

A Description of Morbidity from Abortion Complications in Ethiopia, 2008 & 2014

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Abstract

Background: This research provides a national description of abortion complications in Ethiopia in 2014, comparing them to a similar 2008 study.

Methods: Prospective abortion-related morbidity data were collected on symptoms and treatment of 2,925 women seeking PAC in 369 health facilities over 30 days.

Results: Socio-demographic characteristics of women seeking PAC changed in 2014 with more single, fewer married, and younger women presenting with complications. Almost two-thirds of all women received contraception. A smaller proportion, 11%, told their provider they tried to interrupt their pregnancies. Most women presented in the first trimester, yet over 40% had been referred by another provider. Although the morbidity pattern was similar in both years, less than 1% of all women died. In absolute numbers, seven women died in 2008 and two in 2014.

This research has national and global implications exploring abortion morbidity longitudinally and assessing the impact of abortion policy reform over time.

Background and significance of the study

Despite enormous improvements in maternal health over the past two decades, more than one in three births in Ethiopia are estimated to be unintended or mistimed (1-4). In a previous national study on abortion conducted in 2008, researchers estimated that of the 382,000 induced abortion procedures performed in that year, as many as 73% were likely performed outside of health facilities (5). In spite of an abortion law revised in 2005 and liberally interpreted in Ethiopia, abortion-related complications were high, frequently life-threatening, and estimated to impact more than 58,000 women who sought treatment in a health facility in that year alone (6).

Since reform of the Ethiopian abortion law took effect in 2005, abortion can be performed legally in cases of rape or incest, if the woman has physical or mental disabilities, if it is needed to preserve the woman's life or her physical health, or if she is a minor who is physically or mentally unprepared for childbirth (7). The scaling up of elective abortion services throughout the health care system has progressed at a relatively rapid pace, although service availability is still variable across the expansive and diverse nation of more than 95,000,000 people (8, 9).

Descriptive results presented here compare the 2008 baseline study with 2014 results to assess the degree to which unsafe abortion morbidity has changed in abortion-related morbidity and mortality in the intervening six years. This research will help to determine whether:

- more abortions are being performed safely and in health facilities than in 2008,
- abortion morbidity is decreasing since 2008, and
- abortion case-fatality rates are decreasing since 2008.

The goal of this research was to provide a comprehensive description of complications from unsafe abortion in Ethiopia relative to a similar study for which data were previously gathered. This research has implications in Ethiopia and beyond, being one of the few studies to explore the incidence unsafe abortion morbidity over time, and one of even fewer national-level studies to assess the impact of the reform of abortion policy and practice over time in a low-resource setting.

Methodology

The cross-sectional descriptive study employed in Ethiopia draws on a methodology, now called the Prospective Morbidity Methodology (PMM) (10), developed by the WHO (11) and then tested and adapted in South Africa (12-14) to collect prospective, descriptive data on abortions, abortion clinical management and abortion-related morbidity. The analysis described in this abstract was a component of a larger project to assess the incidence, severity and consequences of safe and unsafe abortion in Ethiopia. Only the methods and procedures relevant to the examination of unsafe abortion and miscarriage, or the care for women with abortion complications, is described here. The 2014 study findings will be compared to the 2008 baseline measures in order to assess the impact of maternal health interventions, including changes in contraceptive use, on abortion-related morbidity and mortality during the 5-year period. A complete description of the methodology and analytic procedures for the 2008 study is published in Gebreselassie et al. 2010 (6).

Identifying and selecting the facility sample

The sampling frame was constructed to allow representation from public, private and non-governmental (NGO) providers of maternal health services. A national sample of health facilities was selected from all 11 administrative areas of the country - nine regions and two city administrations, one of which is the

capital city of Addis Ababa. Although the government has been the primary provider of health care until recently, the number of private sector providers has been increasing rapidly particularly in abortion care (1, 8). In 2014 only, NGO maternal health providers were not included in the PMM. Health facility surveys were conducted and internal monitoring data were collected from individual sites and NGO headquarters to allow adjustments to be made for national level estimation of numbers and treatment of abortion complications and numbers of induced abortions.

In both study years, eligible facilities were those that were expected to provide treatment for abortion complications or postabortion care (PAC), induced abortion services (as permitted by law), and/or provide labor and delivery services. Health posts and health stations, medium- and lower-level private clinics were excluded by design in 2008 because they were expected to provide limited or no abortion services. In 2014, due the anticipated expansion of comprehensive abortion care services in private sector health facilities, medium-level private clinics were included in the sampling frame and sample. Private hospitals were included in both waves of the study. In 2014, a stratified multi-stage systematic random sample without replacement was selected to ensure adequate representation for each type of facility and region in the country.

Data collection

For the purposes of this research, data collection instruments from Ethiopia, Kenya, Malawi and Cambodia were reviewed and input received from a panel of local experts and investigators. The instruments were pilot tested and further revisions made before provider training was conducted. In preparation for the prospective morbidity study, one provider from each participating facility was selected to participate in a residential group training session to learn to extract case information on abortion clients. Study team members and regional supervisors monitored data collection with in-person visits and phone calls during the data collection period. Survey data were collected simultaneously from key informants in the same sample of facilities in a companion health facilities survey.

Data collection began in November 2013 and continued until May 2014. Prospective abortion-related morbidity data were collected on the care and case management of 2,925 women who sought care for abortion complications, or those of a complicated miscarriage, in 369 public and private sector health facilities over a thirty day period. Using the standardized form developed for this study, data were collected for all women with abortion complications presenting to sampled facilities during consecutive 30-day periods. Data collectors did not differentiate between complications resulting from unsafe abortions and spontaneous miscarriages. Each healthcare provider recorded information on each woman with an incomplete, missed, inevitable, complete, or septic abortion of 27 weeks or less gestation. Data capture forms completed by the caregivers collected data on patient demographics, self-reported induction attempts, reproductive history, vital signs, symptoms found on physical exam, and clinical management. Data were extracted from the woman's care by her provider, patients were not interviewed directly. The flow of the form approximated the continuum of the woman's care to improve data quality and minimize provider effort.

Analysis

Table 1 provides details, by stratum, on the national number of facilities sampled, the relevant sampling fraction, non-inclusion of a sampled facility by type, and the participation rate in both study waves. The final national sampling frame of private and public health facilities included 898 facilities in 2008 and, due to a substantial expansion in the health sector in the previous five years, 3,186 facilities in 2014. Based on an overall sampling fraction of 44% in 2008 and 22% in 2014, 393 facilities were selected in

2008 and 689 in 2014. Ultimately, 344 facilities participated in 2008 and 369 in 2014 for an 88% and 54% participation rates, respectively.

Weighted adjustments were calculated for each stratum, based on the sampling fraction and the level of non-response, making adjustments for strata that contained few facilities, either in terms of the universe or the number of facility respondents. Sampled facilities that reported at or before PMM training that they did not provide any abortion care did not meet eligibility requirements and were subsequently dropped from the universe of eligible facilities; facilities that did not provide abortion care during the 28-day study period were included in these analyses.

Data were entered using Epidata version 4.0 in Addis Ababa, Ethiopia, and then transferred to Stata version 11.0 analysis. Ethical approval was obtained from the Guttmacher Institute's Institutional Review Board in the United States and the National Ethics Review Committee of the Ministry of Science and Technology in Addis Ababa.

Analyses have been limited to non-missing data. Percentages are presented as weighted proportions of non-missing responses; in addition, a description of the unweighted frequencies and percentages of the complete sample is described in **Table 2** to allow for a more thorough assessment of the results.

Data analysis is ongoing. Descriptive data presented here will be adjusted to account for variance estimation appropriate for survey data and the multi-stage stratified sampling design. Adjusted chi-square statistics and their corresponding p-values will be used to test for bivariate associations and additional analyses of change over time will be calculated using McNemar's tests for paired nominal data.

Results

As shown in **Table 2**, Women in the 2014 sample sought care for their complications most often in public hospitals (62%) very similar to women in 2008 (63%). However, in 2014, a higher proportion of women pursued assistance in 2014 in public health centers (23%) rather than private facilities (14%). These facilities also seemed better able to manage the PAC cases with fewer women, only 1%, needing to be referred to higher level facilities for emergency treatment, down from 6% in 2008.

The socio-demographic characteristics of women seeking PAC also changed in the second wave of the study with more single, 28% versus 14% in 2008, and fewer married women, a decrease from 81% to 61%, as well as younger women presenting with complications of abortions. Women in 2014 were also more educated, with fewer women having never gone to school and a larger proportion having attended some secondary school.

In both years, around one in four women reported that their pregnancies were the result of a contraceptive failure. In 2014, much smaller proportions of women in the study sample reported either a previous miscarriage (23%) or a previous abortion (11%). Women in the second wave of the study, being younger overall, had also been pregnant fewer times. Almost the inverse of the 2008 parity distribution occurred in 2014 with more than 40% of women reporting this pregnancy as their first and only one quarter stating that they had been pregnant four or more times. A slightly smaller proportion, 11%, than in 2008 told their health care provider that they had tried to interrupt their pregnancies that resulted in their complications.

Although the response had a significant amount of missing data, women do seem to be seeking care earlier; three-quarters (74%) of women in the sample sought care for their abortion complications in the first trimester of their pregnancies, this is up from 62% in 2008. Although most women presented for care in the first trimester, over 40% of all women in the 2014 sample had been referred to the caregiving facility by another provider or facility, quite possibly delaying appropriate care and increasing the severity of their complications and risk of subsequent morbidity.

A picture of the presentation and treatment of Ethiopian women seeking PAC on a national level is described in **Table 3**. In both years a similar proportion, 79% and 82%, respectively, of all women seeking PAC required a uterine evacuation procedure. In 2014, more women overall received a procedure with vacuum aspiration (75% compared to 56% in 2008) and a smaller proportion of all women received a procedure using sharp curettage (decreasing from 38 to 8% of all procedures in the country), a method no longer recommended by the World Health Organization as the gold standard of care. Some women in 2014 also benefitted from the introduction of medical methods or misoprostol for PAC, with 13% of women in 2014 having a uterine evacuation procedure with medication. Across the nation, a large shift can be seen in the type of health care worker providing PAC; physician-administered care decreased from over half to only 29% of all care as the proportion of midlevel providers treating women increased from 45 to 71% of all postabortion care. Additionally, although the question was not asked in 2008, almost two-thirds of women receiving PAC left with a method of contraception in 2014.

As shown in **Table 2**, women presented from care earlier with only 19% of all women seeking care after their first trimester. In general, either case management improved or women presented with less severe morbidity because far fewer women (only 4%) needed to be referred to a higher level facility for care in 2014.

However, changes in treatment were relatively small. In both years, a small proportion of all women required blood transfusions or other blood products. Over half of women in 2014 received intravenous fluids (up from a third in 2008) and they more often received antibiotics and some kind of pain medication to supplement their treatment. Although a smaller proportion of all women required hospitalization, from 23% to 18%, to treat serious complications, changes in the proportions of women with symptoms very specific to unsafe abortion, signs of a foreign body or mechanical injury to the vaginal area or foul smelling or offensive products of conception were similar in both years. Although the morbidity pattern was similarly high in both years, overall, the proportion of women who died from complications of an unsafe abortion was less than 1% of all women seeking care in both years. In absolute numbers, seven women died during the study period in 2008 and two women in 2014.

Table 1. Health Facility Sampling Frame and Participation for Prospective Morbidity Study, National Totals, Ethiopia 2008 & 2014

Type of facility	2008					2014				
	Total eligible facilities (universe) No.	Sampling fraction	Total selected facilities No.	Facility participation No.	Participation rate %	Total eligible facilities (universe) No.	Sampling fraction	Total selected facilities No.	Facility participation No.	Participation rate %
Public hospitals	94	1	94	90	96	113	1	113	102	90
Public health centers	597	0.33	177	158	89	2655	0.15	397	194	49
NGO reproductive health clinics ¹	24	1	24	24	100	85	NA	NA	NA	NA
Private & NGO hospitals	39	1	39	39	100	77	1	77	41	53
Higher private clinics	144	0.4	59	33	56	341	0.3	102	32	31
Total	898	0.44	393	344	88	3186	0.22	689	369	54

¹ NGO reproductive health clinics are being analyzed separately in 2014 using their own retrospective service statistics.

Table 2. Socio-demographic, Reproductive and Abortion Characteristics of Postabortion Clients in Ethiopia in 2008 (N=1,932) & 2014 (N=2,925)

	2008		2014	
	No.	%*	No.	%*
Women sought abortion care at				
Public hospital	1,194	62	1847	63
Public health center	348	18	673	23
Private or NGO facility ¹	390	20	405	14
PAC cases referred to higher level of care	121	6	26	1
Marital status				
Single	275	14	1804	28
Married	1567	81	1759	61
Cohabiting	45	3	130	5
Separated/widowed/divorced	44	2	181	6
Age, in years				
< 18	60	3	177	6
18-24	660	35	1224	43
25-29	527	28	764	27
30-34	322	17	384	13
35+	329	17	325	11
Rural residence	835	43	Not asked	
Education				
No schooling	801	42	819	28
Some primary school	343	18	509	18
Some secondary school	620	32	1366	47
Some post-secondary school	160	8	188	7
Woman reported pregnancy was a result of contraceptive failure	465	24	823	28
Reported a previous miscarriage	970	50	661	23
Reported a previous abortion	682	35	304	11
Number of pregnancies				
1	534	28	1233	42
2	325	17	544	19
3	274	14	410	14
4+	797	41	730	25
Provider's estimate of gestational age				
< 13 weeks ²	1207	62	1264	74
13 or more weeks	725	38	447	26
Reported trying to interrupt this pregnancy ³	268	14	172	11
Woman was referred from another provider or facility	Not asked		657	43

* All figures are unweighted frequencies and percentages. Percentages are a proportion of non-missing responses.

¹2014 sample was limited to private facilities only whereas the 2008 sample included both NGO and private facilities.

²Includes 15 cases with missing values imputed to the first trimester in 2008; 2014 sample includes a large number of questionnaires (n=1214; 42%) with no indication of gestational age given.

³In 2014 only 1,521 (52%) responses were recorded for this question.

Source: Gebreselassie et al. 2010

Table 3. National Description of Clinical Management and Morbid Symptoms of Abortion Complications Among Women Seeking Postabortion Care in Ethiopia in 2008 and in 2014

	2008 (N=1,932)		2014 (N=2,925)	
	No.	%*	No.	%*
Evacuation performed	1684	78.95	1379	82.41
Method of evacuation				
Sharp curettage	772	38.2	98	7.48
MVA/EVA	787	55.54	1096	74.59
Other methods	124	5.26	41	5.06
Medical methods	0	0	126	12.86
Who performed evacuation ¹				
Physician	1106	54.64	741	29.34
Midlevel provider	573	45.36	622	70.66
Woman accepted a contraceptive method				
	Not asked		984	65.08
Woman received antibiotics				
	1606	82.76	1397	89.73
Woman received something for pain				
	1138	68.15	1210	75.14
Second trimester gestation				
	725	33.65	447	18.76
Client was referred to a higher level facility				
	121	12.56	26	4.39
Intravenous fluids given				
	725	33.65	956	56.29
Blood given				
	51	2	111	4.29
Woman required hospitalization				
	608	22.7	421	17.67
Woman presented with a foreign body or mechanical injury to cervix or vaginal area				
	148	7.58	230	6.57
Woman had foul smelling or offensive products of conception				
	315	17.12	206	16.79
Death				
	7	<1	2	<1

*Sizes of subgroups (counts) are unweighted while percentages have been adjusted for weighting. Percentages are presented as proportion of non-missing responses

Source: Prospective morbidity data, Ethiopia, 2008

¹Physicians include specialists, general practitioners, residents, IES Officers and interns. Midlevel providers include nurses, midwives and health officers.

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