 1.25 million abortions annually, representing more than half (56%) of all unintended pregnancies to Nigerian women. According to the prior dichotomous categorization of abortion safety at the World Health Organization (WHO), nearly all of these abortions would be considered unsafe (Sedgh et al. 2012; World Health Organization 1993), resulting in nearly 500,000 women experiencing serious health consequences and less than half (212,000) receiving treatment for these complications (Bankole et al. 2015).

The WHO has moved towards a more nuanced categorization of abortion safety in recent years, operationalizing a three-category measure of safety – safe, less safe, and least safe (Ganatra et al. 2017; Ganatra et al. 2014; Sedgh et al. 2016). This conceptualization better accounts for the increasing availability of medication abortion drugs like misoprostol in many legally restrictive settings. This allows for distinction between abortions that are most likely to result in maternal mortality and morbidity and abortions that are relatively safe but not performed as per medical guidelines (e.g. not in a recommended setting or by a recommended provider). Based on this new conceptualization, recent estimates indicate that approximately 85% of abortions in West Africa are unsafe – 33% less safe and 52% least safe (Ganatra et al. 2017).

In addition to the obvious burden of unsafe abortion on women and their families, treatment of unsafe abortion is associated with a significant cost to the public health care system (Vlassoff et al. 2009). The ability to design evidence-based programs to improve contraceptive services and safe abortion or post-abortion care (PAC), and to document the frequency of abortion and the burden of disease, depends on the capacity to measure the incidence and descriptive demography of induced abortion within a specific geography and time period.

The primary objective of this study is to estimate the one-year incidence of induced abortion in Nigeria overall and by women's characteristics using direct and indirect methodologies. The secondary objective is to determine the safety of reported abortions and identify the women who are most likely to experience the most unsafe and most safe abortions.

Methodology

Sampling

Data for this study come from a population-based survey of reproductive age women (15 to 49) in Nigeria conducted by Performance Monitoring and Accountability 2020 (PMA2020). PMA2020 conducts frequent low-cost and rapid turnaround national or regional surveys in several countries across Africa and Asia,

using smartphone technology (Zimmerman et al. 2017). The Center for Research, Evaluation Resources and Development (CRERD) is the implementing partner for PMA2020 in Nigeria and the Bill & Melinda Gates Institute at the Johns Hopkins School of Public Health oversees the PMA2020 abortion measurement project and provides technical support. An Anonymous Donor provided funding for the abortion module.

PMA2020 surveys in Nigeria follow a three-stage cluster sampling design. First, seven states were selected using probability proportional to size (PPS) sampling: at least one state from each of the six geopolitical zones with two from the North West, where 25% of Nigeria's total population resides. Within each state, enumeration area (EA) clusters that contained approximately 200 households were randomly selected using PPS and 35 to 40 households per EA were randomly selected. Female resident interviewers invited all eligible female respondents age 15 to 49 from the selected households to consent and participate in the study. This sampling strategy produced nationally representative samples of households and women of reproductive age in Nigeria. Data are also representative at the state level. For this study, we used data from PMA2020 Nigeria Round 5. Data collection occurred from April through May, 2018. The final sample included 11,106 women. The Johns Hopkins Bloomberg School of Public Health and the National Health Research Ethics Committee (NHREC) of Nigeria provided ethical approval for this study.

Measures

Trained interviewers living in or close to the geographic clusters conducted face-to-face interviews with eligible women. The interviewers collected information about women's socio-demographic characteristics, their reproductive history, and their knowledge of and experience using contraception. In addition to these PMA2020 core questions, women also answered an abortion module exploring the frequency, correlates and nature of abortion experiences in Nigeria.

The abortion module began with questions on the number of close female confidantes the respondent had, followed by questions on the age and highest level of education ever attended by the respondent's closest confidante. The interviewer then inquired about the closest confidante's experiences with abortion, specifically asking about pregnancy removal when pregnant and period regulation at a time when she was worried she was pregnant (asked separately). This indirect approach, relying upon respondent's reports of their closest friend's experience with abortion, builds off prior work using the anonymous-third party reporting method, the best friend method, and a more recent blending of the two that researchers at the Guttmacher Institute have developed (Rossier et al. 2006; Sedgh 2018; Sedgh et al. 2011; Yeatman and Trinitapoli 2011). Subsequent questions related to the respondent's own experiences with these phenomena. The decision to ask separately about pregnancy removal and period regulation at a time that women were worried they might be pregnant emerged during the three-day pilot testing of the new module. We have described our approach in more detail elsewhere (Bell et al. forthcoming). Other questions investigated pathways to confidantes' and respondents' terminations, including whether the women made multiple attempts to end the pregnancy or bring back a period, which method she used on the only or first and last attempt to end the pregnancy, and the sources of these methods. Using these data, we operationalized abortion safety along two dimensions; whether the method(s) used put the woman at potentially high risk of abortion related morbidity and mortality, and whether the source(s) used involved untrained or no provider(s). We deemed an abortion as potentially high risk if the woman at any point in the termination used a method other than surgery or medication abortion drugs. With regard to provider training, we deemed the termination as involving untrained or no provider(s) if the woman sought any method from a source

other than one where an appropriately trained provider would likely be present. This categorization differed by country, but generally included most public and private facilities, non-governmental organizations, and mobile clinics. To explore how abortion pathways (use of one method or multiple methods) altered the safety categorization related to method and source, we separately measured the proportion of abortions categorized as potentially high risk using: 1) information on the last method used and 2) all method information, including last and first method used for those who did multiple things to terminate the pregnancy. Similarly with regard to provider training, we separately measured the proportion of abortions categorized as involving no or untrained providers using: 1) information on the last source, and 2) all information on source, including first and last source for those who did multiple things to terminate the pregnancy.

Analyses

We first examined respondent characteristics, as well as the demographic characteristics of their confidantes. We made assumptions regarding the confidante living in a similar residence (urban/rural) and state as the respondent. We calculated one-year incidences of induced abortion using responses from the questions on pregnancy removal and period regulation combined. Some respondents reported having zero confidantes. To address the bias this introduced, we ran separate Poisson models for the confidante sample using the respondent socioeconomic variables and whether the respondent had shared their own abortion experience with that confidante as the predictors, and the indicator variable for whether the confidante had an abortion in the year prior as the outcome. We then predicted the outcome variable, confidante probability of having a likely abortion in the prior year, for all observations. This included predicting confidante probability of having an abortion in the year prior for respondents with no confidantes; these are the "missing" observations in the surrogate confidante samples. We used this information to create a new variable that combined respondent reported confidante abortion data for those with confidantes, and the predicted probability of abortion in the prior year for the confidantes who were not in the sample because they had no close friends who we could have captured in the respondent sample. We describe this methodology elsewhere (Bell et al. 2018).

Using the aforementioned four safety definitions, we estimated the overall distribution of abortions by safety category for respondents and confidantes separately. We then examined the proportion of women who experienced the most unsafe (potentially high risk method/untrained provider) and the most safe (low risk method/trained provider) by background characteristics for both respondents and confidantes. We conducted all analyses in Stata version 15.1 and present weighted analyses to account for the complex sampling design.

Results

A total of 11,106 women of reproductive age completed the female survey (Table 1). Respondents reported on average 0.8 close confidantes, and provided demographic and abortion experience details for 5,883 closest confidantes (results not shown). Respondents were on average 29.1 years old, most had attended at least some secondary school (46.9%), and the majority were currently married or cohabiting (67.3%). Many respondents were nulliparous (35.1%) yet a not insignificant portion had five or more children (18.1%). Confidantes were similar in age and education but tended to be slightly younger and more educated. The adjusted confidante estimates, which include the characteristics of the respondents who reported zero confidantes reflect an age and education distribution that is closer to the respondents.

Overall, the one-year abortion incidence (pregnancy removal and period regulation combined) for respondents was 41.1 per 1,000 women age 15 to 49 while the adjusted confidante incidence was 59.4 (Table 2). The respondent and confidante incidences revealed similar trends, with women in their 20s, women with secondary or higher education, women in urban areas, and women in Anambra or Rivers states being the most likely to have had an abortion in the prior year.

With regard to abortion safety, 29.1% of respondents' abortions involved low risk methods and trained providers compared to 22.0% of confidantes' (Table 3). Relatively few abortions were categorized as low risk/untrained providers or potentially high risk/trained provider, while the majority of respondent (56.3%) and confidante (61.0%) abortions involved potentially high risk methods and untrained or no providers.

Examining abortion safety by background characteristics, respondent and confidante patterns both reveal that younger women, women with less education, and women living in rural areas were the most likely to have had an abortion that involved a potentially high risk method and an untrained or no provider (Table 4). Additionally, Anambra, Kaduna, Nasarawa, and Taraba states had among the highest levels of the most unsafe abortions for both respondents and confidantes. Among respondents, for whom we had wealth data, the poorest women were the most likely to have experienced the most unsafe abortions.

Discussion

Results from this study provide new insights regarding the frequency, correlates, and conditions under which women have abortions in Nigeria. Regardless of whether examining respondent or confidante data, findings indicate that abortion in this setting is common and more likely to occur among young, urban, and educated women. Given the concerns with underreporting in self-reported data on abortion, we know the respondent one-year incidence of likely abortion (41.1) is an underestimate. The confidante incidence estimate of 59.4 is likely closer to the truth. Compared to the 2012 Incidence Complications Methodology (AICM) study estimate of 33 per 1,000 women age 15 to 49, our estimate is much higher. But this estimate is rather close to our confidante pregnancy removal incidence of 38; experiences captured via the pregnancy removal questions may be most similar to the abortion experiences captured in an AICM study. Our safety related findings indicate that the majority of abortions were the most unsafe, with younger, poorer, and less educated women at greatest risk of having unsafe abortions. Findings highlight the presence of significant social disparities in the conditions under which abortions are performed, leaving poor, rural, and less educated women at greatest risk of abortion-related morbidity and mortality. Thus, evidence from this study confirms that abortion in Nigeria is not only a public health concern, but an issue of social inequities.

Table 1. Characteristics of female respondents age 15 to 49 and their closest female confidantes age 15 to 49 in Nigeria

	Respondent		Confidante		Adjusted Confidante *
	N	%	N	%	%
Mean age	11,106	29.1	5,772	28.4	29.1
Age					
15-19	2,257	18.9	1,163	19.0	18.3
20-24	1,870	16.2	1,132	19.6	17.2
25-29	2,040	18.8	1,073	18.0	17.8
30-34	1,629	15.0	878	15.3	15.1
35-39	1,473	13.9	694	13.1	14.2
40-44	1,102	10.5	509	9.3	10.5
45-49	735	6.8	323	5.7	6.8
Education					
Never	2,355	17.5	1,049	15.9	18.1
Primary	1,906	15.2	789	11.3	13.7
Secondary	4,934	46.9	2,687	46.4	46.0
Higher	1,911	20.3	1,345	26.3	22.2
Marital status					
Currently married/cohabiting	7,378	63.7	--	--	--
Divorced or separated/widowed	515	4.8	--	--	--
Never married	3,211	31.5	--	--	--
Religion of household					
Catholic	1,593	14.7	--	--	--
Other Christian	3,823	44.0	--	--	--
Muslim	5,369	39.2	--	--	--
Other	321	2.1	--	--	--
Ethnicity					
Hausa	3,524	21.0	--	--	--
Igbo	2,071	22.5	--	--	--
Yoruba	1,015	13.1			
Other	4,495	43.4	--	--	--
Parity					
0	3,745	35.1	--	--	--
1-2	2,666	25.1	--	--	--
3-4	2,385	21.7	--	--	--
5+	2,290	18.1	--	--	--
Residence					
Rural	5,701	42.9	3,077	44.7	42.9
Urban	5,405	57.1	2,806	55.3	57.1
State					
Anambra	1,419	12.8	869	14.4	12.8
Kaduna	2,766	9.5	1,476	8.9	9.5
Kano	1,751	13.1	751	11.2	13.1
Lagos	1,590	21.4	833	21.4	21.4
Nasarawa	1,536	13.4	861	14.3	13.4
Rivers	1,223	17.0	673	17.1	17.0

Taraba	821	12.7	420	12.6	12.7
Mean number of confidantes	10,671	0.8	--	--	
Total	11,106	100.0	5,883	100.0	100.0

*Including respondent characteristics for "missing" confidantes

Table 2. Incidence (per 1,000) of likely abortions (pregnancy removal and period regulation combined) among female respondents and their closest female confidantes in Nigeria by characteristics

	Respondent		Adjusted Confidante*		Reporting ratio
	Incidence	SE	Incidence	SE	
Age					
15-19	25.1	4.35	57.6	4.86	2.3
20-24	68.6	9.40	98.5	8.04	1.4
25-29	59.6	9.48	76.3	6.89	1.3
30-34	43.4	6.04	50.9	5.50	1.2
35-39	34.4	5.30	33.5	4.52	1.0
40-44	16.9	4.26	34.2	3.53	2.0
45-49	15.2	4.55	32.9	4.41	2.2
Education					
Never	13.4	3.45	23.2	2.88	1.7
Primary	33.1	5.17	44.1	3.67	1.3
Secondary	47.7	5.62	72.0	4.16	1.5
Higher	55.9	7.54	72.4	6.30	1.3
Residence					
Rural	24.7	4.22	50.5	3.90	2.0
Urban	53.8	6.42	66.7	4.49	1.2
State					
Anambra	62.1	12.19	84.1	9.19	1.4
Kaduna	20.7	4.09	48.8	3.88	2.4
Kano	5.9	1.77	11.6	2.17	2.0
Lagos	42.1	5.23	57.9	5.65	1.4
Nasarawa	27.3	5.24	50.3	6.66	1.8
Rivers	79.3	12.31	91.5	8.63	1.2
Taraba	35.0	22.94	63.2	11.80	1.8
Total	41.1	4.21	59.4	3.01	1.4

*Including respondent characteristics for "missing" confidantes

Table 3. Safety of most recent reported likely abortion among female respondents age 15 to 49 and their closest female confidantes age 15 to 49 in Nigeria

	Respondent		Confidante	
	Estimate	N	Estimate	N
Low risk, trained provider	29.1	471	22.0	266
Low risk, not trained provider	5.4	97	7.5	101

Potentially high risk, trained provider	9.2	157	9.5	137
Potentially high risk, not trained provider	56.3	1,076	61.0	861
Total	100.0	1,810	100.0	1,370

Table 4. Percentage of most recent likely abortion among female respondents and their closest female confidantes in Nigeria that were least safe by background characteristics

	Respondent (n=1,810)		Confidante (n=1,370)	
	Most unsafe	Most safe	Most unsafe	Most safe
Age				
15-19	84.2	10.1	75.2	3.4
20-24	73.9	8.1	71.0	12.9
25-29	55.8	29.4	61.2	22.0
30-34	52.2	34.0	51.0	30.0
35-39	52.7	30.6	51.6	31.8
40-44	46.1	42.5	54.4	31.6
45-49	50.1	33.1	66.3	15.6
Education				
Never	64.9	14.0	73.6	4.9
Primary	65.3	23.0	62.7	18.6
Secondary	54.9	29.4	62.2	21.6
Higher	53.0	34.6	55.8	27.5
Residence				
Rural	61.5	21.3	69.5	10.9
Urban	54.3	32.2	56.2	28.2
State				
Anambra	67.5	16.5	68.6	13.1
Kaduna	73.3	15.5	62.9	14.3
Kano	54.2	15.3	59.2	19.5
Lagos	44.6	43.0	51.4	39.0
Nasarawa	69.0	21.3	72.0	9.9
Rivers	52.4	32.3	54.3	24.7
Taraba	67.8	11.2	74.1	9.9
Wealth quintile				
Poorest	71.2	13.3	--	--
Second poorest	66.9	18.1	--	--
Middle	55.4	29.5	--	--
Second wealthiest	52.9	32.4	--	--
Wealthiest	47.7	38.8	--	--
Total	56.3	29.1	61.0	22.0

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