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DIFFERENCES IN THE QUALITY OF REPRODUCTIVE HEALTH SERVICES PROVIDED BY PRIVATE MIDWIVES IN UGANDA

August 2009

This publication was produced for review by the United States Agency for International Development. It was prepared by Mai Do and Sohail Agha for the Private Sector Partnerships-*One* project.



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Recommended Citation: Do, M., and Agha, S. August 2009. *Differences in the Quality of Reproductive Health Services Provided by Private Midwives in Uganda*. Bethesda, MD: Private Sector Partnerships-One project, Abt Associates Inc.

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Contract/Project No.: GPO-I-00-04-00007-00

Submitted to: Patricia Mengech, CTO
Bureau of Global Health
Global Health/Population and Reproductive Health/Service Delivery Improvement
Center for Population, Health and Nutrition
Bureau for Global Programs, Field Support and Research
United States Agency for International Development



Abt Associates Inc. ■ 4550 Montgomery Ave, Suite 800 North ■
Bethesda, Maryland 20814 ■ Tel: 301/913-0500 ■ Fax: 301/652-3916
■ www.PSP-One.com ■ www.abtassoc.com

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ACRONYMS

ANC	Antenatal Care
FP	Family Planning
HIV	Human Immunodeficiency Virus
MCH	Maternal and Child Health
PNC	Postnatal Care
PSP-One	Private Sector Partnerships-One project
QI	Quality Improvement
RH	Reproductive Health
SES	Socioeconomic Status
STI	Sexually Transmitted Infection
UPMA	Uganda Private Midwives Association

ACKNOWLEDGMENTS

This study was conducted under the PSP-*One* project with support from the United States Agency for International Development (Contract No. GPO-I-00-04-00007-00). The authors are grateful to Dr. Davidson Gwatkin for his valuable comments and suggestions.

ABSTRACT

Differentials in quality of health services in the private sector by clients' socioeconomic status have not been well documented. This paper examines differentials in quality of reproductive health (RH) services provided by private midwives in Uganda. Data were collected from interviews of 248 midwives and observations of the same midwives' clients before and after a quality improvement intervention implemented by the Private Sector Partnerships-One (PSP-One) project. Improvements in quality were observed at follow-up. The data revealed some evidence of differentials in certain aspects of quality depending on clients' educational attainment and employment status. The differences likely resulted from clients' different demands for services and providers' response to the demands rather than from differential provider treatment of clients. Results suggest that improved overall quality does not necessarily result in lower differentials in quality of care. Strategies to reduce quality differentials may include client education about appropriate health services and enabling disadvantaged clients to demand high-quality services while providers maintain a set of minimal quality standards for all clients.

I. INTRODUCTION

Health disparities by socioeconomic status (SES) have drawn the attention of researchers and policymakers in both the developed and developing worlds. Causes for the disparities are complex and usually operate at more than one level, ranging from individual to structural levels and from individual vulnerability to illness to the availability and accessibility of health services. Many studies have attempted to provide a summary of the several disadvantages plaguing the poor. For example, Wagstaff (2002) summarizes several factors within a vicious circle: poverty leads to poor health, which in turn results in poverty. However, household surveys provide no evidence that, even when poor and rich have the same access to high-quality health care, the poor receive lower-quality services (Barber, Gertler, and Harimurti 2007a). Differentials in quality of health care, although recognized as an important determinant of differences in health service utilization, have not undergone the same thorough examination as differentials in service availability. In the private sector, despite concerns that service provision may disproportionately benefit the wealthy, research has not documented evidence of and the extent to which inequality in care may be addressed (Travis and Cassels 2006). A recent review of the literature by Patouillard et al. (2007) found limited evidence of improved health service equity in response to interventions involving the private sector. In particular, only 5 of 52 studies subject to review reported health service utilization by the poor. Moreover, even in these 5 cases, the evidence was mixed. This paper examines differentials by client SES in two aspects of quality of reproductive health (RH): interpersonal interactions between providers and clients and technical quality of services delivered by private midwives in Uganda. Donabedian (1988) outlined both dimensions of quality as process indicators of quality, which may have a strong influence on outcomes (client satisfaction) and service utilization (see, for example, Rani, Bonu, and Harvey 2008; Stewart, Nápoles-Springer, and Pérez-Stable 1999).

2. BACKGROUND

A few studies have explored differences by SES in client-provider or patient-doctor interactions both within and outside the reproductive health arena. A recent review of 12 published studies by Willems et al. (2005) showed that lower-SES patients experienced less positive interactions with health providers and that providers' clinical consulting was usually less participatory and more directive. Some of the differences may be explained by health providers' biases toward better-off patients (Cooper-Patrick, Gallo, Gonzales et al. 1999). Willems et al. (2005) noted, however, that such differences not only reflect active discrimination by providers but also result from patient communication styles. Clients with lower educational attainment were likely to perceive a greater cultural distance between themselves and providers and thus were less likely to ask questions or offer their own opinions. At the same time, providers may have incorrectly assumed that patients were either not interested in learning about their health or not capable of understanding providers' explanations and instructions (Street 1991; Waitzkin 1985). As a result, health providers provided less information to lower-SES patients (Willems et al. 2005).

In developing countries, evidence of differentials in counseling and client-provider interactions by client characteristics is limited to a few studies that used household surveys of women to examine quality of prenatal care. Rani et al. (2008) found, in both northern and southern India, that information provided to prenatal care clients and interpersonal quality of care varied significantly by the clients' household wealth and education. Clients from the richest quintile received significantly more information, but clients with high educational attainment received better treatment in terms of interpersonal relationships (Rani et al. 2008). The study, however, relied on retrospective data among those who obtained prenatal care within the previous six months and therefore may be subject to recall and courtesy biases.

The number of research studies examining differences in technical quality of health services by client characteristics is considerably greater, although the studies vary with respect to definitions of technical quality. Many studies still rely on retrospective data obtained by interviewing women at their homes, which may be less sensitive to courtesy biases than data obtained by interviewing women at clinics, particularly in the case of interpersonal relationships. Yet, information biases associated with clients' ability to understand and recall technical procedures may persist. In Brazil, where many lower- and middle-class women sought caesarean sections as an alternative for what they considered poor-quality delivery care, women from wealthier families as well as those with higher educational attainment were more likely than others to undergo caesarean sections (Béhague, Victora, and Barros 2002). In the United States, several studies have also shown that lower income and educational attainment were associated with fewer technical procedures in a wide range of services, from mammograms and childhood and influenza immunizations to ambulatory and hospital care (Fiscella et al. 2000).

Similar evidence exists in less developed countries. The aforementioned study in India by Rani et al. (2008) reported wide variations in the technical quality of prenatal care—measured by the performance of essential physical examinations, tests, and services—by clients' household wealth and education. A

similar study among the poor in rural Mexico, also examining prenatal care, found that prenatal clients among the poorest group—compared to the least poor—reported fewer technical procedures in both the private and government sectors (Barber, Bertozzi, and Gertler 2007b). Given that this study found no differences in seeking care from the public sector, the authors also suggested that quality differences were attributable to providers' active discrimination toward disadvantaged women rather than to poor women's incapacity to demand high-quality care (Barber et al. 2007b). Other studies found that the rich received higher-quality prenatal services in the private sector, possibly because of their ability to pay formal or informal user fees (Barber 2006; Barber et al. 2007a). The authors also found more evidence of differential quality of care in the private versus public sector (Barber 2006).

It is important to note, however, that most of the available evidence is limited to experiences in the public sector. While the private health sector has become increasingly important in the provision of reproductive health services in many middle- and low-income settings (Peters, Mirchandani, and Hansen 2004), no study—to our knowledge—has employed data obtained directly from observations of the service delivery process to examine differentials in the quality of reproductive health services in the private sector in a developing country. Using data directly obtained from client-provider observation, the present study examines evidence of differentials in quality of care among clients who obtained reproductive health services from private midwives in Uganda. The study evaluates the quality of three types of services [antenatal care (ANC), family planning (FP), and postnatal care (PNC)]. The results will help provide information on differentials in the quality of reproductive health services in the private sector in developing countries.

3. DATA AND METHODS

THE INTERVENTION

The intervention project, on which this study is based, is a quality improvement (QI) package developed for use with private practitioners in independent practice who could use the tool without necessarily relying on external supervisors for quality assurance (Segall and Levin 2006). The package comprises the following: a form to review service statistics; a provider self-assessment tool; a linked action plan to help solve issues identified by the self-assessment; and a tool to enable the supervisor to find solutions to problems identified by the provider. The Private Sector Partnerships-One (PSP-One) project implemented the intervention in collaboration with the Uganda Private Midwives Association (UPMA). UPMA has about 500 midwife members in 12 branches in three regions: Central, Eastern, and Western.

The service statistics form focuses on 13 FP and maternal and child health (MCH) indicators to help providers track changes in service utilization. The self-assessment tool enables providers to determine gaps in the quality of care they provide and to track changes in quality over time. A provider conducts the self-assessment by responding to a series of questions along each dimension of quality; most questions (67 percent) address technical competence. The package is consistent with Donabedian's approach to quality as a multidimensional concept whose dimensions may vary with context (Donabedian 1988). Providers assess quality of care along six dimensions that are relevant to the provision of services in the commercial sector: physical environment, technical competence, continuity of care, management, marketing, and business practices.

Following completion of the self-assessment, the provider completes an action plan to facilitate problem solving. The plan guides the provider in identifying the cause(s) of a specific shortcoming, listing possible solutions or actions needed to resolve the problem, charging a person (which could be the provider) with responsibility for solving the problem, and specifying a deadline. Providers are encouraged to complete the self-assessment and action plan on a quarterly basis.

The supervisory tool is designed to take advantage of the supervisory support available to commercial providers. The role of the supervisor is to discuss causes of the shortcomings identified by the provider, to help craft solutions to the identified problems, and to mobilize external resources (such as those of UPMA or the Ministry of Health) to implement the solutions. Optimally, a supervisor should visit a clinic on a quarterly basis to monitor progress toward completion of the action plan. As noted later, not all midwives in the project received supervisory support.

PSP-One delivered a one-day training workshop on the use of the QI package to two groups of private midwives exposed to the intervention. Midwives completed and analyzed data compiled in the statistics form, completed the QI self-assessment tool, and developed an action plan to improve the quality of service delivery. Midwives developed the action plan after conducting a root cause analysis to determine the main reasons behind quality performance gaps. They learned to prioritize identified problems, to

develop approaches to eliminating performance gaps, and to monitor progress in resolving problems. Brainstorming sessions—dedicated to identifying not only problems commonly faced by midwives in providing high-quality services but also a range of solutions—helped engage the midwives in the learning exercise.

Supervisors who were to be trained in the QI package attended the one-day training with the midwives and an additional one-and-a-half-day training session. Supervisors learned to determine the numerator and denominator for each score, to transfer numbers from the midwives' self-assessment tool to their own scoring sheet, and to create a quality index for each quality dimension to help midwives measure improvements and the persistence of problems. Supervisors practiced how to assist midwives in identifying root causes of quality problems and brainstormed about resources that would help improve the quality of midwife-provided care. They discussed ways of engaging the public sector (e.g., district resource teams, district public/private partnerships, health officers) to assist in solving selected problems. Supervisors also practiced how to lead a branch meeting on quality of care. All 14 supervisors who were to support the midwives participated in the first round of training in November 2006.

DATA

Data for the study came from a pretest/post-test quasi-experimental design intended to evaluate a quality improvement approach based on the QI package described above. The study involved three groups: a comparison group of midwives in Kampala (the capital city) and two intervention groups in three regions: Central, Eastern, and Western. One intervention group (group A) comprised midwives who participated in a one-day training session on the use of the self-assessment tool and completion of an action plan; their supervisors were not trained in problem solving and mobilizing external resources to assist midwives in problem solving. The second intervention group (group B) consisted of midwives who participated in a training session on the self-assessment tool and action plan; their supervisors were trained in problem solving. Midwives in Kampala were the comparison group. Selection of that group averted possible confounding of QIs associated with interventions outside the project. Midwives in the other eleven branches were randomized at the branch level to be part of either intervention group A or B.

A sample size of 300 midwives was considered practical in terms of budgetary resources and appropriate in terms of detecting changes over time. One hundred midwives would be recruited for each of the three groups, with observations of at least three client-provider interactions conducted per midwife. PSP-One conducted follow-up data collection about six months after baseline data collection. The same midwives were interviewed at baseline and follow-up while client observations and exit interviews were conducted among clients who came to the clinics on the days of visits; therefore, clients may not be the same at both time points. Of the 276 midwives recruited at baseline, 248 (90 percent) were also interviewed at follow-up. Among the 248 midwives, 74 were in the comparison group, 85 in intervention group A, and 89 in intervention group B. We conducted 772 observations of client-provider interactions among the 248 midwives at baseline and 776 at follow-up. We also interviewed all clients with observed interactions with midwives as they left the clinics. We combined data from baseline and follow-up rounds of the same 248 midwives to increase power to detect differences in quality when possible. More detail about the evaluation and the impacts of the QI package on the quality of care is available elsewhere (Agha 2009).

The study received IRB approval at the Tulane University Health Sciences Center. Separate consent forms obtained midwife and client consent to participate in the study.

DEPENDENT VARIABLES

The study measures quality of RH services by two main indicators: counseling score and technical quality score. We collected data from direct observations of service delivery. Table I presents definitions of the indicators.

Counseling score reflects the client-provider interaction in terms of the degree to which providers treated clients with respect and understanding, the degree to which the interaction was participatory, and the extent to which providers used the opportunity to discuss other available health services that may meet clients' needs. The composite score was an additive summary of yes or no responses to eight questions. Internal reliability was high for both baseline and follow-up data: Cronbach alpha was 0.73 and 0.78, respectively.

TABLE I: DEFINITIONS OF INTERPERSONAL AND TECHNICAL QUALITY INDICATORS

Interpersonal	Definition of Indicators
Counseling	Provider did the following during consultation: informed client of her right to privacy and confidentiality, asked client questions regarding how she felt and listened attentively, encouraged client to ask questions, provided client with relevant information to make health-related decisions, ensured that client understood the information provided by asking follow-up questions, asked client what she thought about the services provided, used opportunity to discuss additional health issues, discussed additional services provided at clinic (out of 8)
Technical	Definition of Indicators
Family planning	Provider explained how the reproductive systems works, discussed client's needs, counseled client based on her unique needs, explained which contraceptive methods are available, provided information on where to obtain desired method if unavailable at midwife clinic, explained benefits of selected method, explained risks of selected method, explained contraindications of selected method, explained side effects of selected method, discussed how selected method works, discussed how to use selected method, explained what to do in case of side effects, discussed resupply of selected method, explained when client should return for follow-up, discussed option of changing method if it does not work for client, recommended use of condom for dual protection, encouraged client to have partner participate in counseling and FP decision making (out of 17, rescaled to be out of 30)

<p>Antenatal care</p>	<p>Provider discussed need for four spaced antenatal visits, provider informed client about due date, explained importance of personal hygiene and nutrition during pregnancy, discussed how to prevent malaria, discussed how to avoid exposure to sexually transmitted infection (STI)/human immunodeficiency virus (HIV) by being faithful and asking partner to use condom, discussed how client can involve partner in preventing STIs/HIV, reviewed danger signs of pregnancy, encouraged pregnant woman and partner to come for HIV counseling and testing, provided information about health problems and appropriate treatment, discussed need to develop a birth plan (including arrangements for emergency transportation), discussed need and options for family planning, discussed what client should bring to clinic for delivery, discussed unsafe traditional practices, discussed signs and symptoms of labor and what to expect during labor</p> <p>Provider did the following during the first antenatal visit: recorded height, weight, and blood pressure, determined expected date of delivery, performed or referred clients for syphilis blood test [Venereal Disease Research Laboratory (VDRL)] and hemoglobin cross-matching, listened to fetal heart tone and recorded results, inspected and palpated breasts, prescribed/dispensed iron and folic acid tablets and other preventive medication, determined tetanus toxoid status and vaccinated for tetanus toxoid or referred for vaccination</p> <p>Provider did the following during repeat antenatal visit: recorded weight and noted changes, recorded fundal height and noted changes, recorded blood pressure and noted changes, listened for and recorded presence of fetal heart beat, checked for following danger signs: vaginal bleeding, severe headache, visual changes or epigastric pain, swelling of face or hands, leaking amniotic fluid, severe nausea or vomiting, high temperature, severe abdominal pain, lack of fetal movement (out of 30)</p>
<p>Postnatal care</p>	<p>Provider discussed personal hygiene, nutrition and infant feeding, care of perineum and breasts, family support, FP and avoiding unwanted pregnancy, benefits of exclusive breastfeeding</p> <p>Provider assessed mother's knowledge of and ability to breastfeed</p> <p>Provider asked client about postpartum danger signs, including excessive vaginal bleeding, vaginal discharge with odor, severe abdominal pain, worsening perineal pain, high temperature, continuous nausea and vomiting, redness or pain in breasts, pain in urination or difficulty in voiding</p> <p>Provider asked client if she had noticed danger signs in infant, including infant not sleeping well, sleeping all the time, vomiting or spitting, watery, dark green stool, breathing too fast, stiffness or convulsions, yellow skin and eyes, redness around or foul discharge from umbilicus or from eyes (out of 30)</p>
<p>Family planning, antenatal care, and postnatal care</p>	<p>Summary score across FP, ANC, and postnatal clients (out of 30)</p>

Technical quality score was similarly constructed, although we first constructed the score separately for three types of services provided by midwives: ANC, FP, and PNC. For ANC and PNC services, the technical quality score for each service type measures the degree to which providers discussed a woman's need for health care during the antenatal or postnatal period, danger signs, and the performance of essential clinical examinations and laboratory tests. For FP services, the measure focuses on discussion of methods that may meet a client's RH needs, information related to the use of a particular method of choice, condom use for STI prevention, and a woman's partner's involvement in FP decision making. We calculated all three scores and mathematically rescaled them to a range between 0 and 30. Finally, the sum of the three scores represents a measure of technical quality for all services provided. Internal reliability coefficients for the technical quality scores were high, ranging from 0.78 to 0.90 at baseline and from 0.67 to 0.76 at follow-up.

INDEPENDENT VARIABLES

We constructed independent variables for the analysis from data obtained from client exit interviews. The main independent variables of interest were client's household wealth, educational attainment, and employment status. Household wealth was based on ownership of household assets (e.g., television, radio, telephone or cell phone, bicycle, and so forth). We asked questions about educational attainment and employment status at both rounds of data collection while information on household wealth was available only at follow-up. The main research questions deal with differences in quality of care by these three client characteristics.

In addition, the analysis included age and marital status of clients. The literature has shown that, in many settings, these factors may be important in how providers treat clients, particularly those seeking FP and ANC services.

STATISTICAL MODELS

Our data structure is unique in that it is panel data at the midwife level, but for each midwife, clients were likely to be different at the two rounds of data collection. While different approaches to analysis control for unobserved heterogeneity at the midwife level (Brüderl 2005; Wooldrige 2002), most such approaches require aggregation of client data at the midwife level—a disadvantage in this case for several reasons. First, if we aggregated client data, we would lose information and would be unable to assess differences in how each midwife may treat (in terms of counseling and technical procedures) her clients based on client characteristics. Second, if the analysis were performed at the midwife level, the results would indicate how different midwives treated their clients differently and thus could be confounded by the self-selection of clients who visit different midwives.

For these reasons, we required an approach that would allow us to control for unobserved heterogeneity among midwives, to assess changes in quality of care by client characteristics for each midwife, and, at the same time, to account for the collection of data at two time points—before and after an intervention. Accordingly, we used fixed-effects estimation with the “demeaning” method, where, for each midwife, we compared each of her clients against the average value of all clients of the same midwife (Brüderl, 2005). The method has found application in economics, sociology and labor force research (Halaby 2004); we have not found any studies in public health that have used this method.

The model takes the following general form:

$$Y_{ij} - \text{mean}(Y_{ij}) = \beta_0 + \beta_1[X_{ij} - \text{mean}(X_{ij})] + \beta_2[T_{ij} - \text{mean}(T_{ij})] + \beta_3I_{ij} + \varepsilon_{ij}$$

Where:

Y_{ij} = a measure of quality for client i of midwife j

X_{ij} = a set of characteristics of client i of midwife j

T_{ij} = indicator of time (baseline versus follow-up) for client i of midwife j

I_{ij} = dummy variables that indicate intervention group that client i of midwife j belonged to

ε_{ij} = random error

The model depicts departure of quality of care that a particular client received from the mean value of quality of care that all clients of a particular midwife received. X_{ij} is a set of a client's characteristics, including household wealth, age, marital status, educational attainment, and employment status. If there is no inequality, β_1 should be 0, and the only difference in quality would be attributable to the intervention (T_{ij}), differences between midwives and clients of three groups (I_{ij}), and random variation. A significant and positive β_1 indicates increased quality of care among clients whose SES was higher than that of an average client of the same midwife while a significant, negative β_1 indicates decreased quality of care among clients whose SES was lower than average. Either way, a β_1 significantly different from 0 indicates differentials in quality of care.

4. FINDINGS

Table 2 presents the distribution of clients of all services (ANC, FP, and PNC) in three groups: comparison, intervention group A, and intervention group B. Each group demonstrated some differences in client characteristics between baseline and follow-up. In the comparison group, clients were slightly older, more educated, and more likely to be married at follow-up than at baseline.

TABLE 2: DISTRIBUTION OF CLIENT CHARACTERISTICS AMONG CLIENTS OF ALL SERVICES PROVIDED BY PRIVATE MIDWIVES, UGANDA, 2006–2007

Client Characteristics	All Services					
	Comparison		Intervention A		Intervention B	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Age Mean (s.d.)	23.7 (4.4) ^{*c}	24.5 (4.5) ^{*c}	24.7 (4.9) ^c	25.5 (5.2) ^c	26.6 (5.7) ^c	27.0 (6.2) ^c
Currently married (percent)						
No	16.3 [*]	9.7 [*]	16.1	13.3	14.2	15.5
Yes	83.7 [*]	90.3 [*]	83.9	86.7	85.8	84.5
Education (percent)						
Less than secondary	38.8 ^{**}	25.6 ^{**}	39.6	37.4	51.0	45.4
Secondary or more	61.2 ^{**b}	74.5 ^{**c}	60.4 ^b	62.6 ^c	49.0 ^c	54.6 ^c
Currently employed (percent)						
No	53.5	54.2	65.4	64.0	63.2	71.2
Yes	46.5 ^a	45.8 ^c	34.6 ^a	36.0 ^c	36.8 ^a	28.8 ^c
Household wealth (percent)						
Poor	—	17.6 ^c	—	32.3 ^c	—	49.1 ^c
Middle	—	48.0 ^c	—	29.5 ^c	—	25.1 ^c
Rich	—	34.4 ^c	—	38.1 ^c	—	25.8 ^c
N	245	227	280	278	247	271

* $p < .05$; ** $p < .01$; *** $p < .001$ for comparisons between baseline and follow-up data within each intervention group.

^a $p < .05$; ^b $p < .01$; ^c $p < .001$ for comparisons between intervention groups at each time point.

In addition, across the three groups, there were differences in clients' age at both baseline and follow-up: on average, clients in group B were oldest, and clients in the comparison group were youngest ($p < .001$). Clients in the comparison group (Kampala) were the most educated and wealthiest while clients in group B were the least educated and poorest; clients in group A fell between the comparison group and group B. Clients in the comparison group were also more likely to be employed than those in the other two groups at both baseline and follow-up ($p < .05$ and $p < .001$, respectively).

Counseling and Technical Quality Scores in Three Groups at Baseline and Follow-Up

Table 3 shows the scores at baseline and follow-up for each of the three groups with reference to counseling and quality of technical procedures, by client characteristic. The sample is the pooled sample of clients of all services. First, it should be noted that, overall, counseling and technical scores increased significantly between baseline and follow-up. The same increases may be observed among subgroups of women with different characteristics, such as educational attainment and employment status.

Second, the three groups did not start out with the same quality scores with respect to counseling and technical procedures: at baseline, quality was highest in the comparison group and lowest in group B. The same held for each service provided (ANC, FP, and PNC) at baseline (not shown). Between baseline and follow-up, changes in quality of care did not occur in all three groups: only group B achieved significant improvements in both counseling and technical quality. The comparison group and group A had little quality improvement. The results are consistent with an earlier evaluation of the impacts of the same interventions (Agha 2009).

TABLE 3: DIFFERENCES IN QUALITY OF CARE BY MIDWIFE INTERVENTION GROUP AND CLIENT CHARACTERISTICS AMONG CLIENTS OF ALL SERVICES PROVIDED BY PRIVATE MIDWIVES, UGANDA, 2006–2007

Client Characteristics	Average Counseling Score (maximum = 8)						Average Technical Quality Score (maximum=30)					
	Comparison		Intervention A		Intervention B		Comparison		Intervention A		Intervention B	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Age												
17–20	6.8	6.8	6.0	6.6	5.1	6.2	23.4	23.7	19.5	24.1	15.9*	20.6*
21–25	6.6	7.0	6.5	6.6	5.6	6.3	22.1	24.2	20.1	24.7	18.6*	22.5*
26–30	6.6	6.8	6.3	6.4	5.3	6.4	20.7	25.2	21.6	24.5	19.7*	21.5*
31–44	6.0	7.2	5.7	6.1	5.0	6.6	21.3	27.3	19.1	22.3	19.4*	23.6*
Currently married												
No	6.3	5.8***	5.5**	6.5	5.0	6.3	22.5	23.0	19.1	24.4	17.6	22.5
Yes	6.7	7.0***	6.3**	6.5	5.3	6.4	22.0	24.8	20.5	24.2	18.8	22.1
Education												
Less than secondary	6.5	6.9	5.7***	5.9***	5.3	6.2*	21.8	24.6	18.2***	22.0***	18.5	21.0**
Secondary or more	6.7	6.9	6.6***	6.9***	5.2	6.6*	22.2	24.6	21.7***	25.5***	18.7	23.2**
Currently employed												
No	6.7	6.8	6.2	6.4	4.9***	6.3*	21.7	23.6**	19.9	23.6*	17.1***	21.6**
Yes	6.6	7.0	6.2	6.6	6.0	6.7*	22.5	25.8**	21.0	25.3*	21.3***	23.6**
Household wealth												
Poor	—	7.3	—	5.5***	—	6.0***	—	25.3	—	21.0***	—	21.1**
Middle	—	6.8	—	6.5***	—	6.6***	—	24.7	—	24.5***	—	22.6**
Rich	—	6.8	—	7.3***	—	7.0***	—	24.3	—	26.6***	—	23.8**
Total	6.6	6.9	6.2	6.5	5.3***	6.4***	22.1***	24.6***	20.2***	24.2***	18.6***	22.2***
N	245	227	280	278	247	271	245	227	280	278	247	271

* P < .05; ** P < .01; *** P < .001 for comparisons within an intervention group at one point in time.

Third, it is important to note that, at both time points, we observed more evidence of differentials in quality by client characteristics in groups A and B than in the comparison group. For example, at baseline, the counseling score differed by marital status and educational attainment in group A and by employment status in group B; the comparison group showed no evidence of any differences. At follow-up, despite evidence that counseling quality varied by marital status in the comparison group, we observed variations in the counseling score by educational attainment in group A and by both educational attainment and employment status in group B. Similarly, we observed no evidence of differential technical quality in the comparison group at baseline compared to variations by educational attainment in group A and by age and employment status in group B at the same time. At follow-up, technical quality varied by employment status in the comparison group; by educational attainment, employment status, and household wealth in group A; and by age, educational attainment, employment status, and household wealth in group B.

Even though we collected household wealth information only at follow-up, we noted that variations in quality by household wealth showed similar patterns between intervention groups. With no evidence of differences in quality by household wealth in the comparison group, both the technical and counseling scores increased among the wealthier in groups A and B.

One possible explanation for the differences between intervention groups is that clients in the comparison group may be more homogeneous than clients in the other two groups. However, when we examined the data more closely, we did not find evidence of greater homogeneity in client characteristics in the comparison group versus the other two groups (data not shown). In addition, our data did not show that an overall improvement in quality led to lower differentials in quality of care in each of the three groups. When we stratified the sample by each type of service, we still saw little evidence of lower differentials in quality at follow-up versus baseline. We found lower differentials in technical quality in FP and PNC services in group B (the group that received both midwife training in the self-assessment tool and supervisor training) at follow-up compared to that at baseline (not shown). This finding suggests that it may take both training of midwives in the use of a self-assessment tool and supervision to produce an impact on equity in quality of care, if any.

Associations between Client Characteristics and Quality of Care

Table 4 presents results from linear regressions. We regressed departures of counseling and technical quality scores for each client from the mean scores for all clients of the same midwife against departures from the mean of a client's characteristics. As mentioned, a positive value of a coefficient means that, with each unit increase in a client characteristic, the counseling or technical quality score was higher than the mean for all clients of the same midwife; a negative coefficient indicates that the quality score was lower than the mean for all clients of the same midwife. For example, if a coefficient for household wealth is positive, it means that wealthier women received better-than-average quality of care. We present results for the pooled sample. In the case of household wealth, we used only follow-up data.

TABLE 4: FACTORS ASSOCIATED WITH QUALITY OF CARE AMONG CLIENTS OF ALL SERVICES PROVIDED BY PRIVATE MIDWIVES, UGANDA, 2006–2007

Independent Variables	Counseling Score Coefficient (s.e.)				Technical Quality Score Coefficient (s.e.)			
	Pooled Sample		Follow-Up Only		Pooled Sample		Follow-Up Only	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age	-.01 (.01)*	-.01 (.01)*	-.02 (.01)*	-.02 (.01)*	.05 (.02)	.05 (.03)	.03 (.03)	.03 (.03)
Marital status	.06 (.09)	.09 (.09)	.12 (.11)	.10 (.11)	-.46 (.36)	-.45 (.37)	-.63 (.45)	-.63 (.45)
More than secondary education	-.01 (.07)	-.02 (.07)	-.09 (.09)	-.10 (.09)	.56 (.28)*	.57 (.28)*	.14 (.35)	.14 (.35)
Employment status	-.03 (.07)	-.01 (.07)	.02 (.08)	.01 (.08)	.49 (.27)	.49 (.27)	.60 (.33)	.60 (.33)
Household wealth			.06 (.06)	.01 (.09)			.10 (.23)	.05 (.39)
Time (follow-up versus baseline)	.59 (.06)***	.25 (.11)*			3.57 (.25)***	3.28 (.46)***		
Intervention group	—	—	—	—	—	—	—	—
Comparison group	—	—	—	—	—	—	—	—
Intervention group A	.01 (.07)	.01 (.07)	.03 (.08)	.02 (.08)	.01 (.27)	.01 (.27)	.28 (.33)	.28 (.33)
Intervention group B	-.01 (.07)	-.01 (.07)	.36 (.08)***	.36 (.08)***	.01 (.28)	.01 (.28)	.01 (.33)	.01 (.33)
Time * Intervention group								
Comparison group * Time		—				—		
Intervention group A * Time		.06 (.15)				.58 (.61)		
Intervention group B * Time		.96 (.15)***				.22 (.63)		
Household wealth * Intervention group								
Comparison group * Wealth				—				—
Intervention group A * Wealth				-.01 (.13)				.06 (.51)
Intervention group B * Wealth				.21 (.14)				.08 (.54)
Adjusted R-squared	.056	.086	.031	.033	.124	.123	.004	.001
N	1,548	1,548	776	776	1,548	1,548	776	776

* p < .05; **p < .01; *** p < .001

Model 1 includes only the main independent variables, which are client characteristics, time (i.e., a proxy for the interventions), and dummy variables for the three groups (to control for all measured and unmeasured characteristics that may differ between them). Model 2 includes an interaction term between the intervention and time for the pooled sample as well as between the intervention and household wealth for the follow-up sample. The purpose for including the interaction terms is to assess whether the intervention would also lead to decreased differentials in quality of care.

Table 4 shows that, for clients who were older than average, counseling scores were lower than the mean ($p < .05$) among both the pooled and follow-up samples. More specifically, when we stratified clients by services received, ANC counseling scores were lower than average among older clients ($p < .05$; Table 5). It is possible that older clients were likely to have at least one birth before their current pregnancy and that either provider or client might have perceived ANC counseling as relatively less important. Unfortunately, our data did not allow us to test such hypotheses. In neither the pooled nor follow-up sample did we find other evidence of differentials in quality of counseling by any other client characteristics.

We did, however, find some evidence of differentials in technical quality by a client's educational attainment: in the pooled sample, clients with at least secondary schooling received technical procedures of better-than-average quality ($p < .05$). The trend, however, was not consistent in the pooled sample: none of the differences in technical quality was statistically significant when clients were stratified by services received. For the follow-up sample only, we observed evidence of differential ANC technical quality by educational attainment: pregnant women with secondary education or higher received technical services of higher-than-average quality (Table 5).

TABLE 5: FACTORS ASSOCIATED WITH QUALITY OF CARE AMONG CLIENTS OF ANC SERVICES PROVIDED BY PRIVATE MIDWIVES, UGANDA, 2006–2007

Independent Variables	Counseling Score Coefficient (s.e.)				Technical Quality Score Coefficient (s.e.)			
	Pooled Sample		Follow-Up Only		Pooled Sample		Follow-Up Only	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age	-.02 (.01)*	-.03 (.01)*	-.04 (.01)**	-.04 (.01)**	.02 (.05)	.02 (.05)	.04 (.08)	.03 (.09)
Marital status	.05 (.16)	.10 (.15)	.06 (.18)	.06 (.18)	-.16 (.73)	-.20 (.73)	-1.32 (1.37)	-1.32 (1.37)
More than secondary education	-.07 (.11)	-.08 (.10)	-.08 (.14)	-.11 (.14)	.09 (.54)	.09 (.54)	2.13 (1.04)*	2.15 (1.05)*
Employment status	.02 (.12)	.04 (.11)	-.04 (.13)	-.05 (.13)	-.99 (.55)	-1.01 (.55)	-2.38 (1.01)*	-2.38 (1.01)*
Household wealth	—	—	.11 (.10)	-.07 (.15)	—	—	-.15 (.73)	-.05 (1.18)
Time (follow-up versus baseline)	.72 (.10)***	.38 (.18)*	—	—	9.47 (.49)***	9.83 (.90)***	—	—
Intervention group	—	—	—	—	—	—	—	—
Comparison group	—	—	—	—	—	—	—	—
Intervention group A	.08 (.11)	.07 (.11)	.09 (.13)	.09 (.13)	-.29 (.54)	-.28 (.54)	-.01 (.96)	-.01 (.97)
Intervention group B	.01 (.11)	-.02 (.11)	.34 (.12)**	.36 (.12)**	-1.23 (.55)	-1.21 (.55)	-2.01 (.94)*	-2.02 (.94)
Time * Intervention group	—	—	—	—	—	—	—	—
Comparison group * Time	—	—	—	—	—	—	—	—
Intervention group A * Time	—	-.03 (.25)	—	—	—	-.30 (1.20)	—	—
Intervention group B * Time	—	1.05 (.25)***	—	—	—	-.75 (1.24)	—	—
Household wealth * Intervention group	—	—	—	—	—	—	—	—
Comparison group * Wealth	—	—	—	—	—	—	—	—
Intervention group A * Wealth	—	—	—	.20 (.22)	—	—	—	-.04 (1.65)
Intervention group B * Wealth	—	—	—	.41 (.22)†	—	—	—	-.28 (1.69)
Adjusted R-squared	.068	.102	.045	.049	.391	.389	.027	.020
N	607	607	323	323	607	607	323	323

† p < .10; * p < .05; ** p < .01; *** p < .001

We observed no evidence of differential quality of service in either counseling or technical procedures by client's marital and employment status when scores were summed across services. However, different trends emerged when we stratified clients by services received. Among ANC clients at follow-up, employed clients received technical services of significantly lower-than-average quality compared to clients who were not employed ($p < .05$). However, among FP clients, whether for the sample of clients at follow-up or of clients at both baseline and follow-up, we observed the opposite: employed clients received technical services of significantly higher-than-average quality compared to unemployed clients ($p < .05$; Annex A). It seems that clients or midwives might have benefited from clients' ongoing practice of FP and that midwives might not have emphasized ANC services to employed women. Detailed analysis shows that, at both baseline and follow-up, employed clients received much more information compared to unemployed clients with respect to (1) alternative contraceptives if method of choice was unavailable, (2) condom use for dual protection against pregnancy and STIs, and (3) partner involvement in the FP decision-making process. Meanwhile, we observed no clear patterns of differences in PNC services between employed and unemployed clients (Annex B).

Time – a proxy for the interventions – was associated with both improved counseling and technical quality scores ($p < .001$). However, when Model 2 included the interaction between time and intervention group for the pooled sample, we noted that only the interaction term between time and group B was positive and significant while the coefficient for time was considerably reduced. This finding suggests that it was the combination of midwife training and supervision that improved quality. In addition, our analyses of the pooled sample and samples stratified by services showed the same results with only the counseling score. No interaction terms between time and any intervention group were statistically significant in the models for technical quality scores; in other words, we observed no significant differential impacts of interventions on technical quality between study groups. The findings align with our expectations – counseling techniques may be more readily assessed and modified than technical procedures.

5. CONCLUSIONS

Unlike much of the existing literature that has assessed differentials in perceived quality of care (i.e., based on data obtained through client interviews) by client characteristics, the present study is one of a few examining differentials in actual quality (i.e., based on data obtained through direct observations) of RH services provided. The study addresses the failure of the existing literature to evaluate interventions targeting the private sector in terms of equity of service delivery (Patouillard et al. 2007). Data were collected on clients of the same midwives before and after a quality improvement intervention. The intervention involved a self-assessment tool and supervision to help private midwives identify and address areas in need of improved service delivery, in many cases with assistance from supervisors.

The study's multivariate analyses show some evidence of differentials in the quality of services by client characteristics, notably, educational attainment and employment status. The quality of technical ANC services seemed higher among clients with at least secondary schooling compared to clients with lower educational attainment. It may be that more highly educated clients were more likely to know what to expect and to have higher expectations for technical procedures; therefore, they were more likely to ask questions about procedures. It was probably easier for midwives to recognize relatively more educated clients and to anticipate possibly higher expectations for quality. Meanwhile, we observed no differences in the quality of ANC counseling received by women with different levels of education. The results suggest one of two possible scenarios. In the first case, high-quality ANC counseling and general knowledge of ANC may be more widespread than expected despite the likely need for improvements in technical ANC services. In the second case, clients' perception that higher-quality services mean more technical services may result in more highly educated women being more likely than women with lower educational attainment to demand more services.

While technical quality of ANC services was lower among employed versus unemployed women, the evidence for the quality of FP services was the opposite. One explanation could be that employed women were particularly interested in FP services – for job-related reasons – and therefore spent considerable time talking to midwives about such services. At the same time, given the demands of work, employed women might not view ANC as a priority, especially in the case of a normal pregnancy. In these instances, midwives simply responded to clients' needs and desires.

The findings suggest that, in many cases, midwives may simply respond to clients' desire for what they perceive as high-quality services. In fact, the results indicate improved quality of care at follow-up compared with baseline among all clients regardless of SES. This finding suggests that active discrimination by providers toward clients of different SES may play a minimal role in service quality differentials. Indeed, we compared the distribution of educational attainment and household wealth among the study sample with the most recent (2006) Demographic and Health Survey sample and found a wide range of distribution in both samples (not shown). Compared with the national sample, the study sample was slightly more educated but consisted of somewhat more women in the lowest wealth quintile, except in Kampala. It indicates that clients of UPMA midwives were not a homogeneous group, although the sample did not necessarily represent the general population. Given the clientele's diversity, it is likely that differences in clients' demand for services may have led to the observed differential quality of care.

The analysis also shows that, in contrast to what is often presumed, increased quality of services did not necessarily result in decreased quality differentials. Evidence points to differentials in quality of care at both baseline and follow-up, suggesting a need for interventions that reduce differentials in quality of care. Such interventions may need to focus on clients' perceptions of service quality and providers' biases in providing information to clients of different socioeconomic status.

Because it seems that private midwives' response to clients' demands for service was driving differentials in quality of care, one approach to improve equity may be to educate lower-SES clients about health care and services appropriate for their antenatal and family planning needs. If clients are aware of needed services and know what to expect, they are more likely to ask for and receive services that are up to standard. Clients need to understand that quality of health services means more than just providers' responsiveness and shorter waiting times; they should be informed of what constitutes quality of services. To be able to demand better-quality services, lower-SES clients need to be empowered to overcome the social and cultural barriers they often perceive between themselves and providers.

At the same time, providers should keep in mind that simply complying with clients' desires may result in the oversupply or provision of unnecessary services to wealthier clients. Regulations need to ensure that a minimum set of high-quality services is always provided to all clients, many of whom may not be able to judge technical procedures and/or to demand what may be appropriate. A professional network that provides financial and non-financial incentives for providers, such as UPMA, is likely to have a structure that permits the development and maintenance of a set of quality requirements. Finally, training on the needs and attributes of the poor should be targeted to private providers serving predominantly poor clients.

Despite its several findings, the present study has some limitations. First, the analysis is based on average measures of quality of only three clients per midwife. The small number of clients observed on the day of visit may not be representative of all clients served by a midwife. In addition, the small number of clients constrains the study's ability to detect differences in quality of care between clients. Second, the study focuses only on services delivered to clients at midwives' clinics, limiting the analysis to those who have access to and choose to visit private midwives. In addition, as discussed, clients were not representative of the general population. Therefore, the extent to which results may be generalized to differentials in service provision at the population level is limited, particularly given that it is also not clear if the study's midwives and clients are of one ethnicity. Differences in ethnicity and/or the language spoken by midwives and clients could affect client-provider interactions. Finally, it is possible that the midwives performed at a higher level during observation than during routine practice. If so, it is likely that they improved their performance across all clients during observation rather than for selected clients and therefore did not bias the examination of differentials in quality of services.

As the private sector continues to expand its role in health care in many developing countries, it must reduce not only inequities in access to care but also inequities in quality of care. Even with its limitations, the present study indicates that important differentials in the quality of services among the clientele of Uganda's private midwives are unlikely to be reduced solely through quality improvements. Instead, the study suggests that interventions to increase equity in service quality should improve clients' knowledge of quality services while maintaining a set of minimal quality standards among all providers.

ANNEXES

ANNEX A: FACTORS ASSOCIATED WITH QUALITY OF CARE AMONG CLIENTS OF FP SERVICES PROVIDED BY PRIVATE MIDWIVES, UGANDA, 2006–2007

Independent Variables	Counseling Score Coefficient (s.e.)				Technical Quality Score Coefficient (s.e.)			
	Pooled Sample		Follow-Up Only		Pooled Sample		Follow-Up Only	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age	-.02 (.01)	-.01 (.01)	-.01 (.01)	-.01 (.01)	-.09 (.07)	-.09 (.07)	-.11 (.11)	-.12 (.11)
Marital status	.01 (.13)	-.01 (.13)	.07 (.17)	.07 (.17)	.87 (.92)	.87 (.92)	2.05 (1.40)	2.31 (1.41)
More than secondary education	-.06 (.12)	-.05 (.12)	-.05 (.17)	-.06 (.17)	-.24 (.82)	-.23 (.83)	-.41 (1.36)	-.27 (1.37)
Employment status	-.08 (.11)	-.08 (.11)	.02 (.14)	.02 (.14)	1.72 (.76)*	1.73 (.76)*	2.88 (1.15)*	2.98 (1.16)*
Household wealth	—	—	-.03 (.10)	-.08 (.20)	—	—	-.25 (.79)	-2.08 (1.63)
Time (follow-up versus baseline)	.46 (.10)***	.26 (.19)	—	—	2.99 (.68)***	2.89 (1.36)*	—	—
Intervention group								
Comparison group	—	—	—	—	—	—	—	—
Intervention group A	-.20 (.11)	-.19 (.11)	-.07 (.14)	-.07 (.14)	-2.09 (.74)	-2.09 (.74)	-1.51 (1.14)	-1.55 (1.14)
Intervention group B	-.13 (.11)	-.12 (.11)	.22 (.15)	.21 (.15)	-.01 (.79)	-.02 (.80)	.26 (1.23)	.33 (1.25)
Time * Intervention group								
Comparison group * Time		—				—		
Intervention group A * Time		.07(.25)				.55 (1.72)		
Intervention group B * Time		.54 (.26)*				-.41 (1.82)		
Household wealth * Intervention group								
Comparison group * Wealth				—				—
Intervention group A * Wealth				.02 (.24)				2.78 (1.93)
Intervention group B * Wealth				.16 (.26)				1.51 (2.08)
Adjusted R-squared	.042	.050	.010	.010	.055	.052	.021	.021
N	494	494	239	239	494	494	239	239

* P < .05; **P < .01; *** P < .001

ANNEX B: FACTORS ASSOCIATED WITH QUALITY OF CARE AMONG CLIENTS OF PNC SERVICES PROVIDED BY PRIVATE MIDWIVES, UGANDA, 2006–2007

Independent Variables	Counseling Score Coefficient (s.e.)				Technical Quality Score Coefficient (s.e.)			
	Pooled Sample		Follow-Up Only		Pooled Sample		Follow-Up Only	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age	-.01 (.01)	-.01 (.01)	.01 (.01)	.01 (.01)	.10 (.06)	.10 (.06)	.21 (.09)*	.20 (.09)
Marital status	.17 (.21)	.25 (.21)	.12 (.29)	.07 (.29)	.98 (1.09)	.85 (1.09)	.25 (1.73)	.39 (1.75)
More than secondary education	.09 (.13)	.02 (.12)	-.16 (.17)	-.17 (.17)	-.73 (.65)	-.59 (.65)	-.34 (1.03)	-.31 (1.04)
Employment status	.10 (.14)	.16 (.13)	.22 (.18)	.18 (.19)	.14 (.70)	.01 (.70)	-.58 (1.10)	-.47 (1.12)
Household wealth	—	—	.10 (.11)	.09 (.17)	—	—	.77 (.63)	.78 (1.02)
Time (follow-up versus baseline)	.63 (.12)***	.16 (.20)	—	—	1.58 (.62)*	1.72 (1.06)	—	—
Intervention group	—	—	—	—	—	—	—	—
Comparison group	—	—	—	—	—	—	—	—
Intervention group A	.18 (.13)	.19 (.13)	.13 (.17)	.12 (.17)	-.03 (.68)	-.04 (.68)	.86 (1.04)	.89 (1.04)
Intervention group B	.15 (.13)	.15 (.12)	.57 (.17)	.57 (.17)**	-1.07 (.66)	-1.08 (.66)	-1.36 (1.01)	-1.37 (1.01)
Time * Intervention group								
Comparison group * Time		—				—		
Intervention group A* Time		.06 (.29)				1.35 (1.52)		
Intervention group B* Time		1.30 (.28)***				-1.67 (1.49)		
Household wealth * Intervention group								
Comparison group * Wealth				—				—
Intervention group A * Wealth				-.15 (.24)				.40 (1.44)
Intervention group B * Wealth				.21 (.25)				-.58 (1.50)
Adjusted R-squared	.051	.102	.037	.037	.024	.028	.037	.030
N	447	447	214	214	447	447	214	214

* P < .05; **P < .01; *** P < .001

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