The Association Between Abortion Motivation and Abortion Safety in Ghana

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June 22nd, 2019

Abstract

Introduction: Twenty-five million unsafe abortions occur globally each year, a vast majority of which occur in developing regions which often have restrictive abortion laws. In Ghana, abortion is restricted except on few legal grounds (health of mother, risk of fetal malformation, and rape or incest) and unsafe abortion contributes around 11% of all maternal deaths. This study aimed to investigate the association between abortion motivation (the primary reason women sought abortion) and abortion safety.

Methods: We analyzed a sample of 1,425 women using the nationally representative Ghana Maternal Health Survey (2017). Abortion safety was defined using WHO three level categorization (safe, less safe, least safe) operationalized to the Ghanaian context. Multinomial logistic regression analysis, controlling for age, education level, relationship status, and place of residence was used to examine the relationship between abortion motivation and the safety of the abortion method used.

Results: In our study 5.7% of women had terminated a pregnancy. The main reason why women sought an abortion was to limit or space births (32%). Only 20% of women sought abortions on grounds that are considered legal in Ghana. Compared to women who had a legal ground for abortion, women who cited financial constraints (OR=2.84, 95% CI: 1.63 - 4.97), a need to space or delay pregnancy (OR=2.51, 95% CI: 1.50 - 4.18), a lack of social support (OR=2.23, 95% CI: 1.19 - 4.18), or education/career advancement (OR=3.00, 95% CI: 1.52 – 5.95) as reasons for abortion were at a significantly higher risk of seeking least safe abortions.

Conclusion: Women in Ghana seek abortions for many reasons that are not covered by the abortion law in Ghana. Women who seek abortions for reasons not covered by legal grounds are at a significantly higher risk of obtaining less safe and least safe abortions. Ghana's abortion law should be expanded to include these additional abortion motivations to ensure that women can seek and obtain legal and safe abortions on broader grounds.

Introduction

Unsafe abortion is defined by the World Health Organization (WHO) as the termination of pregnancy performed by an individual lacking the necessary skills or in an environment not in conformity with basic medical standards, or both.[1] The WHO estimates that 56 million abortions occurred globally each year between 2010 and 2014,[2] of which 25 million (45%) were unsafe.[3] The WHO further categorizes unsafe abortion into two categories: less safe (31%) and least safe abortions (14%).[3] An abortion is defined as less safe if provided by a trained provider but using an outdated method, such as sharp curettage or if a woman uses a recommended method such as misoprostol tablets but does not have access to a trained provider or adequate information. A least safe abortion is defined as an abortion provided by an untrained provider using a method not recommended by WHO.[2] Common complications from an unsafe abortion include sepsis, hemorrhage, and trauma to the cervix, vagina and uterus.[4] Abortion-related mortality is difficult to compute but it is estimated that each year, complications from unsafe abortions contribute about eight percent of all maternal deaths globally.[5] This figure is likely underreported due to the legal, religious, and cultural factors that deter women from reporting information about complications or death related to clandestine abortions.[5]

Restrictive abortion laws constitute one major factor that prevents access to safe abortions for women around the world.[3] Worldwide, in countries where abortion is restricted, only 25% of abortions are safe compared to countries with liberal abortion laws where 90% of all abortions are safe.[3] Abortion legality is defined on a six-point scale continuum category where one represents complete prohibition on any ground, six allows abortion without any restriction, and categories two through five permit abortions on increasingly broader grounds.[6] In Africa, 93% of women live in countries with restrictive abortion laws; 10 countries completely restrict abortion,

40 countries have some form of restriction (to preserve physical and/or mental health) and only four countries permit abortions on fairly liberal grounds (Zambia, South Africa, Cape Verde, and Tunisia).[7] Unsurprisingly, three out of four abortions that occur in Sub Saharan Africa are unsafe[2] and it is estimated that 62% of all deaths related to unsafe abortions in 2008 occurred in this region.[8] Thus, the burden of unsafe abortions and abortion related mortality disproportionately affect women in Sub Saharan Africa compared to women in other developing regions.

Ghana falls within the range of countries that permit abortion on some grounds: 1) rape or incest, 2) endangerment to the health or life of mother, and 3) risk of fetal abnormality.[9] Additionally, under the Maputo protocol that Ghana adheres to, all women under 18 years of age can seek abortion. Yet even with its less restrictive abortion laws compared to most countries in the sub region, Ghanaian women report many motivations for seeking abortion outside of the Ghana legal framework. The need to delay or prevent child bearing is the most common reason that women in Ghana cite for seeking an abortion[9] aligning with trends reported for why women seek abortions globally.[10] Women in Ghana also seek abortions due to socioeconomic factors such as financial constraints and not wanting to disrupt education or career.[11] Nineteen percent of women in the 2007 Ghana Maternal Health Survey reported not wanting to disrupt education or career as their primary reason for seeking abortion while about 21% cite financial difficulties.[12] Relationship challenges, such as extramarital affairs and father denying paternity, are also reasons why women in Ghana seek pregnancy termination.[10] Only a small minority of women (5.5%) cite health or rape as their primary reason for seeking abortion.[12] Thus the data indicate that a vast majority of women in Ghana are seeking abortions for reasons not considered legal

grounds and it is important to understand how these various motivations for abortion affect the safety of the abortion women obtain.

Approximately seven percent of all pregnancies in Ghana end in unsafe abortions,[13] and unsafe abortions account for at least 11% of all maternal mortalities in Ghana.[9] Unsafe abortions in Ghana disproportionately affects women who are younger, from lower socioeconomic status, have multiple children, and are not financially supported by their partners to seek safe abortions.[9] Wealthier women have three times the odds of obtaining a safe abortion compared to their poorer counterparts.[9] Some studies report even higher rates of abortion related mortality according to place of death or geographic location. For example, the Ghana Ministry of Health estimates that unsafe abortions contribute about 22-33% of all maternal deaths,[14] smaller scaled facility-based studies have reported abortion related mortality as the top or one of the top causes of maternal mortality in facilities, [15] [16] and Hodgson et al. (2006) report abortion related mortality as the highest cause of maternal death in rural Ghana.[17] These high rates of abortion related maternal mortality highlight the burden of unsafe abortion on the health and lives of Ghanaian women.

To our knowledge, only one study in Ghana has investigated the association between abortion motivation and abortion safety. Biney et al. (2017) report that women are more likely to undergo unsafe abortions if their main reason for abortion was financial reasons. This association was more evident among rural women, where abortion was safer if associated with any other motivation than if it was financially motivated.[12] However, this study examined this question from a financial constraints lens, uses data from over 12 years ago, and used the old WHO two category definition of abortion safety (safe vs unsafe).

The purpose of this study is to explore the relationship between abortion motivation and abortion safety from a legal framework, using the most updated and comprehensive nationally

representative data set on abortion in Ghana. We hypothesize that women who seek abortions for reasons that are not covered by legal grounds have a higher chance of seeking unsafe abortions than women seeking abortions for reasons covered by the legal framework.

Data and Methods

Study Population

The data used from this analysis were from the 2017 Ghana Maternal Health Survey (MHS). The Ghana MHS is a nationally representative, cross sectional, stratified, multi-level clustered survey of women of reproductive health conducted by the Ghana Statistical Service (GSS) and the Ghana Health Service (GHS). The MHS survey gathers comprehensive information on maternal health issues related to pregnancies, contraceptive use, abortion, and miscarriages in Ghana. The data for MHS 2017 were collected in from 15 June through 12 October 2017. Data from the second phase was used in this survey, and a total of 25,062 eligible women from 26,324 households were interviewed. For this analysis, women were included if they had an abortion in the five years preceding the survey (2012-2017) and reported a primary reason for seeking abortion. No additional exclusions were applied. The final sample size was 1,425 women of reproductive age.

Independent Variable - Abortion Motivation

The predictor of interest was a woman's primary reason for seeking an abortion. Women who reported having had an abortion in the five years preceding the survey were asked about their most recent abortion, "What was the main reason you decided to have this abortion?" We created eight categories based on these responses (Table 2): Legal, Financial Constraints, Career/Education Advancement, Lack of Social Support, Limit or Delay Childbirth, Stigma and Family Pressure, Bad Relationships, and Other. Motivation was categorized as *"legal"* if reason

reported was health or rape and all abortions by women less than 18 years, regardless of motivation, "*financial constraints*" if woman cited no money to take care of baby, *"limit/delay birth"* if her reason was too young to have a child, not ready to be a mother, wanting to delay childbearing, wanted to space children and wanting no more children, *"lack of social support*" if her reason was partner did not want or denied child, father of child died or no one to help look after child, *"bad relationships"* if her reason was did not love father or did not want to stay with father, *"stigma and family pressure"* if reason was parents insisted, afraid of parents, or to avoid shame and *"other"* if the main reason for abortion was not specified. Some of these categories were adopted from Atiglo et al (2017).

Dependent Variable - Abortion Safety

The primary outcome of interest for this study was abortion safety, specifically the safety of the abortion method used to terminate the most recent pregnancy prior to the survey in 2017. Abortion safety was defined using WHO three level categorization for abortion safety adapted to the Ghanaian context. The operationalized WHO definition of abortion safety is: "safe" if abortion was provided by a trained provider *and* using a WHO recommended method, "less safe" if only one criteria was met, and "least safe" if provided by an unskilled provider using a dangerous method, such as ingestion of traditional concoctions. The less safe and least safe abortion group can further be combined together as unsafe abortions. Furthermore, the WHO provides additional recommendations on which health workers can provide which abortion methods. For example, the WHO recommends that dilation and curettage be performed only by doctors but not nurses or midwives.

For this analysis, we adapted the operationalized WHO three level definition of abortion safety to the Ghanaian context based on circumstances and what is common practice in Ghana. In

Ghana, dilation and curettage, an outdated WHO method, remains a common method for terminating pregnancy in facilities. Also, a large number of women who had terminated pregnancies did not know what pills they had been provided. Thus, for this analysis, an abortion was further categorized as safe if: 1) a dilation and curettage was provided by a doctor and 2) unidentified pills provided by a doctor, nurse, or midwife. We compared the complication rates of women who terminated abortions using dilation and curettage to women who used methods categorized as "safe" by WHO and found no significant difference in complication rates, thus we categorized dilation and curettage as safe only if provided by a doctor.

The table below illustrates how we categorized abortion safety specifically within the Ghanaian context.

	Provider Type as listed in Ghana MHS 2017 Survey			
Method Type as listed in Ghana MHS 2017 Survey	**Doctor**	**Nurse/Midwife**	**Pharmacist/ Chemical Seller**	**Another provider**
Unsafe method (drank some form of mixture, etc)				
Manual Vacuum Aspiration				
Dilation and Curettage/ Dilation and evacuation				
Misoprostol/ Misoprostol + Mifepristone				
Unknown pills				
Other Medical (injection, iv/oxytocin, etc)				
Other				

Key:
SAFE **LESS SAFE** **LEAST SAFE**

Covariates

Potential covariates were identified a priori and based on existing literature. Covariates assessed were age, education, number of living children, place of residence, wealth quintile, number of prior abortions, relationship status, knowledge of abortion legality in Ghana, and whether partner paid for all or some of the costs associated with the abortion.

Data Analysis

Statistical computation was done using STATA 15.0. To test for associations between covariates and abortion motivation and abortion safety, the χ^2 statistic was transformed into an approximate F using a second order Rao-Scott estimation to account for the complex survey design. Multinomial regression was used to estimate the association between abortion motivation and the three-category abortion safety outcome. Covariates that were significantly associated with abortion motivation and abortion safety in the univariate analysis were added to the model (statistical significance, p value <0.05). Final models adjust for the following covariates: wealth, age, education, marital status, and whether partner paid for all or some portion of the abortion cost. Additionally, we controlled for place of residence because of its relevance in the literature, despite it not being significant in bivariate analysis. We then ran logistic regressions to generate odd ratios which estimate the results generated from our multinomial regression. We attempted to report relative risks as well, however we encountered numerical difficulties computing relative risks in our adjusted model because the Zou approximation cannot be used with survey data. Finally, we analyzed the association between abortion motivation and abortion safety in Ghana using the standard WHO three level categorization of abortion safety.

Ethical Considerations

Ethical approval was not needed for this study because the Ghana Maternal Health Survey data is a publically available dataset with no personal identifiers.

Results

Sociodemographic Characteristics of Women Seeking Abortions in Ghana

Respondents were largely aged 20 - 24 years (30.9%) and had junior/middle school level education (46.47%). Around 45% of the women had no living children and close to 70% had no abortions prior to this index abortion. Sixty-five percent of women lived in urban areas and most women seeking abortion were in the top three wealth quintiles (78 %). A significant number of women (90%) in Ghana who have had an abortion were unaware of the abortion law in Ghana. About equal proportions of women had their partner either support the cost of their abortion (47.05%) or not (45.85%) (Refer to Table 1).

Abortion motivation

A desire to delay or limit childbirth was the largest motivation for abortion seeking women in Ghana (32.07%) followed by financial constraints (12.77%). Legal grounds for abortion accounted for about 20% of all abortion motivations, a majority of whom were for the reason that the woman was less than 18 years of age at time of abortion (Refer to Table 2).

Table 3 shows the results of bivariate analysis between covariates of interest and abortion motivation. Sociodemographic factors associated with abortion motivation were education, age, number of living children, wealth, relationship status, number of prior abortions, and if partner paid for some or all of the abortion cost. Higher educated and wealthier women were more likely to cite educational advancement and limit/delay childbirth as a main motivation for abortion while lower educated women were at a higher chance of citing financial constraints (21.94%).

The more children a woman had the higher her chance of reporting a need to limit/space births and women that had more than 3 children were more likely than all other women to cite space/limiting (42.76%) and financial constraints (23.71%) as main reason for abortion. Women in the lowest wealth quintile had more legal grounds for abortions (32.09%). Unmarried women were slightly more likely to cite education/career advance advancement (12.57%) and lack of social support (14.16%). Women whose partners did not pay for abortion costs were more likely to cite financial constraints (16.23%), lack of social support (15.23%), and bad relationships (8.86%) compared to women whose partners financially supported their abortion procedure. Place of residence and knowledge of Ghana's abortion law does not seem to be associated with abortion motivation.

Sociodemographic factors associated with abortions safety

In this study, 59.1% of all abortions were safe, 14.71% were less safe and 26.2% were least safe. Results of the bivariate analysis between sociodemographic factors and safety of abortion are presented in Table 4. Sociodemographic characteristics associated with abortion safety include age, education, place of residence, relationship status, wealth, knowledge of abortion legality and whether partner financially supported cost of abortion. Younger women (67.44%) aged 25-29 had the highest percentage of safe abortions compared to women aged 30 - 35 who had the highest rates of least safe abortions (33.46%). The more educated a woman is the higher her chance of getting a safe abortion. Women who received a high school education or higher had 67.26% of safe abortions compared to only 49.97% in women who had a primary education or no education. More married women (67.56%) were able to obtain safe abortions compared to their unmarried counterparts (56.32% and 56.75% respectively). Differences exist by wealth status as well; about 62% of women living in urban areas were able to get safe abortions

compared to only 53% of women in rural areas. The top two wealth quintiles were at a higher chance of getting a safe abortion while the lowest two wealth quintiles had the highest percentage of least safe abortions. Women who knew of abortion legality in Ghana had a higher percentage of safe abortions (69.38%) and lowest percentage of least safe (12.82%) and less safe (17.80%) abortions. Finally, women whose partners paid for the abortion had a higher percentage of safe abortion and lowest percentage of least safe abortions (refer to Table 4).

Association between abortion motivation and abortion safety

Results for the bivariate analysis between abortion motivation and abortion safety (Table 5) shows that there is a significant crude association between reason for abortion and safety of pregnancy termination. All abortion motivation groups, except "stigma and family pressure" had lower percentage of safe abortions and a higher percentage of least safe abortions compared to the legal group. For example, only 51% of women who cite educational or career advancement get safe abortion compared to 63% in the legal group. Around 33% of women who cite financial constraints as primary reason for terminating pregnancy have least safe abortions, while only 19% of women who have legal grounds for abortion obtain least safe abortions (Table 5).

Table 6 and Table 7 show the adjusted multinomial output and estimated odd ratios from the multinomial and logistic regression analyses of the association between abortion motivation and abortion safety. Controlling for age, education, wealth, marital status, place of residence and whether partner paid for some or all of abortion costs, we observe an overall significant association between abortion motivation and safety of abortion. Women who cite "other" as their motivation for abortion have 3.87 higher odds (95% CI:1.18 – 12.68, p-value: 0.025) of having a less safe abortion compared to their those who sought abortion on a legal ground (Table 7). The association between reason for abortion and abortion safety is more prominent when we compare

women getting safe abortions to least safe abortions. Women who cite any abortion motivation other than legal were at a higher risk of obtaining *least safe* abortions compared to women who sought abortion on legal grounds (Table 6 and Table 7). These results are significant for the women seeking abortions to limit/space births, for educational or career advancement, due to lack of social support and financial constraints, and due to "other" reasons. Women citing education or career advancements were at a 3.00 times higher odds (95% CI:1.52 – 5.95, p-value: 0.002) of a least safe abortion, women seeking to delay or limit birth were at a 2.51 times higher odds (95% CI:1.50 – 4.18, p-value <0.005), women citing lack of social support were at a 2.23 times higher odd (95% CI:1.19 – 4.18, p-value 0.013), and women who reported a lack of finances were at 2.84 higher (95% CI:1.63 – 4.97, p-value <0.005) odds compared to those who had a legal grounds for seeking abortion. The odds of seeking a least safe abortion is highest in the "other" group compared to the legal group, where women citing other reasons were at a 9.78 times higher odds (95% CI:4.01 – 23.91, p-value <0.005) of seeking *least safe* abortions. These findings suggest that abortion motivation is more significantly associated with abortion safety when looking at women getting least safe abortions.

Table 8 (in appendix) shows the covariates associated with abortion safety in our adjusted multinomial regression model. Age, education, wealth, relationship status, and partner's financial support for abortion cost were factors significantly associated with the safety of abortion method. Single women were at a higher risk of both *less safe* and *least safe* abortions than their married counterparts. Also, women who had higher than a primary school education were less likely to have least safe abortions than women who had only primary education or no education. Women aged 20-29 and 35 or older were at a reduced risk of least safe abortions compared to women who were aged 13 - 19 at time of abortion. Women in the fourth wealth quintile were at a lower

odd of having a least safe abortion. Finally, women whose partner did not financially support cost of the abortion were also at an increased risk of least safe abortions.

Discussion

Unsafe abortions account for 40% of abortions in Ghana, of which 15% are least safe. The results of this study show that Ghanaian women seek abortions for diverse reasons. A vast majority of women's abortion motivations are not covered by the current abortion laws in Ghana. Women who seek abortions for reasons not covered by the legal framework are at an elevated risk of unsafe abortion, specifically the category of least safe abortions. The percentage of unsafe abortions reported in this study is lower than figures reported from previous nationally representative studies[18] because of differences in how abortion safety was categorized.

Over 30% of women cited a need to space or limit childbirth as their primary motivating factor for seeking an abortion; this is consistent with previous research conducted in Ghana and elsewhere.[10,12,18] Many underlying factors may make a pregnancy unwanted or mistimed. This could also be a reflection of reducing fertility preferences in Ghana where unmet need for family planning is high. Ensuring adequate access to contraceptives could reduce unintended pregnancies and subsequently rates of safe and unsafe abortions in Ghana. The other reported abortion motivations were financial constraints and a desire to continue work or education socioeconomic concerns, suggesting that socioeconomic factors are also a large driver for why women seek abortions. A woman's decision to terminate a pregnancy is also influenced by circumstances such as age, relationship status, wealth, education level, and parity. The results of this study corroborate similar studies in Ghana which found that the majority of women who seek unsafe abortions are likely to be women who are poor, lower educated, live in rural areas, and not financially supported by their partners to seek safe abortions. [9,11]

Our results demonstrate that there is a significant association between the legality of a woman's stated motivation and the level of safety of her abortion. A very important finding in this study is that women who stated reasons outside of the legal framework for abortion had a greater likelihood for receiving a least safe rather than a less safe abortion. The only motivation that was significantly associated with whether a woman got a safe or less safe abortion was "other". This was a group of women whose abortion motivations were outside the given reasons that women were able to select from in the questionnaire. These results suggest that women who cannot seek abortions on legal grounds are particularly vulnerable to the most dangerous methods of abortion in Ghana. A possible reason why we don't see a significant difference between a woman's stated motivation and whether she gets a safe or less safe abortion is because the prevalence of women who reported less safe abortions was relatively small (14%). Thus, we may not have been powered enough to see significance. Additionally, abortions categorized as less safe are a very heterogeneous group including abortion provided by a skilled provider using an unsafe method, an unskilled individual providing a safe method such as misoprostol, and a safe method such as medication abortion but with inadequate guidance. Thus, it is difficult to tease apart the spectrum of abortion safety that this groups represent.

This study has several limitations that should be taken into consideration. First, there is a potential for under-reporting because women may be hesitant to report induced abortions because of fear of stigma or legal repercussions. However, in past studies, Sundaram and colleagues (2012) have reported that this level of underreporting does not appear to vary systematically across various socio demographic subgroup.[11] Second, women may be reporting abortion motivations that are more socially acceptable or desirable. However, as noted in past studies, it can be assumed that women who truthfully report an induced abortion will mostly

likely also report an accurate motivation for pregnancy termination.[12] A final limitation of this study is that the exposure of interest, abortion motivation, required women to only report their primary reason for abortion. While this gives us some insights into understanding women's abortion motivation, women's motivation for seeking abortion is complex and often results from a myriad of inter-related factors that collectively result in abortion seeking. [19] Thus, this study could have greatly benefited from a qualitative open-ended question component that fully captures women's motivations and what factors make women resort to unsafe abortions. This would help pinpoint areas of intervention, especially for the women who are most at risk for least safe abortions.

This study has a few notable strengths. First, the study used a large nationally representative dataset with no missing data on the exposure and outcome of interest. Also, the study used the new WHO three category definition of abortion safety (safe, less safe, least safe) which allowed for a more granular analysis and the ability to reflect a broader spectrum of abortion risk compared to the old binary abortion safety categorization (safe vs unsafe). Finally, the greatest strength of this study is that we operationalized the WHO definition of abortion safety to make it contextually relevant based on common abortion practices in Ghana, which more truly reflects the current abortion access and provision setting in Ghana. Additionally, this makes the study generalizable to other Sub-Saharan African contexts where dilation and curettage remains a common method of abortion and/or women often receive abortion pills they are unable to identify.

The findings from this study are important because it is, to our knowledge, the first study to look at abortion motivation and abortion safety in Ghana through an abortion legality framework. Overall knowledge of abortion law in Ghana is low among women. In this study, only nine

percent of women knew that abortion is legal in Ghana. To reduce unsafe abortions, Ghana should consider raising awareness of the law and ensuring adequate access, so that women can seek safe abortions to the full extent of the current law. Additionally, as this study shows, over 80% of women in Ghana are seeking abortions for motivations outside the current legal law. Thus, it is important for Ghana to consider women's abortion motivations and broaden the legal grounds on which women can seek legal abortions so that women are able to seek abortions safely on broader grounds.

Finally, the findings from this study are crucial because as one of few Sub-Saharan African countries collecting comprehensive data on abortion, the results from Ghana can be applied to other African countries where minimal to no abortion data is collected. This research allows us to make a case for expanding the grounds of legal abortion, not only in Ghana, but the rest of the continent where abortion is generally restricted.

Conclusion

Women in Ghana seek abortions for various reasons. The vast majority of Ghanaian women are seeking abortions for reasons not within the legal framework in Ghana and these women are at elevated risks of unsafe abortions, especially least safe abortions. Unsafe abortions contribute a significant portion of maternal mortality and morbidity in Ghana. To reduce the rate of unsafe abortions and abortion-related mortality, Ghana should raise awareness on its current abortion law and also consider expanding its abortion law to cover vulnerable women seeking abortions for reasons outside the current law.

Table 1: Demographic characteristics of study sample, Ghana Maternal Health Survey, 2017

Characteristic	Unweighted Count (n)	Weighted Percentages (%)
Age*		
12 - 19	317	21.40
20 - 24	465	30.94
25 - 29	285	21.99
30 - 35	198	14.59
35+	160	11.08
Education		
No Education/Primary	372	24.47
Junior Secondary	618	46.47
Secondary/ Higher	435	29.07
Number of Children*		
0	684	45.15
1	275	20.89
2	195	15.42
3+	271	18.53
Place of Residence		
Urban	919	65.42
Rural	506	34.58
Wealth Quintile		
Lowest	131	5.35
Second	237	16.61
Middle	338	24.19
Fourth	415	29.16
Highest	304	24.7
Religion		
Pentecostal	715	55.55
Catholic	151	8.66
Other Christian	373	26.49
Islam	149	6.78
Other	37	2.53
Prior Abortions*		
None	975	67.50
1	324	24.24
2+	126	8.26
Relationship Status		
Currently Married	353	23.28
Living with man	494	36.27
Not in union	578	40.45
Knowledge of Abortion Legality		
Yes	170	10.65
No	1,255	89.35
Partner paid for all or some of abortion cost		
Yes	674	47.05
No	627	45.85
Missing	124	7.10

* Age, Number of children and prior abortions were calculated at time of abortion. All other variables are calculated at time of survey (2017)

Table 2: Primary Reason that women gave for terminating most recent pregnancy between 2012 – 2017, Ghana Maternal Health Survey, 2017

Abortion Motivation	Unweighted Count (n)	Weighted Percentages (%)
Legal		**19.51**
<18 years of age	159	
Health of mother	77	
Risk of birth defect	10	
Fetus not viable	32	
Education/Career Advancement		**12.00**
Wanted to continue schooling	124	
Wanted to continue working	47	
Limit/Delay Childbirth		**32.07**
Too young to have child	16	
Not ready to be a mother	176	
Wanted to space child	157	
Wanted to delay childbirth	67	
Wanted no more children	41	
Lack of Social Support		**11.44**
No one to help me look after child	46	
Partner did not want child	114	
Father of child died	3	
Financial Constraints		**12.77**
No money to take care of child	182	
Bad Relationships		**4.84**
Did not love the father	8	
Did not want to stay with the father	61	
Stigma or Parental Pressure		**4.56**
To avoid shame	27	
Afraid of parents	22	
Parents Insisted	16	
Other	40	**2.81**

Table 3: Bivariate Association of covariates with abortion motivation, Ghana Maternal Health Survey, 2017

	Abortion Motivation (Weighted Percentages %)								
	Legal	**Education/ Career Advancement**	**Limit or Delay Birth**	**Lack of Social Support**	**Financial Constraints**	**Bad Relationship**	**Stigma/ Parental Pressure**	**Other**	**P value**
Age*									<0.05
12 - 19	48.27	14.95	15.15	5.96	4.83	2.52	6.54	1.80	
20 - 24	3.73	18.16	34.99	15.37	15.60	4.68	4.25	3.22	
25 - 29	10.58	7.78	40.43	8.42	14.30	9.83	5.41	3.25	
30 - 35	13.76	0.68	35.62	16.48	22.54	2.77	3.00	5.14	
35+	19.06	0.39	32.08	12.60	20.2	10.36	1.98	3.34	
Education									<0.05
No Education/Primary	16.46	2.03	29.04	15.23	21.94	7.25	2.94	5.10	
Junior Secondary	20.04	10.13	30.55	10.85	15.94	5.47	3.82	3.20	
Secondary/ Higher	15.79	18.80	35.80	10.03	6.04	4.77	7.10	1.66	
Number of Children*									<0.05
0	26.22	18.90	25.43	11.02	6.50	2.99	7.58	1.36	
1	11.10	7.77	30.81	13.07	18.59	11.29	3.09	4.27	
2	10.85	2.88	38.03	10.92	21.51	6.58	2.55	6.68	
3+	11.31	0.35	42.76	12.38	23.71	5.28	0.53	3.67	
Residence									0.212
Urban	16.21	10.25	33.10	10.98	15.72	5.42	4.51	3.79	
Rural	21.27	11.47	29.07	13.00	12.28	6.23	4.65	2.13	
Wealth Quintile									<0.05
Lowest	32.09	7.32	24.46	16.63	7.37	3.56	5.07	3.50	
Second	18.55	13.89	25.38	12.36	17.78	4.82	4.83	2.39	
Middle	18.78	11.26	25.08	12.44	19.49	4.94	3.15	4.85	
Fourth	14.87	11.30	30.87	12.36	14.74	6.65	6.39	2.82	
Highest	17.22	7.91	45.02	8.61	8.79	6.38	3.49	2.57	
Prior Abortions*									
None	21.80	11.55	29.71	11.13	11.94	5.02	5.34	3.51	<0.05
1	10.66	8.96	37.05	12.15	18.36	6.63	2.94	3.24	
2+	7.60	8.52	32.40	14.82	24.45	8.54	2.92	0.75	
Knowledge of Law									0.124
Yes	26.78	12.99	30.37	7.86	11.98	4.49	4.85	0.67	
No	16.87	10.39	31.87	12.14	14.83	5.85	4.53	3.52	
Relationship Status									
Currently Married	18.72	7.90	39.23	6.43	13.78	5.39	4.33	4.22	<0.05
Living with man	14.02	10.33	33.16	12.30	17.94	4.24	3.77	4.24	
Not in union	20.97	12.57	26.08	14.16	11.91	7.19	5.40	1.72	
Partner paid for some or all of abortion cost									<0.05
No	12.05	7.21	31.64	15.23	16.53	8.86	4.24	4.25	
Yes	23.03	14.46	31.69	9.57	12.00	3.17	4.75	1.33	
Missing	22.06	7.92	32.31	2.79	18.41	2.05	5.40	9.06	

* Age, number of children and prior abortions were calculated at time of abortion. All other variables are calculated at time of survey (2017)

Table 4: Bivariate association of covariates with Ghanaian abortion safety categorization, Ghana Maternal Health Survey, 2017

	Ghana Abortion Safety (Weighted Percentages %)			
	Safe	**Less Safe**	**Least Safe**	**P value**
Age*				<0.05
12 - 19	53.40	15.50	31.10	
20 - 24	58.61	17.61	23.78	
25 - 29	67.44	12.23	20.32	
30 - 35	53.97	12.57	33.46	
35+	61.75	12.81	25.45	
Education				<0.05
No Education/Primary	49.97	14.95	35.27	
Junior Secondary	58.92	12.64	28.45	
Secondary/ Higher	67.26	17.82	14.92	
Number of Children*				0.469
0	60.77	15.29	23.93	
1	58.80	16.22	24.98	
2	58.58	14.21	27.21	
3+	55.84	11.99	32.16	
Residence				<0.05
Urban	62.24	15.40	22.37	
Rural	53.19	13.40	33.40	
Wealth Quintile				<0.05
Lowest	49.43	15.48	35.08	
Second	42.13	14.63	43.24	
Middle	54.66	16.49	28.85	
Fourth	66.70	13.81	19.50	
Highest	68.02	13.92	18.06	
Prior Abortions*				0.065
None	56.76	15.26	27.98	
1	63.36	15.47	21.17	
2+	65.82	7.99	26.19	
Knowledge of Law				<0.05
Ye	69.38	17.80	12.82	
No	57.88	14.34	27.78	
Relationship Status				<0.05
Currently Married	67.56	13.03	19.41	
Living with man	56.32	12.23	31.45	
Not in union	56.75	17.90	25.35	
Partner paid for some or all of abortion cost				<0.05
No	59.35	12.8	27.86	
Yes	64.61	17.61	17.78	
Missing	21.11	7.84	71.05	

* Ae, number of children and prior abortions were calculated at time of abortion. All other variables are calculated at time of survey (2017)

Table 5 Crude Association Between Abortion Motivation and Abortion Safety

Abortion Motivation	Safe (%)	Less Safe (%)	Least Safe (%)
Legal	63.03	17.52	19.45
Education/Career Advancement	51.77	18.68	29.55
Limit/Delay Childbirth	60.51	14.43	25.06
Lack of Social Support	60.65	11.51	27.83
Financial Constraints	56.61	9.95	33.49
Bad Relationships	63.51	15.08	21.42
Stigma or Parental Pressure	72.02	11.94	16.04
Other	27.58	25.02	47.39
Total	**59.11**	**14.71**	**26.18**

Table 6 GHANA Multinomial Logit Model for Safe, Less Safe, and Least Safe Abortion Safety (Using Legal as Baseline)

	Less Safe versus Safe			Least Safe vs Safe		
Abortion Motivation	***RRR***	***C.I (95%)***	***P value***	***RRR***	***C.I (95%)***	***P value***
Education/ Career Advancement	1.224	(0.644 – 2.329)	0.537	3.036	(1.554 - 5.931)	0.001
Limit/ Delay Childbirth	0.961	(0.521- 1.773)	0.898	2.292	(1.396 - 3.766)	0.001
Lack of Social Support	0.648	(0.324 - 1.296)	0.219	2.088	(1.125 - 3.875)	0.020
Financial Constraints	0.634	(0.312 - 1.291)	0.209	2.609	(1.516 - 4.489)	0.001
Bad Relationships	0.972	(0.340 - 2.781)	0.958	2.005	(0.816 - 4.929)	0.129
Stigma or Parental Pressure	0.601	(0.258 - 1.397)	0.236	1.068	(0.442 - 2.581)	0.884
Other	3.583	(1.103 -11.641)	0.034	8.854	(3.677 - 21.318)	< 0.0005

Note: Controlling for Age, Education, Wealth, Marital Status, Place of Residence, and if partner paid for some/all costs associated with abortion

Table 7 GHANA Logistic Regression Model for Safe, Less Safe, and Least Safe Abortion Safety (Using Legal as Baseline)

	Less Safe versus Safe			Least Safe vs Safe		
Abortion Motivation	***OR***	***C.I (95%)***	***P value***	***OR***	***C.I (95%)***	***P value***
Education/ Career Advancement	1.240	(0.646 – 2.380)	0.517	3.001	(1.523 – 5.945)	0.002
Limit/ Delay Childbirth	1.004	(0.555 – 1.813)	0.991	2.507	(1.503 – 4.182)	<0.0005
Lack of Social Support	0.638	(0.322 – 1.262)	0.196	2.227	(1.187 – 4.177)	0.013
Financial Constraints	0.650	(0.317 – 1.328)	0.237	2.844	(1.626 – 4.974)	<0.0005
Bad Relationships	1.046	(0.366 – 2.989)	0.933	2.162	(0.860 – 5.435)	0.101
Stigma or Parental Pressure	0.605	(0.261 – 1.399)	0.240	1.086	(0.448 – 2.636)	0.855
Other	3.872	(1.182 – 12.680)	0.025	9.797	(4.015 – 23.909)	<0.0005

Note: Controlling for Age, Education, Wealth, Marital Status, Place of Residence, and if partner paid for some/all costs associated with abortion

Appendix

Table 8 GHANA Multinomial Logit Model for Safe, Less Safe, and Least Safe Abortion Safety (Including covariates)

	Less Safe versus Safe			Least Safe vs Safe		
Abortion Motivation	***OR***	***C.I (95%)***	***P value***	***OR***	***C.I (95%)***	***P value***
Education/ Career Advancement	1.240	(0.646 – 2.380)	0.517	3.001	(1.523 – 5.945)	0.002
Limit/ Delay Childbirth	1.004	(0.555 – 1.813)	0.991	2.507	(1.503 – 4.182)	<0.0005
Lack of Social Support	0.638	(0.322 – 1.262)	0.196	2.227	(1.187 – 4.177)	0.013
Financial Constraints	0.650	(0.317 – 1.328)	0.237	2.844	(1.626 – 4.974)	<0.0005
Bad Relationships	1.046	(0.366 – 2.989)	0.933	2.162	(0.860 – 5.435)	0.101
Stigma or Parental Pressure	0.605	(0.261 – 1.399)	0.240	1.086	(0.448 – 2.636)	0.855
Other	3.872	(1.182 – 12.680)	0.025	9.797	(4.015 – 23.909)	<0.0005
Age						
20 - 24	1.218	(0.714 - 2.076)	0.469	0.568	(0.357 - 0.904)	0.017
25 - 29	0.747	(0.374 - 1.494)	0.410	0.434	(0.261 – 0.718)	0.001
30 - 35	1.071	(0.537 - 2.136)	0.846	0.870	(0.509 - 1.488)	0.611
35+	0.967	(0.469 - 1.991)	0.926	0.572	(0.327- 1.000)	0.050
Education						
Junior Secondary	0.632	(0.386 - 1.036)	0.069	0.690	(0.490 - 0.9697)	0.033
Secondary/ Higher	0.784	(0.472 - 1.301)	0.347	0.367	(0.239 - 0.564)	<0.0005
Place of Residence						
Rural	0.858	(0.566 - 1.300)	0.469	1.196	(0.832 - 1.719)	0.334
Wealth Quintile						
Second	1.069	(0.473 - 2.418)	0.872	1.394	(0.720 - 0.702)	0.325
Middle	0.850	(0.384 - 1.882)	0.688	0.706	(0.359 - 1.389)	0.313
Fourth	0.629	(0.277 - 1.426)	0.266	0.490	(0.245 - 0.979)	0.043
Highest	0.633	(0.268 - 1.496)	0.297	0.606	(0.288 - 1.277)	0.187
Relationship Status						
Living with man	1.0356	(0.613 - 1.748)	0.896	1.618	(1.084 - 2.414)	0.018
Not in union	1.619	(1.011 - 2.593)	0.045	1.652	(1.084 - 2.519)	0.020
Partner paid for all or some of abortion cost						
No	1.293	(0.943 - 1.775)	0.111	1.496	(1.162 - 1.925)	0.002

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