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ECONOMIC CONSEQUENCES

Public hospital costs of treatment of abortion complications in Nigeria

Janie Benson [a,*], Mathew Okoh [b], Keris KrennHrubec [a], Maribel A. Mañibo Lazzarino [c], Heidi Bart Johnston [d,e]

[a] Ipas, Chapel Hill, NC, USA
[b] Ipas, Abuja, Nigeria
[c] Ipas, Durham, NC, USA
[d] Swiss Tropical and Public Health Institute, Basel, Switzerland
[e] University of Basel, Basel, Switzerland

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ABSTRACT

Unsafe abortion is a significant contributor to maternal mortality in Nigeria, and treatment of postabortion complications drains public healthcare resources. Provider estimates of medications, supplies, and staff time spent in 17 public hospitals were used to estimate the per-case and annual costs of postabortion care (PAC) provision in Ogun and Lagos states and the Federal Capital Territory. PAC with treatment of moderate complications (US $112) cost 60% more per case than simple PAC (US $70). In cases needing simple PAC, treatment with dilation and curettage (D&C, US $80) cost 18% more per case than manual vacuum aspiration (US $68). Annually, all public hospitals in these 3 states spend US $807 442 on PAC. This cost could be reduced by shifting service provision to an outpatient basis, allowing service provision by midwives, and abandoning the use of D&C. Availability of safe, legal abortion would further decrease cost and reduce preventable deaths from unsafe abortion.

1. Background

Globally, 47 000 women are estimated to die each year from complications of poorly performed induced abortions, 29 000 of them in Africa [1]. Many more women suffer from short- and long-term disabilities. These consequences result from a confluence of factors, including low use of modern contraceptive methods, restrictive abortion laws, lack of safe abortion services, and gender discrimination. An estimated 1.18 million women annually obtain care in health facilities in Sub-Saharan Africa for treatment of unsafe abortion complications such as incomplete abortion, hemorrhage, septicemia, and uterine perforation [2]. The health system costs of such treatment in the region are estimated to range from US $68 million to US $76 million per year [3].

1.1. Abortion in Nigeria

Nigeria represents a particularly acute situation, with low contraceptive use, high rates of unwanted pregnancy, and high rates of unsafe abortion. Recent estimates show a maternal mortality ratio of 608 per 100 000 live births with 36 700 women dying annually from pregnancy-related causes, the second largest number in the world [4]. The national fertility rate is 5.7 births per woman, although wide differences exist across geographic zones [5]. Contraceptive prevalence is quite low, with just 9.7% of currently married women using a modern contraceptive method in 2008, and has not increased markedly since 2003 when it was 8.2% [5].

Although abortion is legal only to save the life of the woman, 1 in 10 Nigerian women has had an abortion in their lifetime. Abortion is most common among women who were younger than 25 years, unmarried, and childless at the time [6]. The only national estimate of abortion incidence in Nigeria was conducted in 1996, with a rate of 25 abortions per 1000 women aged 15–44 years, although rates were much higher in the southern part of the country. Two of the states in this study, Ogun and Lagos, are located in the Southwest zone, where abortion rates are high at 46 per 1000 [7]. Factoring in population growth since the 1996 study, researchers estimate that 760 000 abortions occurred in Nigeria in 2006 [6].

The practice of abortion is also often unsafe in Nigeria. According to a 2002–2003 household survey of women of reproductive age, almost half of women reporting an abortion had a surgical procedure, manual vacuum aspiration (MVA) or dilation and curettage (D&C), which was performed in a clinic, hospital, or private office of a physician [6]. However, despite this common use of technologies with normally low complication rates, 1 in 4 women interviewed in the household survey who reported a surgical abortion had serious complications [6]. Based on mortality data from a 2002–2003 hospital survey, researchers estimate that about 3000 women die each year in Nigeria from abortion complications, a likely underestimate [8].

* Corresponding author: Janie Benson, Vice President, Research and Evaluation, Ipas, P.O. Box 9990, Chapel Hill, NC 27515, USA. Tel.: +1 919 960 5994.
E-mail address: bensonj@ipas.org (J. Benson).

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1.2. Costs of treating abortion complications in Nigeria

An array of studies using different methodologies has been conducted in Nigeria to estimate the costs of induced abortion and the costs of treatment of complications from unsafely performed abortion. Using the 1996 estimates of induced abortion and abortion complications and survey findings from 150 health facilities in 2 states, Adewole et al. [9] estimated that the cost of treating 141 000 cases of abortion complications per year was £9.4 million. The methodology used to calculate the per-case and total costs is not detailed, however, and it is not clear if the "cost" of treatment refers to the full cost of care or the portion paid by patients to the facility for treatment.

In a 2002–2003 public and private hospital survey of patients seeking treatment of postabortion care (PAC) for complications of unsafely induced abortion, induced abortion, or treatment of spontaneous abortion, and the main clinical provider for each patient, Henshaw et al. [8] obtained the amount women paid for care outside the hospital and the amount paid for treatment in the hospital. The average per-case amount paid by women presenting at facilities for serious complications resulting from induced abortions obtained elsewhere was 10 971 Naira (US $91). In contrast, the average per-case amount paid for treatment of a spontaneous abortion was 5114 Naira (US $43).

To estimate the annual costs of PAC to the Nigerian health system, Bankole et al. [10] calculated that the annual health system cost for treating women with complications of unsafely induced abortions was US $7.6 million. An additional US $11.4 million would have been required to treat women who needed but did not obtain clinical care for complications. The estimated per-case cost for hospital-based care was US $132, including costs absorbed by both women and the health system. Estimated costs of treating complications from unsafely performed abortions represent 3.5% of the 2005 total expenditure of public health care [10].

To provide evidence on the implications of shifting away from unsafe abortion, researchers modeled rates of morbidity and mortality and cost data from the literature to determine the most cost-effective strategies for offering safe abortion in Nigeria [11]. All safe abortion approaches (hospital-based D&C; hospital-based MVA; clinic-based MVA; and medical abortion using misoprostol) yielded gains in life expectancy and cost savings compared with unsafe abortion. MVA provided in a clinic setting was the most cost-effective of all safe abortion strategies in Nigeria, and converting all unsafe procedures to clinic-based MVA was estimated to save more than US $2.5 million per 100 000 procedures.

The present study was conducted to add more recent cost estimates of PAC in Nigeria to the existing body of literature. The aim was to provide a more comprehensive level of detail of how PAC provision is organized and clinically managed in public hospitals by obtaining data on different uterine evacuation technologies, inpatient and outpatient care, as well as severity of presenting complications. To this end, the objectives of the study were to: (1) describe current PAC caseloads and treatment regimens in selected study public hospitals; (2) calculate estimates of the per-case costs of treatment of abortion complications; and (3) calculate estimates of annual costs of treatment of abortion complications in all public hospitals in the 3 study states. These data will be used as an aid to improve management of care and law reform efforts in Nigeria.

2. Methods

2.1. Sampling

The study sample was drawn from a list of all 79 PAC-providing public hospitals in the study states provided by the Nigerian Ministry of Health. Estimated monthly caseloads for each of these sites were also obtained through a combination of Ipas site-monitoring visits and Ministry of Health data. A total of 21 facilities (5 tertiary and 16 secondary hospitals) were purposively selected from this list for the study. Facilities were included from Abia, Ogun, and Lagos states as well as the Federal Capital Territory (FCT, also called Abuja), representing 3 of the 6 geopolitical zones of Nigeria. Each selected facility reported a minimum of 5 PAC cases per month and was located in an urban, semi-urban, or rural setting. The purposive sample was developed to represent, as well as possible, public sector hospitals that provide PAC, since resources did not allow for a full random sample.

Data were obtained from 19 facilities; 2 tertiary-level facilities were not able to complete and submit data collection forms because of physicians' strikes underway in those sites. Facilities in Abia state were not included in the analysis because of insufficient data. The analysis ultimately included 17 facilities representing 22% of all 79 PAC-providing public hospitals and 34% of the estimated annual PAC caseload in public hospitals in the 3 states. Because of low caseloads and difficulties in obtaining caseload information from a number of facilities originally considered, 11 of the 17 included hospitals had taken part in Ipas-sponsored clinical training of their current or former providers, had participated in service delivery upgrades, and/or had received MVA instrument donations.

2.2. Data collection

The study utilized *Savings*, an Excel-based tool designed by Ipas based on cost inputs and types of abortion complications found in the World Health Organization's (WHO) Mother-Baby package [12]. The cost estimates generated by the *Savings* tool incorporate the various clinical practice regimens currently in use for PAC and compares these with alternative treatment strategies for safe abortion.

A data collection tool to be completed by providers working in the study facilities was developed. The tool reflects PAC caseloads, clinical treatment regimens, amounts used and costs of drugs and supplies, and time and costs of health personnel to care for women presenting with abortion complications at each health facility. Treatment methods for uterine evacuation of incomplete abortion included D&C, MVA, electric vacuum aspiration (EVA), misoprostol alone (MPAC), and dilation and evacuation (D&E). Data were also collected on cases treated with expectant management, to capture PAC cases where a uterine evacuation method was not necessary. The tool was pretested by physicians from the Lagos state study hospitals and subsequently modified.

Data collectors were primarily nurse-midwives, obstetrician-gynecologists, and general practitioners with experience providing clinical PAC services in their individual facilities. The study team visited facilities to familiarize participating providers with the tool, and subsequently revisited or called each facility several times to answer questions, troubleshoot, and remind participants of the deadline for completion. The forms for each facility were collected in person and reviewed for any missing, incomplete, or questionable data. Follow-up contact with the facilities occurred to resolve outstanding issues, and additional data were collected in 8 facilities to clarify the inputs required for complicated PAC cases. Data were collected from June to September 2010.

2.3. Facility-level data collection

The number of women treated for postabortion complications in each facility between January and March 2010 was retrieved from the facility logbook by the respondents. In 5 facilities that did not have logbook data, the study coordinator and study respondent used the case notes of PAC patients to report caseload. The data were reported by the severity of complications with which patients