Study methods

All public facilities in the selected districts were invited to participate in the survey, and a census of 90 facilities was conducted.

Recruitment strategy

Within each facility, potential respondent types were selected. Minimum and maximum quotas were developed for each facility type (Table 1). Larger facilities had larger quotas. The intent was to recruit the most pertinent staff, including managers and those most directly involved in the provision of gynaecological care. A quota-sampling technique corrected for facility size was used to recruit health workers for the attitudinal component of the survey.

Table 1: Intended versus achieved quota sampling

	Health centres/ reproductive child health clinics (RCH)	Polyclinics	District hospitals	Regional/ teaching hospitals
Expected recruitment range	7-12	7-12	14-24	20-32
Mean number of respondents per site	7.29	6.8	14.6	11.4
Proportion of respondents by level	32.4%	7%	50.9%	9.7%

Data collectors were not always able to fill the quotas in the regional and teaching hospitals and polyclinics due to staff workloads. Slightly more than half of the data in the attitudinal survey (50.9%) come from the district and maternity-home level. Recruitment logs were lost, and it is not possible to calculate the refusal rate for the health-worker and manager interviews.

The facility census measured:
1. Facility possession of policies, norms, log books;
2. Availability of contraception, PAC and legal-termination services;
3. Previous training in contraception, PAC and legal-termination skills;
4. Availability of infrastructure and equipment.

The staff survey measured:
1. Individuals' knowledge of national abortion law and policies;
2. Individuals' attitudes toward the inauguration of legal termination for specific indications;
3. Individuals' willingness to be trained to offer contraception, PAC and legal-termination services;
4. Individuals' perceptions of the most appropriate manner to render services.

Key informants were identified to respond to the facility-needs assessment to obtain detailed information on hospital preparedness including training and equipping needs. In most cases, these informants were midwives (41.1%), medical assistants (18.9%), nurses and matrons directly involved with obstetric and/or gynaecological care. On average, key informants had served for 5.19 years at the facility. The facility-needs assessment was completed as a face-to-face interview.

All facility management and relevant staff in the sampling strata were invited to participate in the self-administered survey on staff knowledge and attitudes. Relevance was defined as any staff working in any unit where reproductive health care is rendered, including gynaecology, maternity, FP and those involved in complementary or supervisory functions including social workers, pharmacists, anaesthesiologists, matrons, etc. The questionnaires were returned to data collectors in a sealed envelope.

All surveys were anonymous, and only select sociodemographic data were collected to protect respondent identities. Professional backgrounds were not solicited to preserve anonymity. The human-subject protections and protocol were reviewed and approved by the Institutional Review Board (IRB) of the Health Research Unit of the Ghana Health Service. The study instruments were pilot-tested and abbreviated to reduce respondent burden and enhance participation (Table 2). Trained data collectors from the regions were employed to ensure language and cultural competency.

Table 2: Characteristics of the survey instruments

	# of items	Population	Method of administration
Facility-needs assessment	78	Key informant	Face-to-face interview
Attitudes, experiences and beliefs	37	Managers	Self-administered
Attitudes, experiences and beliefs	50	Health workers	Self-administered

Although this study was designed to gather information on clinical management, poor record-keeping and the absence of log books and case records for PAC, menstrual regulation (MR) and lawful termination precluded the collection of most quality-of-care variables. Only 12 facilities (14.2%) surveyed maintained a log book. Only eight (36.3%) out of 22 facilities that offer PAC had clinical records available for review.

Table 3: Proportion of facilities with PAC log books by region (n=84)

	Accra (30)	Ashanti (20)	Eastern (34)
Reports having a log book	5 (16.7%)	5 (25%)	4 (11.8%)
Log book seen by interviewer	4 (13.3%)	5 (25%)	3 (8.9%)

Data analysis

Data were entered into Epi Info 6.0 and imported into STATA version 9.0 and SPSS 14.0 for analysis. We computed unadjusted proportions, means and medians to describe the provision of services by region and by level. Differences in simple proportions between regions were computed using Fisher's exact test. Odds ratio and 95% confidence intervals are given for specific comparisons.

A large volume of missing data is common in surveys on sensitive issues, and this study was no exception. When missing data exceed 10% of expected response, it is indicated. Where necessary to preserve confidentiality, data were combined to reduce risk of identifying individual respondents.

Facility characteristics

There was universal participation in the facility census in the 10 districts.

Table 4: Distribution of facilities by district and region (n=90)

Region	District	Facilities per district	Population by district
Greater Accra n=31	Accra Metro	19	2,147,993
	Dangbe East	7	120,562
	Tema	5	653,175
Ashanti n=21	Adansi N	6	137,301
	Amansie W	6	137,879
	Kumasi Metro	9	1,430,241
Eastern n=38	Akwapim N	11	113,866
	Akwapim S	5	126,491
	Birim S	11	194,952
	New Juaben	11	148,666
	Total	**90**	**5,211,126**

The population to be served by the initial phase of the R3M programme in 2006-2008 is 4,826,194 or 22% of Ghana's 21,693,971 inhabitants. Three districts (shaded) will enter the programme in the subsequent phase (Dangbe East, Amansie West, Akwapim South).

Table 5: Census of facilities by type (n=90)

Facility type	Number	%
Teaching hospital	2	2.2
Regional hospital	3	3.3
District hospital	11	12.2
Maternity home	2	2.2
Polyclinic	6	6.6
Health centre	41	45.5
Reproductive and child health clinics/CHPS	25	27.7
Total	**90**	**100%**

The census of facilities included a preponderance of primary-level facilities (82%), with 16 secondary- and tertiary-care facilities (18%) surveyed.

Respondent characteristics

The geographic distribution of the sample roughly reflects the concentration of the population, with a slight undersampling of the metropolitan areas. Of the 143 facility managers surveyed, only 34 (23.7%) were from primary-level facilities, and all primary-level administrators were located in the Greater Accra Region. Therefore, the health-manager data are not a reflection of all the facilities in the census or the knowledge and attitudes of management in primary health-care facilities outside the Greater Accra Region.

Table 6: Geographical distribution of survey respondents (n=645)

Region	District	Respondent per district	%
Greater Accra n=31 sites	Accra Metro	156	24.2
	Dangbe East	37	5.7
	Tema	49	7.6
Ashanti n=21 sites	Adansi N	44	6.8
	Amansie W	16	2.5
	Kumasi Metro	129	20.0
Eastern n=38 sites	Akwapim N	42	6.5
	Akwapim S	18	2.8
	Birim S	39	6.1
	New Juaben	52	8.1
Missing data		51	7.9
Total		**645**	**100%**

Table 6 includes 143 managers and 502 health workers. Respondents were predominantly female (77.8%), older than 40 years of age (70.4%) and of Akan heritage (55.3%). Most had children (87.2%) and reported adherence to one of several Christian denominations (81.6%).

Table 7: Sociodemographic characteristics of survey respondents (n=645)

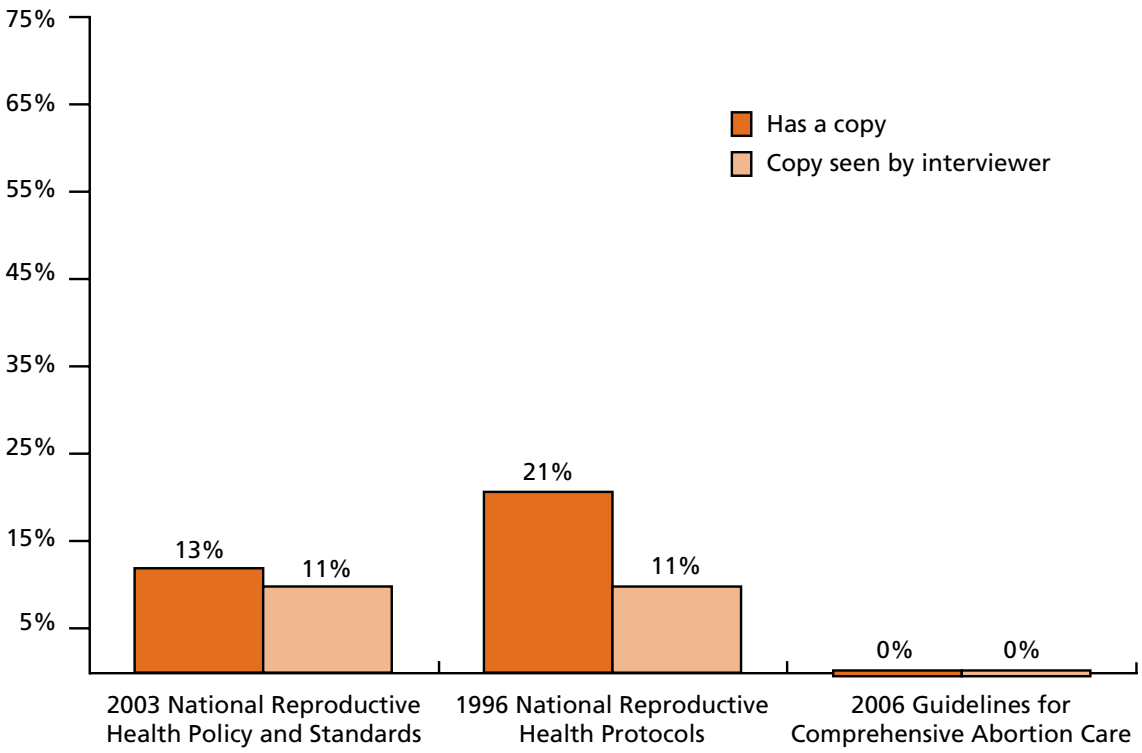
		N	%
Sex	Female	485	77.8
	Male	138	22.2
Age in years	15-29	70	10.9
	30-39	91	14.1
	40-49	208	32.2
	50-59	212	32.9
	>60	34	5.3
Ethnicity	Akan	357	55.3
	Ga	94	14.4
	Ewe	75	11.6
	Guan	37	5.7
	Mole-Dagbani	9	1.4
	Grussi	11	1.7
	Gruma	9	1.4
	Dagati	8	1.2
	Missing/Other	36	5.5
Has Children	Yes	538	87.2
	No	79	12.8
Religion	Other Christian	163	25.3
	Presbyterian	159	24.7
	Catholic	120	18.6
	Methodist	84	13.0
	Other religion	48	7.4
	Muslim	19	2.9
	Traditional/spiritualist	4	.6
	Nonreligious/missing	28	4.3

The following results section details the findings of both the facility census and the two knowledge-and-attitude surveys.

Results

Reproductive health policy access

Figure 1: Facility possession of specific policy documents (n=90)



One of five facilities (21%) reported having the 1996 National Reproductive Health Protocols (covering management of PAC). In roughly half of these sites (11%), the document was made available to the interviewer. Thirteen percent of the facilities reported having the revised National Reproductive Health Policy and Standards document (2003), but only 11% were able to show a copy to the interviewer. Fewer than 10% of key informants surveyed had read the National Reproductive Health Strategy, but many expressed interest in reading it. These documents have not been systematically distributed throughout the country. No respondent had a copy of the 2006 Guidelines for Comprehensive Abortion Care services. This is probably due to the fact that the document was in its final stages of preparation and was not disseminated by the time of the census.

Since 2003, the GHS has begun to engage managers and clinicians in dialogue regarding the abortion law and its implementation. Almost a third of respondents (29%) reported having attended a meeting in which different viewpoints on abortion were expressed.

Legal and policy knowledge

Table 8: Knowledge of Ghanaian legal indications for termination of pregnancy (n=631)

	%
Where continuance of the pregnancy would involve risk to the life of the pregnant woman	91.1
Where continuance of the pregnancy would involve risk or injury to the physical health of the pregnant woman	78.8
Where there is a substantial risk that the foetus may have a serious physical abnormality or disease	73.4
Where continuance of the pregnancy would involve risk or injury to the mental health of the pregnant woman	69.3
Where the pregnancy is the result of rape	66.7
Where the pregnancy is the result of incest	54.0
When the pregnant woman or girl is mentally "subnormal" or mentally challenged	33.4

While knowledge of certain legal indications is quite high among those surveyed, roughly one in five health workers and management correctly identified all seven legal indications for abortion in Ghana (20.6%). Approximately nine out of 10 respondents knew of the legal dispensation where termination is permitted to reduce risk to the life of the pregnant woman. Two-thirds or less (54-66.7%) of managers and service providers mentioned incest or rape as indications for legal abortion. The least awareness (33.4%) was demonstrated for situations in which the pregnant woman was "subnormal" or cognitively impaired.

Table 9: Regional differences in knowledge of the law (n=645)

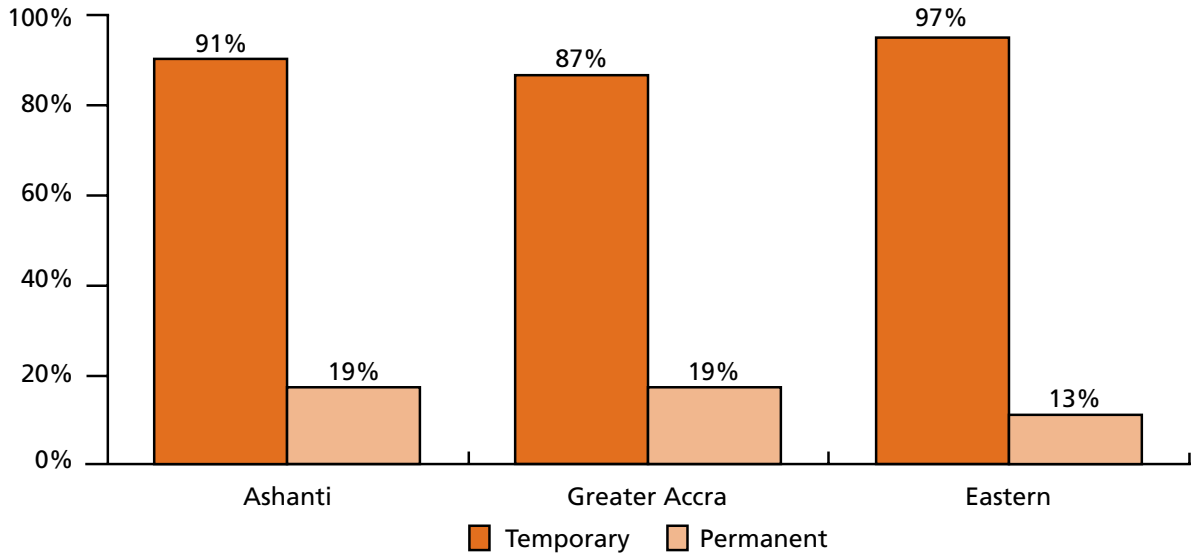
	Where continuance of the pregnancy would involve risk to the life of the pregnant woman (%)	Where continuance of the pregnancy would involve risk or injury to the physical health of the pregnant woman (%)
Accra	87.9	74.3
Ashanti	92.9	81.7
Eastern	94.4	82.7
	p=.014	**p=.025**

Health-facility staff in the Greater Accra Region are slightly less aware of the legal indications for protecting women's health and life than in Ashanti and Eastern.

Knowledge of GHS policy regarding legal termination was also surveyed. Whereas close to one-quarter of management staff (25.8%) and providers (21.6%) perceive that the law requires written parental consent for adolescents, nearly one-half of management staff (47%) and one-quarter of the providers (23.2%) incorrectly reported that the law requires husband's or boyfriend's written consent.[56]

Contraceptive services: Access and attitudes

Figure 2: Availability of temporary and permanent contraception (n=90)



Almost all (84 of 90; 93.3%) of the facilities reported provision of temporary contraceptive methods, including IUD and implants. Only two reproductive and child-health centres and one maternity home were not offering any contraception at the time of the census. Roughly one in five (16.7%) public facilities in the census offer permanent methods of contraception. Access to permanent methods is most limited in the Eastern Region (13%).

[56] The law does not require parental consent. However, the 2006 GHS Comprehensive Abortion Care Standards and Guidelines include provisions for a parent's consent or consent of an adult acting *in loco parentis* in nonemergency circumstances.

Table 10: Staff training in contraception by cadre (n=3,003)

Cadre	Postabortion contraception	Temporary methods	Permanent methods
Doctor (n=384)	87 (22.7%)	95 (24.7%)	90 (23.4%)
Midwife (n=1,018)	236 (23.2%)	279 (27.4%)	111 (10.9%)
Nurse (n=1,517)	118 (7.8%)	178 (11.7%)	59 (3.9%)
Medical assistants (n=84)	14 (16.7%)	14 (16.7%)	8 (9.5%)
Total (N=3,003)	455 (15.2%)	566 (18.8%)	268 (8.9%)

In the facility census, key informants were asked to identify previous training of facility staff. Almost one in five staff members were trained in temporary contraception (18.8%), and a similar proportion (15.2%) was trained in postabortion contraception. However, medical doctors were the only staff with significant training in permanent methods of contraception (23.4%). Midwives had received slightly more training in temporary and postabortion contraception than medical doctors.

The majority of management staff was strongly supportive of offering postabortion contraception in their facilities. Six percent in Eastern and 11% in Ashanti were undecided. However, 18% of facility managers in Greater Accra were opposed to implementation of postabortion contraception services.

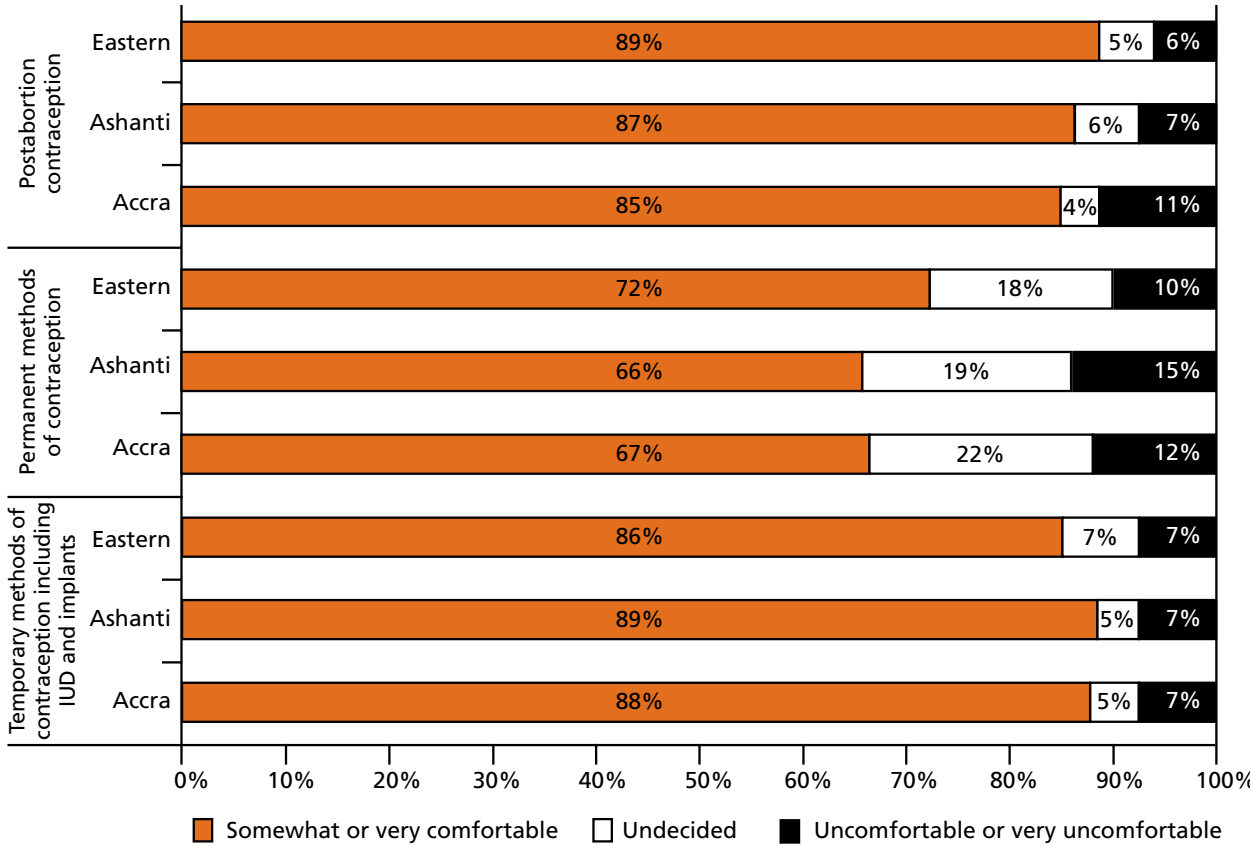
Table 11: Eligible staff currently providing and willing to offer contraception (n=430)

	Currently offering (%)	Willing to offer if given training and support (%)
Offer temporary contraceptives	65.8	87.5
Offer permanent methods	28.0	68.0

The majority of respondents was comfortable providing specific counseling and contraception. About 20% were undecided about permanent methods of contraception while a little more than 12% said they were uncomfortable providing permanent methods.

In the survey, health workers were asked about their personal scopes of contraceptive practice. The majority of health workers surveyed (65.8%) offered temporary contraceptives as part of their job. Only 28% offered permanent methods, but this may be due to the fact that traditionally, only doctors offer permanent methods. The majority of health workers surveyed in all regions (85-89%) was comfortable offering temporary contraception and postabortion contraception, including IUD and implants. More than two-thirds of health workers (67-72%) surveyed in all regions were willing to offer permanent methods if offered training and administrative support.[57]

Figure 3: Health-worker attitudes toward providing contraceptive services (n=430)



[57] Between 15% to 20% of respondents did not answer these questions. Presumably, these were cadres who are ineligible to offer the services.

PAC and legal abortion services

Table 12: The availability of PAC and legal abortion by type of facility (n=90)

	Already offering PAC	Already offering legal abortion
Hospitals (n=16)	15 (93.7%)	11 (68.7%)
Health centres/polyclinics/ RCH (n=74)	7 (12.1%)	1(1.3%)
Total facilities (n=90)	22 (26.6%)	12 (13.3%)

Availability of PAC and legal abortion services was quite low in the health centres and polyclinics in all regions where the census was conducted. While about 12% of the 74 polyclinics and health centres offer PAC services, only one (1.3%) offered CAC services. On the other hand, of the 16 hospitals surveyed, 15 (93.7%) were already offering PAC services while 11 (68.7%) of the 16 hospitals were already providing CAC services. Second-trimester dilatation and evacuation was offered in only 11.1% of sites.

Table 13: Facilities offering PAC by level and district (n=22)

	Accra n = 7			Ashanti n = 7			Eastern n = 8				
	Greater Accra	Dangbe East	Tema	Adansi N	Amansie W	Kumasi Metro	Akwapim N	Akwapim S	Birim S	New Juaben	
Teaching/regional hospital	2					2				1	**5**
District hospital	1	1	1			4	1	1	1		**10**
Maternity homes											**0**
Polyclinic/health centre/RCH	2			1			2	1	1		**7**
Total	**5**	**1**	**1**	**1**	**0**	**6**	**3**	**2**	**2**	**1**	**2**

Of the 22 facilities offering PAC services in the census area, seven each were from the Greater Accra and Ashanti regions while eight were from the Eastern Region.

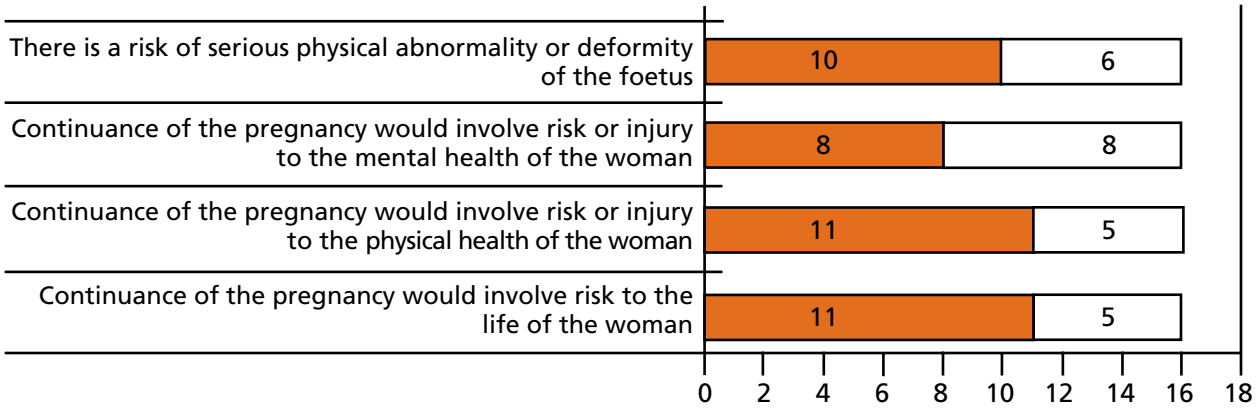
Table 14: Facilities providing safe abortion care (SAC) services

Indicator	Eastern	Ashanti	Accra
Basic SAC services	4	4	3
Comprehensive SAC services	1	4	3
Basic SAC services per 500,000 population	3.42	1.17	0.51
Comprehensive SAC services per 500,000 population	.86	1.17	0.51
Population of study area *Source: GSS 2000 Census*	583,975	1,700,421	2,921,730

Signal functions for a facility designation as a basic safe-abortion service include: ability to render induced abortion up to 12 weeks for all legal indications; provision of postabortion contraception; capacity to administer essential antibiotics, oxytocics, intravenous replacement fluids; and capacity to remove retained products of conception 24 hours a day, seven days per week. The recommended minimum is five sites per 500,000 population, with at least one also offering comprehensive services to include blood transfusion, laparotomy and uterine evacuation after 12 weeks for retained products of conception and all legal indications.[58]

Eastern Region had better access to basic SAC services (see Table 14), with 3.42 facilities per 500,000 population while the Greater Accra Region's mainly urban population had the lowest access to SAC services (0.51/500,000 population). This may be due to the fact that PAC services were piloted extensively in the region in the mid-1990s. None of the regions studied met the minimum requirement of five basic sites per 500,000 population, but Ashanti met the standard for comprehensive SAC services.

Figure 4: Public hospitals offering induced abortion by indications (n=16) [59]



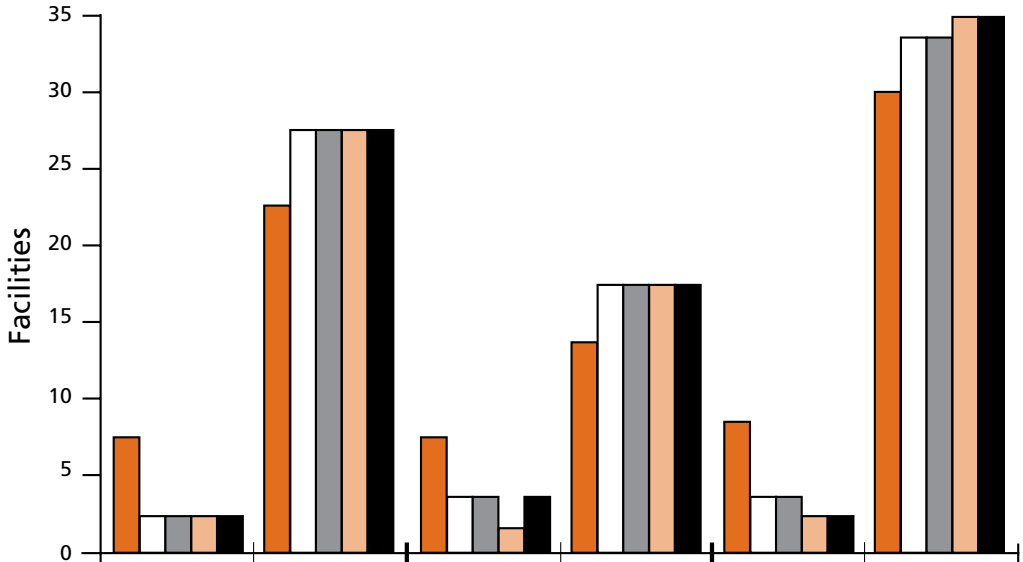
[58] Healy, Joan, Karen Otsea and Janie Benson. 2006. Counting abortion so that abortion counts: indicators for monitoring the availability and use of abortion care services. *International Journal of Gynaecology and Obstetrics*, 95:209-220.

[59] Due to an oversight, the implementation of the legal indications for termination in cases of rape, incest or cognitive impairment were not surveyed.

Although 69% of hospitals facilities in the census provided legal abortion services, facilities providing the service did not provide services for all the indications. Eleven (69%) of the 16 public hospitals offer services when the continuance of the pregnancy would involve a risk to the life of the woman or would involve injury to the physical health of the woman. Fewer (63%) offered services when there is a risk of serious physical abnormality or deformity of the foetus and when the continuance of the pregnancy would involve risk or injury to the mental health of the pregnant woman (50%). This finding may be reflective of the legal knowledge gaps of key health personnel described below.

Figure 4 shows all facilities by region and the number of facilities offering services for the same indication. Even among facilities offering legal termination, there is a gap between the broad legal stipulations for termination of pregnancy and narrower circumstances when services are actually rendered.

Figure 5: Distribution of public facilities providing PAC or legal termination by indication and by region (n=90)



	Accra		Ashanti		Eastern	
	Yes	No	Yes	No	Yes	No
Postabortion care	7	23	7	14	8	30
Continuance of the pregnancy would involve risk to the life of the woman	3	27	4	17	4	34
Continuance of the pregnancy would involve risk or injury to the physical health of the woman	3	27	4	17	4	34
Continuance of the pregnancy would involve risk or injury to the mental health of the woman	3	27	2	17	3	35
There is a risk of serious physical abnormality or deformity of the foetus	3	27	4	17	3	35

Use of appropriate technologies

Table 15: Facilities offering treatment of incomplete abortion (PAC) by district and by evacuation method (n=22)

Region	District	MVA	Electrical vacuum aspiration (EVA)	Misoprostol	Dilatation and curettage (D&C)	Expectant management
Accra n=7	Accra Metro	5	1	1	2	-
	Dangbe East	-	-	-	-	-
	Tema	1	-	-	-	-
Ashanti n=7	Adansi N	1	-	-	1	-
	Amansie W	-	-	-	-	-
	Kumasi Metro	5	-	3	6	5
Eastern n=8	Akwapim N	1	-	1	2	2
	Akwapim S	1	1	-	1	-
	Birim S	2	-	-	1	-
	New Juaben	1	-	1	1	-
n =22 (100%)		**17 (77.3%)**	**2 (9%)**	**6 (27.2%)**	**16 (72.7%)**	**7 (31.8%)**

Facilities offering PAC services were assessed for the various methods used in evacuating the uterus. Of the 22 facilities offering PAC services, 17 used MVA, while two facilities (one in Accra metro and the other in Akwapim South district) provided electric vacuum aspiration. Dilatation and curettage, a method discouraged by WHO, is still one of the main methods of uterine evacuation; 16 of the 22 (72.7%) facilities still report its use. Misoprostol use is emerging as a technique in urban areas. Six facilities (27.2%) reported this method for PAC. Seven facilities (31.8%) offer expectant management.

Table 16: Facilities offering legal abortion by district and by evacuation method (n=12)

Region	District	MVA	EVA	Misoprostol	Mifepristone and Misoprostol	D&C
Greater Accra n=4	Accra Metro	3	1	2	1	2
	Dangbe East	-	-	-	-	-
	Tema	1	-	-	-	1
Ashanti n=4	Adansi N	-	-	-	-	
	Amansie W	-	-	-	-	
	Kumasi Metro	2	-	1	-	2
Eastern n=4	Akwapim N	-	-	-	-	-
	Akwapim S	1	1	-	-	1
	Birim S	-	-	-	-	
	New Juaben	1	-	-	-	1
Total = 12 (100%)		**6 (50%)**	**2 (16.6%)**	**3 (25%)**	**1 (8.3%)**	**7 (58.3%)**

The most frequently reported uterine-evacuation method for rendering legal termination was D&C (58.3%). Six CAC facilities (50%) offer MVA, and two (16.6%) offer EVA. Three facilities (35%) in Accra and Kumasi providing legal abortion-care services reported using misoprostol. The mifepristone-and-misoprostol combination recommended by the WHO was only offered in one hospital (8.3%), pending its official registration.

Caseloads reported

Table 17: Estimated average monthly postabortion and legal abortion-care caseloads by region

Region	PAC cases (n=20) Monthly mean (range)	Legal abortion cases (n=10) Monthly mean (range)
Ashanti	29.7 (2-250)	-
Greater Accra	48.0 (2-202)	1.5 (0-3)
Eastern	5.9 (0-23)	1 (0-2)
All	**25.9 (0-250)**	**0.6 (0-3)**

Table 17 shows the estimated mean and range for monthly caseloads for PAC and legal terminations. Public facilities in the census treat an average of 520 women with incomplete abortions per month, with an average of 26 patients per facility. Public hospitals average 37 postabortion cases per month, while the average monthly mean at the primary-care facilities was only three. Greater Accra Region estimated the highest mean number of women provided with PAC, at 48 per month.

The median caseloads found in this study are widely perceived to be underestimates and derived from urban areas that are not generalizable. However, if the findings were applied nationally to public-sector facilities and combined with private-sector survey data, the national burden of abortion complications for Ghana would be an estimated 105,720 women treated for incomplete abortion annually (Table 18b).

Table 18a: National estimates of facilities that offer PAC

	Proportion of facilities offering PAC[60]	Number of facilities in Ghana	Estimate of the number of facilities offering PAC
Hospitals	54%	259	140
Health centres	13%	622	81
Clinics	33%	889	293
Private maternity homes	33%	401	132
Totals	**21%**	**2,171**	**646**

[60] Ghana Statistical Service, Health Research Unit of the Ministry of Health and ORC Macro. 2003. Ghana service provision assessment 2002. Calverton, Maryland, ORC Macro.

Using data from the national service provision assessment that measures the proportion of facilities that offer PAC, and applying the caseload data from the census, monthly and annual PAC caseloads by strata were estimated.

Table 18b: National estimates of PAC caseloads

	Estimate of the number of facilities offering PAC	Estimated PAC caseloads	Monthly PAC caseload	Annual estimates of PAC caseloads
Hospitals	140	37	5,180	62,160
Health centres	81	3	243	2,916
Clinics	293	3	879	10,548
Private maternity Homes	132	19[61]	2,508	30,096
Totals	**646**		**8,747**	**105,720**

Given the sensitive nature of the issue, the data available on the average frequency of legal termination care were limited. Ashanti facilities were not able to provide a monthly estimate. Reported average caseloads of legal abortion in all regions were less than two women per month. These values are likely to be underreported and should be interpreted with caution.

For every legal abortion reported in the public sector, there are 109 cases of abortion complications treated.[62] According to the facility census, less than 1% (.92%) of all public-sector, uterine-evacuation procedures are induced.

Quality of care

Poor record-keeping and the absence of log books precluded the rigorous collection of quality-of-care variables in the majority of facilities. In eight hospitals (36.4%) offering PAC, case records were analyzed. Sixteen of 32 (50%) PAC cases reviewed were performed in accordance with the 2006 Ghana Health Service CAC Standards and Protocols using vacuum aspiration. The provision of pain management was high, with 87.5% receiving pain medication before the procedure. D&C was used to manage sixteen (50%) of cases reviewed. Given the limited number of cases reviewed, the quality of care findings should be interpreted with caution.

Few delays to care were reported by the key informants among those facilities that offer emergency care. The mean time from arrival to emergency care for life-threatening abortion complications was reported as 25 minutes. Respondents estimate that patients wait between 15 minutes and two hours for MVA or D&C in cases of incomplete abortion, with a mean wait of 41 minutes for MVA and 51 minutes for sharp curettage.

[61] Private maternity home PAC provision estimate obtained from a study in Eastern Region by Fullerton, Judith, Alfredo Fort and Kulmindar Johal. 2003. A case/comparison study in the Eastern Region of Ghana on the effects of incorporating selected reproductive health services on family planning services. *Midwifery*, 19(1):17-26.

[62] It may also be that because of the perceived illegality of all abortions by the community members, as shown in the GHS strategic assessment of 2005, many clients may be seeking termination of pregnancy in unsafe circumstances and present in the public sector with complications.