Abortion Incidence and Safety in Nigeria: Evidence of Inequities

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Background

In Nigeria, abortion is only legal to save a woman's life. Recent estimates extrapolated from facility-based abortion complications indicate there were approximately 33 abortions per 1,000 women aged 15 to 49 in 2012 (1). This is equivalent to 1.25 million abortions annually, representing more than half (56%) of all unintended pregnancies to Nigerian women. These predominantly unsafe abortions resulted in nearly 500,000 women experiencing serious health consequences, less than half (212,000) of whom received treatment for these complications (1). The only previous national study of abortion incidence in Nigeria estimated a rate of 25 abortions per 1,000 women age 15 to 44 in 1996, suggesting women's use of abortion as a means of fertility control has increased in intervening years (2). Recent regional estimates of abortion safety indicate that nearly 85% of abortions in West Africa are considered unsafe (3).

These unsafe abortions are a result of women seeking clandestine procedures or self-managing their termination outside the formal healthcare system; this is particularly true in the context of legal restrictions (4). They present a measurement challenge, but more importantly, they put women at risk of abortion-related morbidity and mortality. In Nigeria, there are between 496 (95% uncertainty interval (UI) 336-666) and 814 (95% UI 596-1180) maternal deaths per 100,000 live births (5-7), approximately 10% to 18% of which are due to unsafe abortion (8). Using the latest estimates of the general fertility rate (7), we estimate there are as many as 11,000 abortion-related deaths annually, the majority of which are preventable. For each mortality, there are hundreds of women who experience severe, and potentially life-threatening complications (9). Among gynecological admissions at a Nigerian teaching hospital in recent years, 7.4% were related to treatment of unsafe abortion, 17% of which ultimately resulted in maternal death (9). Findings from gynecological admissions at nine referral hospitals in Nigeria suggest that, although surgical abortion is still the primary method of abortion, the share of postabortion care (PAC) patients who report first using misoprostol is increasing (10). PAC patients who used misoprostol experienced fewer and less severe complications than among PAC patients presenting after a surgical abortion (10). While these population level estimates and facility data are essential to track abortion trends and the public health implications of abortion, we know little about the specifics of its occurrence and characteristics of women who seek abortion, particularly those not seeking facility-based care.

Existing evidence indicate that the negative sequelae associated with unsafe abortion is experienced disproportionately by vulnerable women (4, 11-13). A recent study found that young women age 16 to 25 were the most likely to present for treatment of post-abortion complications at a teaching hospital (9). Prior studies found women experiencing abortion related morbidities were younger, more likely to be unmarried

and poorer than women experiencing maternal morbidities for other causes (11, 14). However, these studies and much of the research in low-resource, legally restrictive settings have relied on facility-based, retrospective data, which is limited in the availability of data on women's characteristics and the generalizability of findings. In addition to the obvious burden of unsafe abortion morbidity and mortality on these women and their families, its treatment is associated with a significant cost to the public health care system (11, 14-16).

The first objective of this study is to estimate the one-year incidence of induced abortion in Nigeria overall and by women's characteristics using direct report and the confidante methodology (17). The second objective is to determine the safety of reported abortions and social determinants of abortion safety among women reporting an abortion in the last five years. The study complements facility-based studies of abortion in Nigeria, using a population-based approach to explore women's recent experiences of abortion within and outside of healthcare facilities.

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 (18, 19). The Centre for Research Evaluation Resources and Development (CRERD) is the implementing partner for PMA2020 in Nigeria while 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: one state from five of the six geopolitical zones, and two states from the North West zone, where 25% of Nigeria's total population resides. Within each state, geographic clusters defined as enumeration areas (EA) that contain 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 face-to-face interview. 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 collected between April and 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. Women provided verbal consent prior to participation.

Measures

The resident 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. A confidant was defined as a woman age 15 to 49, residing in Nigeria, and someone with whom the respondent reciprocally shares personal information. 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 social network-based measurement of abortion (17, 20-23). Subsequent questions related to the respondent's own experiences with these phenomena. 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(s) she used, and the source(s) of these methods. If a woman reported doing multiple things to terminate a pregnancy, subsequent questions asked about the first method and source followed by the last method and source. Abortion methods included surgery, medication abortion (MA) drugs, other pills or pills without sufficient information to categorize as MA, and traditional or other methods (like herbal drinks, injections, or alcohol, or other traditional remedies). Sources included public facility types, private facility types (including non-governmental organizations and private doctors), pharmacies or chemist shops, and traditional or other sources (including shops, markets, friends or relatives, or home).

Using these data, we operationalized abortion safety based on two dimensions: 1) whether the method(s) used included any non-recommended methods (i.e. other than surgery or medication abortion drugs) that put the woman at potentially high risk of abortion related morbidity or mortality, and 2) whether the source(s) used were clinical (public or private facilities) or non-clinical (any other source). If a woman reported doing multiple things, we categorized her abortion as non-recommended if she used a method other than surgery or MA drugs at any point in the termination; we similarly categorized an abortion as non-clinical if at any point she used a source other than a public or private facility. We combined source and method information to categorize a woman's abortion into one of following four safety categories: 1) recommended method(s) involving only clinical source(s); 2) recommended method involving non-clinical source(s); 3) non-recommended method(s) involving clinical source(s); and 4) non-recommended method(s) involving non-clinical source(s). Abortions in group four were deemed the most unsafe while abortions in group one were considered the most safe. We have described our incidence measurement approach in more detail elsewhere (24).

Analyses

For the analyses, we first examined the respondent characteristics, and the limited demographic characteristics of the confidantes. Due to data constraints, we assumed that the confidantes lived in the same residence (urban/rural) and state as their respondent. We calculated one-year incidences of induced abortion by combining responses from the questions on pregnancy removal and period regulation for the respondent and confidante separately, overall and by age, education, residence, and state. We excluded any abortions where the woman used only emergency contraception and did not seek subsequent care assuming that the woman was not in fact pregnant. For the confidante estimates, we included pregnancy removal and period regulations that the respondent reported with certainty or with less certainty but for which she could provide details on the method(s) used. For "missing" confidantes (i.e. those respondents who reported zero confidantes), we used a Poisson model to predict the likelihood of these women having had an abortion in

the prior year. This involved regressing the respondent's socioeconomic characteristics and whether the respondent reported an abortion and shared it with their confidante on the available confidante abortion incidence data. We then predicted the likelihood of the "missing" confidantes having had a recent abortion based on their respondents' characteristics. We combined the predicted likelihood for the "missing" confidantes with the respondent reported confidante incidence data to calculate the one-year abortion incidence estimates. We used these bias adjusted confidante data and the respondent data to calculate separate one-year abortion incidences overall and by background characteristics. We then conducted separate respondent and confidante bivariate and multivariable logistic regression analyses to determine which characteristics were independently associated with recent abortion.

With regard to safety, we first separately estimated the overall respondent and confidante distribution of abortion across the four safety categories among all reported abortions. We separately estimated the proportion of women who experienced the most unsafe abortions by background characteristics. Additionally, we conducted bivariate and multivariable logistic regressions to examine what characteristics were independently associated with increased odds of experiencing a most unsafe abortion. Lastly, we calculated the one-year incidence rate of most unsafe abortions and the corresponding annual number of most unsafe abortions in Nigeria.

We conducted all analyses in Stata version 15.1 (25) and present results from weighted analyses that 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. 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 (63.7%). Respondents primarily identified as Christian (not including Catholic) (44.0%) or Muslim (39.2%), and Igbo (22.5%) or Hausa (21.0%) ethnicity. Many respondents were nulliparous (35.1%) yet nearly one in five had five or more children (18.1%). Confidantes were similar in age (average 28.4), but slightly more educated; 26.3% had higher or more education compared to 20.3% of respondents. Additionally, respondents in rural areas were more likely to report a confidante. After adjusting confidante data to account for respondents who did not report a confidante, the distribution of confidante characteristics were more similar to the respondents.

Overall, the one-year induced abortion incidence (pregnancy removal and period regulation combined) for respondents was 39.4 (SE 3.98) per 1,000 women age 15 to 49 while the adjusted confidante incidence was 54.4. The respondent and confidante incidences revealed similar trends (Figure 1). Women age 20 to 24 among respondents and confidantes had the highest one-year abortion incidence at 67.5 and 90.5 abortions per 1,000 women of reproductive age, respectively, followed by women age 25 to 29 (55.7 and 70.3). Women in their 40s had the lowest incidence for respondents and confidantes (16.1 and 28.7 among 40 to 44 year olds and 15.2 and 31.4 among 45 to 49 years olds, respectively). With respect to education, respondents and confidantes with secondary (46.2 and 66.4) or higher education (51.3 and 64.6) had the highest incidences of abortion and women who had never received formal education had the lowest (13.4 and 21.3). Women in rural areas had significantly lower rates of abortion at 24.1 per 1,000 women of reproductive age compared to 51.1 in urban areas among respondents; corresponding estimates for

confidantes were 44.8 and 62.1, respectively. Women in Rivers state had the highest abortion rate among respondents and confidantes (73.9 and 83.8) while women in Kano had the lowest (5.9 and 10.3). Among respondents (for whom we have wealth data) the poorest women were least likely to have had a recent abortion (20.3). Examining the reporting ratio between the adjusted confidante data and the respondent data, we see that the youngest and oldest respondents were similarly likely to underreport abortion when asked directly about their own abortion experience, while respondents with no education, respondents in rural areas, and respondents in Kaduna were the most likely to underreport. Bivariate respondent results confirm patterns identified from examining incidences and were statistically significant (Table 2); confidante bivariate results were largely not significant. Age, residence, and some states remained significantly associated with abortion incidence in the multivariable respondent model while only age and residence were significant factors in the multivariable confidante model (Table 2).

A minority of respondents terminated their pregnancy using recommended methods (34.5%) and only 31.2% received care from clinical sources; the corresponding figures based on confidante experiences were 29.5% and 23.9%, respectively (Table 3). Combining both criteria, most respondent (63.4%) and confidante (68.6%) abortions fell into the least safe category, involving non-recommended methods dispensed by non-clinical or no providers. Few respondent and confidante abortions were categorized as involving recommended method(s) dispensed in non-clinical settings (5.4% versus 7.5%) or non-recommended method(s) dispensed by clinical source(s) (2.1% versus 1.9%), while only 29.1% and 22.0% of respondent and confidante abortions were performed using recommended methods in a clinical setting. Compared to the overall safety distribution among all abortions, abortions reported in the last five years were more likely to involve non-recommended methods from a non-clinical source for respondents (73.6%) and confidantes (72.2%) (data not shown).

Examining abortion safety by background characteristics, respondent and confidante results often revealed similar patterns (Figure 2). Women age 15 to 19 were the most likely to have had the most unsafe abortions (87.8% and 84.8%), as were women who had never attended school (79.1% and 86.5%). Likewise, women residing in rural areas were significantly more likely to have had the most unsafe abortions (70.8% and 78.8%). By state, there was a less consistent pattern across respondent and confidante data, but Anambra, Kaduna, Nasarawa, and Taraba had the highest levels of the most unsafe abortions while women in Lagos and Rivers states were the most likely to have had the most safe abortions. Based on respondent data – for whom we had information on wealth – the poorest women (81.0%) were the most likely to have experienced the most unsafe abortions. Bivariate respondent and confidante results corroborate percentage most unsafe findings (Table 6). Adjusting for these factors in a multivariable logistic regression reveals that age is independently associated with abortion safety, as is state (with differences between respondent and confidante results) and wealth (for respondents) (Table 4). Confidante education remains significantly associated with odds of a most unsafe abortion while it is no longer significant among respondents, for whom we were able to adjust for wealth. Residence also loses significance for both types of women in the multivariable model.

Discussion

Results from this study provide new insights regarding the frequency, correlates, and conditions under which women have abortions in Nigeria. Respondent and confidante incidences both indicate that abortion in this setting is common and more likely to be reported among young, urban, and educated women,

although multivariable results suggest these patterns are not straightforward. Given the concerns with underreporting of self-reported abortion (26-28), the respondent one-year incidence of abortion (39.4) is likely an underestimate, while the confidante incidence estimate of 54.4 may be closer to the truth. Compared to the Bankole *et al.* Abortion Incidence Complications Methodology (AICM) study estimate of 33 per 1,000 women age 15 to 49 in 2012, our self-reported and confidante estimates are higher (1). However, the Bankole *et al.* estimate is closer 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. From a public health perspective, to the extent that the period regulations included in our estimates identify women taking potentially harmful actions post-coitally to bring back their menses at a time when they were worried they were pregnant, we are interested in accounting for this phenomenon in our measurements of abortion.

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. Multivariable results suggest that wealth may be the determining factor in whether a woman receives a most unsafe abortion. Findings highlight the presence of significant social disparities in the conditions under which abortions are performed, leaving vulnerable women at greatest risk of abortion-related morbidity and mortality. These results are consistent with previous literature suggesting the most disadvantaged women are those most likely to resort to unsafe means of termination (4, 11, 14). Evidence from this study confirms that abortion in Nigeria is not only a public health concern, but an issue of social inequity.

This study has limitations. Most importantly, we were unable to validate the abortion estimates against an external, objective measure. Thus, while we view the confidante estimates as more accurate than the respondents', we do not know by how much. Given women were reporting on their confidante's prior abortions, there is a possibility of overestimation if respondents reported more speculative confidante pregnancy removal and period regulation experiences. We excluded experiences that were unlikely to have been abortions. To the extent that the underreporting of respondent or confidante abortions was differential by demographic groups, the observed patterns in abortion incidence may not be accurate. However, the patterns were similar for both respondents and confidantes, which lends credibility to the conclusions regarding what types of women are most likely to have an abortion, and most likely to have an unsafe abortion. Additionally, we adjusted for potential biases in the confidante sample by using the Poisson prediction approach.

With regard to abortion safety measurement, the potential for differential underreporting by method and source is the primary limitation of the data that would lead to bias. Since the overall distribution of abortion safety was similar among respondents and confidantes, as were the findings concerning which types of women were most likely to have had the most unsafe abortion or most safe abortion, this potential bias is unlikely to be significant or to qualitatively affect our conclusions. Another limitation is the potential for misclassification. Women sometimes could not provide sufficient information for interviewers to classify the specific pill used, nor could they distinguish the specific surgery performed. However, this limitation would have led to misclassifications in both directions, limiting the likelihood of systematic error in the overall estimates.

The study has a number of strengths. The data are from a large, nationally representative survey. Investigators took extensive efforts during the questionnaire development and pilot testing to appropriately capture the nuance in how women discuss and refer to abortion locally; this led to the different sets of questions about pregnancy removal and period regulation. The methodological approach enabled estimation of abortion incidence and safety overall and by women's background characteristics, providing details on the characteristics of women most likely to have had an abortion or an unsafe abortion. Additionally, the use of both respondent and confidante data provided contemporaneous estimates of these abortion-related measures. Having data on both populations confirmed the usefulness of this social-network based indirect methodology in reducing the social desirability pressure and producing more accurate estimates while providing two sources of support regarding the patterns of abortion incidence and safety by women's characteristics.

Conclusion

Although the confidante data from this study may not provide the exact one-year induced abortion incidence, results suggest that abortion is significantly more common than previously estimated. Our results reveal that women in Nigeria have a dual conceptualization of abortion, both as a distinct pregnancy removal or termination, as well as an approach to regulate one's menses. This finding positions abortion experiences on a spectrum of fertility regulation options beginning with primary prevention via contraception, but containing more nuance among secondary prevention than previously envisioned. Findings suggest that disadvantaged women with limited ability to navigate and access safe abortion in this legally restrictive setting are most at risk of having an unsafe abortion. Efforts to expand the legal conditions for abortion in Nigeria are critical. Simultaneously, efforts to increase awareness of the availability of medication abortion drugs to more safely self-induce can help mitigate the toll of abortion-related morbidity and mortality.

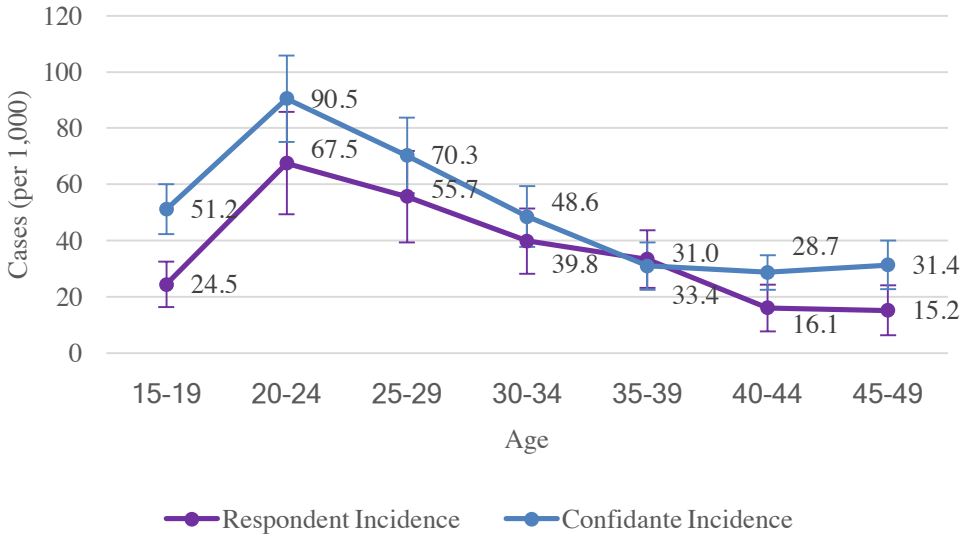
Table 1. Characteristics of Nigerian female respondents age 15 to 49 and their closest Nigeria female confidantes age 15 to 49 who had a prior abortion

	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 Christiam	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

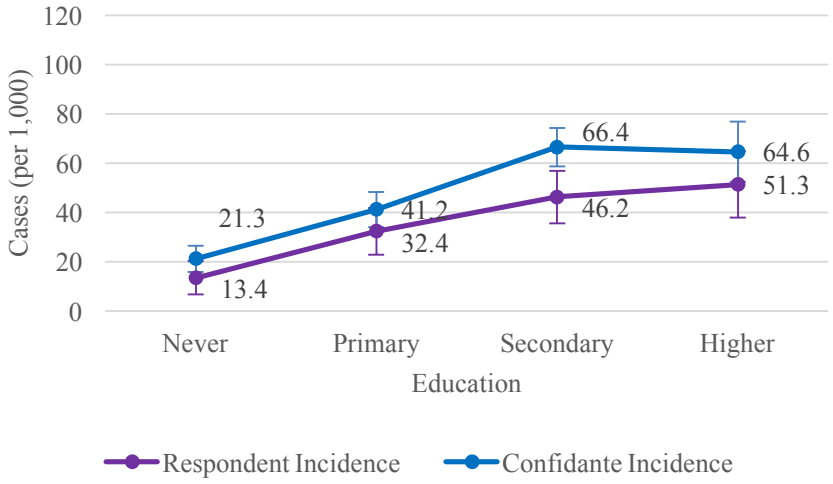
*Including respondent characteristics for "missing" confidantes

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

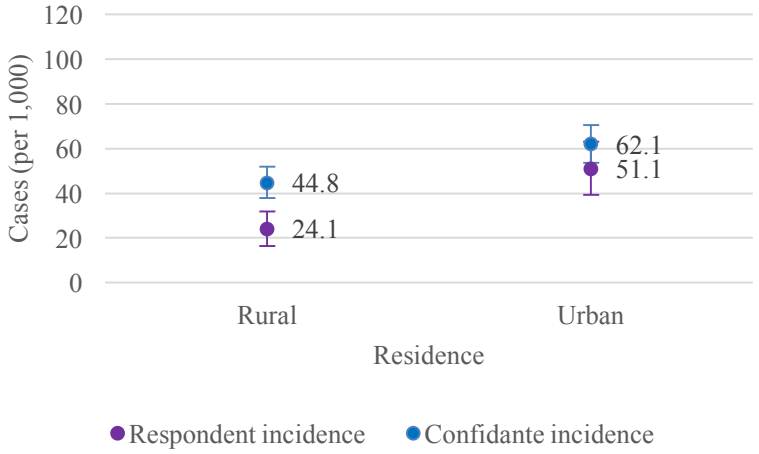
a) By age



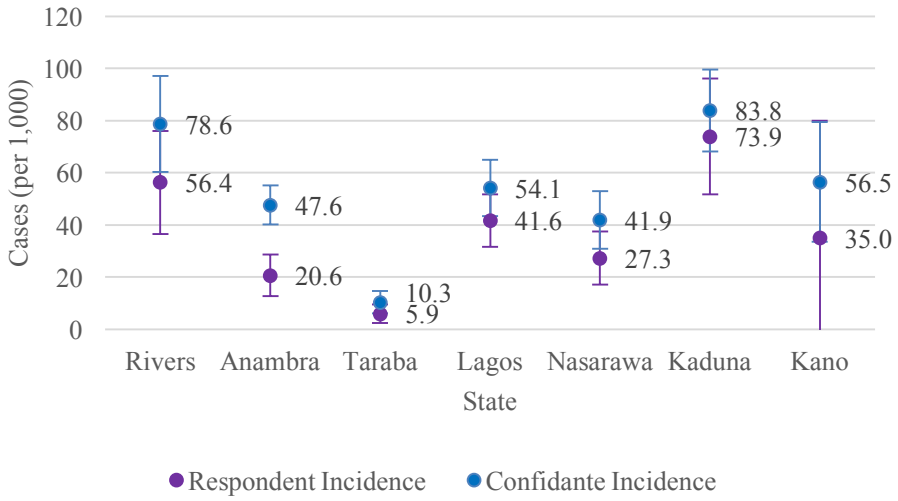
b) By education



c) By residence



d) By state



e) By wealth (respondent only)

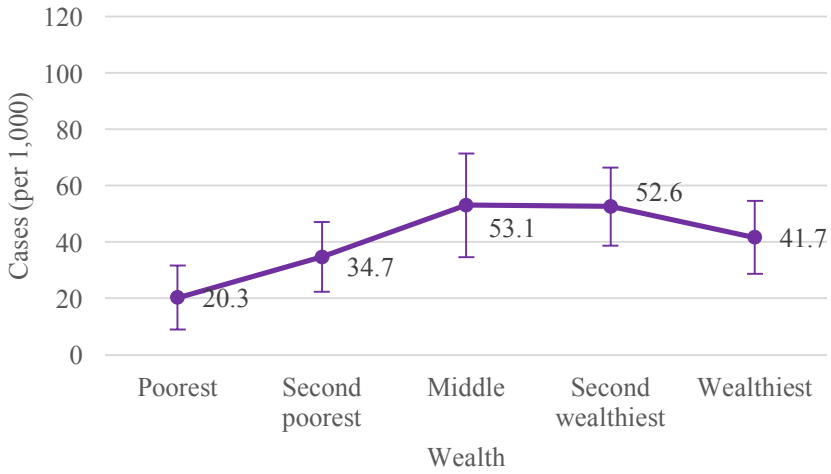


Table 2. Bivariate and multivariate regressions of characteristics associated with experiencing an abortion in the year prior to the survey among Nigerian respondents and confidantes age 15-49*

	Respondent (n=11,070)						Confidante (n=11,080)					
	OR	95% CI		aOR	95% CI		OR	95% CI		aOR	95% CI	
Age												
15-19	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
20-24	**2.93**	**2.08**	**4.13**	**2.89**	**2.07**	**4.05**	0.95	0.81	1.12	1.01	0.86	1.19
25-29	**2.38**	**1.62**	**3.49**	**2.15**	**1.43**	**3.22**	1.08	0.91	1.29	**1.19**	**1.00**	**1.43**
30-34	**1.66**	**1.11**	**2.49**	1.47	0.99	2.19	1.04	0.87	1.24	1.08	0.91	1.29
35-39	1.38	0.90	2.12	1.24	0.80	1.93	1.16	0.97	1.38	**1.21**	**1.02**	**1.44**
40-44	0.65	0.35	1.23	0.66	0.35	1.23	1.22	0.99	1.49	**1.26**	**1.02**	**1.56**
45-49	0.62	0.32	1.17	0.58	0.30	1.10	**1.41**	**1.16**	**1.71**	**1.42**	**1.15**	**1.75**
Education												
Never	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
Primary	**2.47**	**1.44**	**4.26**	1.57	0.84	2.92	1.14	0.85	1.53	1.08	0.82	1.42
Secondary	**3.60**	**2.08**	**6.24**	1.51	0.76	3.00	0.88	0.66	1.17	0.78	0.60	1.01
Higher	**4.02**	**2.28**	**7.08**	1.62	0.81	3.25	0.61	0.44	0.85	0.48	0.36	0.63
Residence												
Rural	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
Urban	**2.23**	**1.47**	**3.40**	**2.05**	**1.18**	**3.55**	1.24	0.97	1.58	**1.59**	**1.16**	**2.17**
State												
Anambra	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
Kaduna	**0.37**	**0.21**	**0.64**	**0.39**	**0.19**	**0.80**	1.30	0.76	2.23	1.16	0.69	1.95
Kano	**0.10**	**0.05**	**0.20**	**0.12**	**0.05**	**0.27**	1.40	0.86	2.27	1.24	0.77	2.00
Lagos	0.75	0.48	1.19	0.68	0.42	1.10	1.18	0.84	1.66	1.02	0.71	1.46
Nasarawa	**0.46**	**0.27**	**0.80**	0.58	0.26	1.29	0.98	0.68	1.43	1.03	0.67	1.60
Rivers	1.34	0.81	2.22	1.36	0.84	2.20	1.27	0.85	1.90	1.27	0.85	1.91
Taraba	0.60	0.15	2.43	0.79	0.11	5.43	1.20	0.69	2.08	1.18	0.64	2.19
Wealth quintile												
Poorest	1.00	--	--	1.00	--	--	--	--	--	--	--	--
Second poorest	1.74	0.88	3.45	0.98	0.43	2.24	--	--	--	--	--	--
Middle	**2.73**	**1.38**	**5.39**	1.02	0.37	2.83	--	--	--	--	--	--
Second wealthiest	**2.70**	**1.43**	**5.12**	0.89	0.32	2.47	--	--	--	--	--	--
Wealthiest	**2.11**	**1.08**	**4.13**	0.64	0.22	1.83	--	--	--	--	--	--

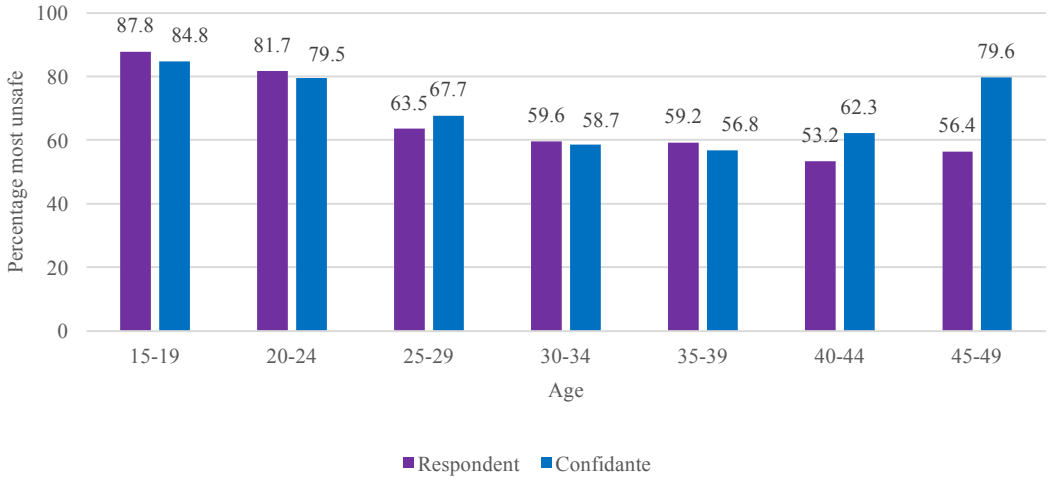
*Bolding indicates statistical significance at the p<0.05 level

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

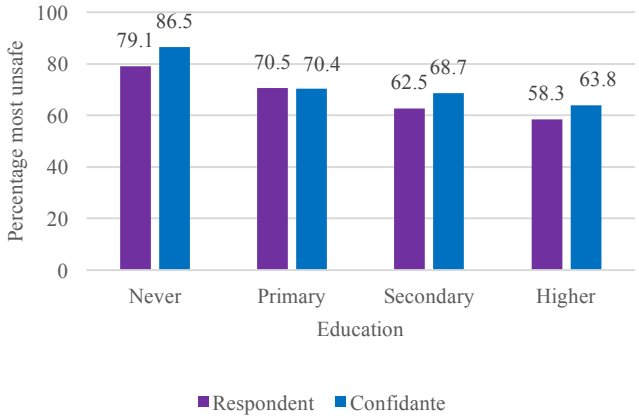
	Respondent		Confidante	
	Estimate	N	Estimate	N
Recommended, clinical provider	29.1	471	22.0	266
Recommended, non-clinical provider	5.4	97	7.5	101
Non-recommended, clinical provider	2.1	37	1.9	29
Non-recommended, non-clinical provider	63.4	1,196	68.6	969
Total	100.0	1,810	100.0	1,370

Figure 2. Percentage of most recent abortion among female respondents and their closest female confidantes in Nigeria that were the most unsafe by background characteristics

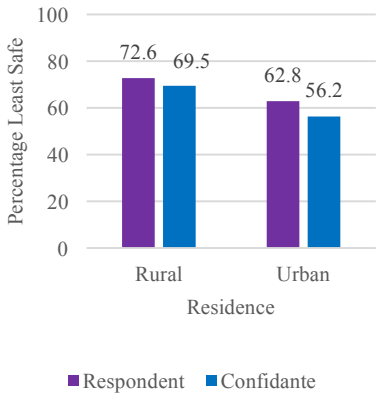
a) By age



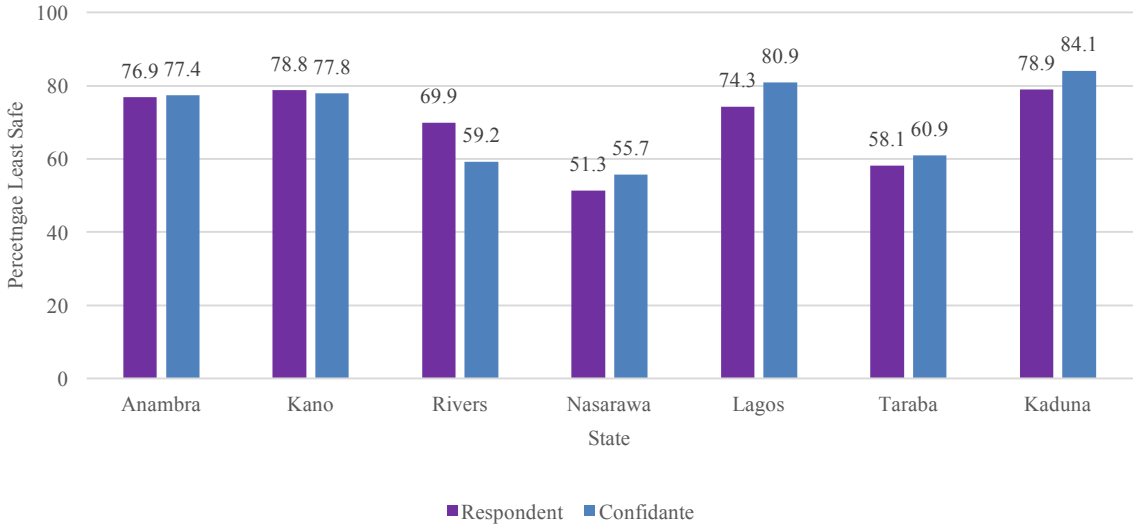
b) By education



c) By residence



d) By state



e) By wealth (respondent only)

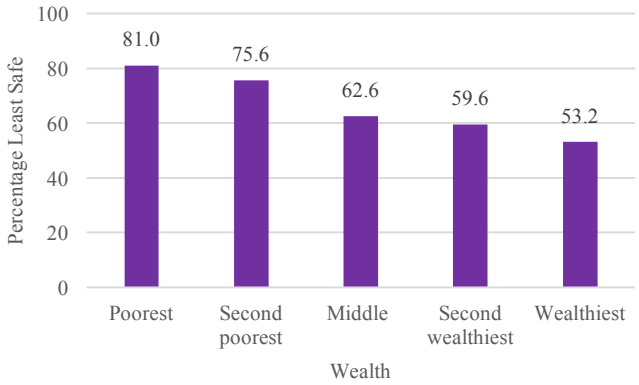


Table 4. Multivariate regression of characteristics associated with experiencing a most unsafe abortion among Nigerian respondents and confidantes age 15-49*

	Respondent (n=1,801)						Confidante (n=1,365)					
	OR	95% CI		aOR	95% CI		OR	95% CI		aOR	95% CI	
Age												
15-19	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
20-24	0.62	0.26	1.49	0.62	0.26	1.51	0.70	0.35	1.37	0.77	0.37	1.61
25-29	**0.24**	**0.11**	**0.53**	**0.28**	**0.12**	**0.62**	**0.37**	**0.19**	**0.72**	**0.45**	**0.22**	**0.91**
30-34	**0.21**	**0.09**	**0.49**	**0.25**	**0.10**	**0.60**	**0.24**	**0.13**	**0.47**	**0.30**	**0.15**	**0.60**
35-39	**0.20**	**0.09**	**0.47**	**0.21**	**0.09**	**0.50**	**0.23**	**0.11**	**0.47**	**0.25**	**0.12**	**0.55**
40-44	**0.16**	**0.07**	**0.36**	**0.17**	**0.07**	**0.38**	**0.30**	**0.15**	**0.62**	**0.35**	**0.16**	**0.74**
45-49	**0.18**	**0.08**	**0.43**	**0.19**	**0.08**	**0.44**	0.69	0.26	1.84	0.74	0.27	2.07
Education												
Never	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
Primary	0.63	0.33	1.21	0.77	0.41	1.47	**0.37**	**0.17**	**0.81**	**0.42**	**0.19**	**0.94**
Secondary	**0.44**	**0.22**	**0.87**	0.56	0.28	1.12	**0.34**	**0.17**	**0.71**	**0.40**	**0.20**	**0.82**
Higher	**0.37**	**0.19**	**0.74**	0.64	0.31	1.33	**0.28**	**0.13**	**0.58**	**0.39**	**0.19**	**0.84**
Residence												
Rural	1.00	--	--	1.00	--	--	1.00	--	--	1.00	--	--
Urban	**0.63**	**0.41**	**0.97**	1.23	0.80	1.89	**0.46**	**0.30**	**0.70**	0.66	0.41	1.06
State												
Anambra				1.00	--	--	1.00	--	--	1.00	--	--
Kaduna	1.12	0.57	2.19	0.61	0.31	1.22	1.03	0.57	1.86	0.68	0.37	1.25
Kano	0.70	0.24	2.00	0.37	0.12	1.12	0.43	0.17	1.07	**0.23**	**0.09**	**0.57**
Lagos	**0.32**	**0.19**	**0.53**	**0.31**	**0.18**	**0.54**	**0.37**	**0.22**	**0.63**	**0.42**	**0.24**	**0.75**
Nasarawa	0.87	0.45	1.67	**0.41**	**0.19**	**0.87**	1.24	0.62	2.49	0.70	0.30	1.60
Rivers	**0.42**	**0.24**	**0.73**	**0.35**	**0.20**	**0.61**	**0.46**	**0.27**	**0.77**	**0.39**	**0.22**	**0.69**
Taraba	1.12	0.46	2.75	0.54	0.21	1.43	1.55	0.56	4.26	1.01	0.36	2.80
Wealth quintile												
Poorest	1.00	--	--	1.00	--	--	--	--	--	--	--	--
Second poorest	0.73	0.37	1.41	0.82	0.42	1.59	--	--	--	--	--	--
Middle	**0.39**	**0.19**	**0.79**	**0.46**	**0.22**	**0.98**	--	--	--	--	--	--
Second wealthiest	**0.35**	**0.18**	**0.68**	**0.43**	**0.21**	**0.91**	--	--	--	--	--	--
Wealthiest	**0.27**	**0.13**	**0.53**	**0.35**	**0.16**	**0.77**	--	--	--	--	--	--

*Bolding indicates statistical significance at the p<0.05 level

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