Published by Oxford University Press in association with The London School of Hygiene and Tropical Medicine *Health Policy and Planning* 2015;**30**:356–367

doi:10.1093/heapol/czu019

Does human resource management improve family planning service quality? Analysis from the Kenya Service Provision Assessment 2010

Nandita Thatte* and Yoonjoung Choi

Office of Population and Reproductive Health, Bureau for Global Health, US Agency for International Development, 1300 Pennsylvania Avenue, NW, Room 3.6.146, Washington, DC 20004, USA

*Corresponding author. Office of Population and Reproductive Health, Bureau for Global Health, US Agency for International Development, 1300 Pennsylvania Avenue, NW, Room 3.6.146, Washington, DC 20004, USA. E-mail: nthatte@usaid.gov

Accepted 25 February 2014

Introduction Human resource (HR) management is a priority for health systems strengthening in developing countries, yet few studies have empirically examined associations with service quality. The purpose of this study was to assess the relationship between HR management and family planning (FP) service quality.

Methods Data came from the 2010 Kenya Service Provision Assessment, a nationally representative health facility assessment. In total, 912 FP consultations from 301 facilities were analysed. Four indices were created to measure quality on reproductive history taking, physical examination, sexually transmitted infections prevention and pill/injectable specific counselling. HR management variables included training in the past year, any and supportive (i.e. with feedback, technical updates and discussion) in-person supervision in the past 6 months and having a written job description. Multivariate linear regression analyses were conducted to estimate coefficients of HR management variables on each of the four quality indices, adjusting for background characteristics of clients, provider and facilities.

Results The level of service quality ranged from 16 to 53 out of a maximum score of 100 across the indices. Fifty-two per cent of consultations were done by providers who received supportive in-person supervision in the previous 6 months. In 23% and 38% of consultations, the provider was trained in the past year and had a written job description, respectively. Multivariate analyses indicated that having a written job description was associated with higher service quality in history taking, physical examination and the pill/injectable specific counselling. Other HR management variables were not significantly associated with service quality.

Conclusion Having a written job description was significantly associated with higher service quality and may be a useful tool for strengthening management practices. The details of such job descriptions and the quality of other management indicators should be explored to better understand the relationship between HR management and FP service quality.

Keywords Health systems, human resource management, family planning, Service Provision Assessment, quality of care

KEY MESSAGES

- Service Provision Assessment data provide a representative sample of facility-based data to assess service quality.
- Overall family planning (FP) service quality among providers in Kenyan facilities was low.
- Supervision and training of providers were not significantly associated with better FP service quality.
- Having a written job description was significantly associated with better FP service quality and may be a useful tool to help strengthen human resource management practices for service providers.

Introduction

Strengthening health systems has been widely considered a key investment to achieving global health goals (WHO 2006a; Brinkerhoff and Bossert 2010; Frenk 2010; Ghaffar *et al.* 2013). In 2006, the World Health Organization (WHO) identified 'six building blocks' to help define a 'well-functioning' health system: health financing, health services, human resources (HR), commodities/medicines, health information systems, and leadership and governance (WHO 2006). As part of WHO framework for strengthening health systems, quality of health services was identified as a key factor to ensure improved health outcomes (WHO 2007). As investments in health systems increase, there is a need to identify practices that will help ensure that as service delivery interventions expand and scale up the quality of services is also maintained (Leatherman *et al.* 2010).

In addition to being one of the WHO health systems building blocks, addressing HR has also been recognized as a priority for achieving Millennium Development Goals (Chen *et al.* 2004). Globally, there is a severe shortage of health workers and these shortages are unevenly concentrated in low- and middle-income countries (Chen *et al.* 2004). Research has demonstrated clear correlations between a high density of health workers and improvements in maternal, child and infant survival (Anand and Bärnighausen 2004; Chen *et al.* 2004). However, the health worker crisis is not only a result of low numbers but also poor distribution of existing health workers, high turnover/migration, substandard training and skill imbalances (Gupta *et al.* 2003; Chen *et al.* 2004). These health worker challenges all contribute to the many barriers to delivering quality health services in developing country settings (Chen *et al.* 2004; Rowe *et al.* 2005; Haines *et al.* 2007). Thus, in addition to increasing the number of health workers, there has been an emphasis on improving the efficient use of and management capacity of the existing health workforce. HR management for health workers is a critical component for ensuring quality health service delivery (Kabene 2006) and strengthening management skills among health workers and can contribute to increased efficiency of services, motivation and retention of clinical health workers (Willis-Shattuck *et al.* 2008). However, demonstrating the measurable impact of management on quality of care is challenging for several reasons. First, there is little consensus on what constitutes 'management' for health care service delivery. Research that has shown significant correlations between management and quality of care has included a wide range of management practices from process measures such as patient intake to performance level measures such as training and supervision (McConnell *et al.* 2013; Powell-Jackson 2013). Second, it is difficult to quantify and assess the quality of management practices (Bloom and Van Reenan 2007). Supervision practices and training curricula may vary significantly depending on resources possibly affecting the quality of these practices. Finally, many of these studies have assessed management as a set of practices and have not articulated what specific aspects of management (i.e. supervision, training, etc.) have the most effect on health worker performance or quality of care, limiting programmatic implications for such findings (Dieleman *et al.* 2009; McConnell *et al.* 2013; Powell-Jackson 2013).

According to the WHO, two key indicators can help assess supportive HR management practices: (1) facility supervisory visit in last 6 months and (2) report of provider receiving pre-service or routine in-service training, and personal supervision (WHO 2010). A systematic review by Bosch-Capblanch and Garner (2008) found that the majority of studies assessing the effects of primary health care supervision in developing countries lacked a thorough description of the components that comprised a 'supervisory visit' making it difficult to articulate the true impact of supervision on both management and health outcomes (Bosch-Capblanch and Garner 2008). And, although there is some evidence that 'supportive supervision' or supervision coupled with feedback and open discussion can improve health worker performance (Tavrow *et al.* 2002; Egger *et al.* 2005; Rowe *et al.* 2005), authoritarian or controlling supervision models, where the emphasis is on finding faults and instituting punitive measures with no recourse, can actually have negative effects on health worker performance and motivation (PATH CsVPa 2003). Clearly defining and understanding the scope of supervision is critical. Research also suggests the effects of supervision to be greater if providers have specific and formal responsibilities outlined in clear job descriptions to implement change (Pattinson 2006; Waddington *et al.* 2007).

Family planning (FP) is a critical intervention to achieving Millennium Development Goals. Investments in FP programmes can prevent 32% of global maternal deaths and 10% of child deaths (Cleland *et al.* 2008) worldwide. Improved quality of FP services is associated with greater contraceptive acceptance and continuation (Jain *et al.* 2012). With the launch of FP 2020, a global initiative to reach 120 million women and girls with access to voluntary FP services by the year 2020, there is a renewed interest in FP globally (DFID 2012; Jacobstein *et al.* 2013). Understanding the impact of improved management on quality FP service delivery is essential. FP studies have shown some positive effects of supportive supervision and training on improving provider/client

communication, increasing knowledge and increasing health worker productivity as measured by time use study (Combary *et al.* 1999; Trap *et al.* 2001; Frimpong *et al.* 2011). However, these effects have not filtered down to the client level to increase contraceptive use or improve the quality of the service provided (Reynolds *et al.* 2008; Jain *et al.* 2012).

The purpose of this analysis was to assess the relationship between HR management and FP service quality at facilities in Kenya. Secondary analysis of the 2010 Kenya Service Provision Assessment (SPA) dataset was used to address the following hypotheses:

(1) Supportive supervision will be positively associated with FP service quality.
(2) Recent training in FP will be positively associated with FP service quality.
(3) Written job descriptions for providers will be positively associated with FP service quality.

Methods

Study setting

With a population of over 40 million people, Kenya is one of the most populous countries in Eastern Africa. According to the 2008 Demographic Health Survey, literacy rates are relatively high for the region at 79% for women and 85% for men. The maternal mortality rate is estimated at 488 per 100 000 live births and infant mortality rate is estimated at 54 deaths per 1000 live births. The total fertility rate is 4.6 children per woman, and HIV prevalence among 15- to 49-year-old adults is 6.3% [Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010].

Over half of all health services in Kenya are accessed through public sector facilities (Chankova *et al.* 2009; National Coordinating Agency for Population and Development [Kenya] *et al.* 2011). Health facilities range from lower level dispensaries to secondary level health centres and district facilities, and finally large national level teaching or private hospitals. As in many other sub-Saharan African countries, HR limitations are a large barrier for the provision of quality health services in Kenya (Ndavi *et al.* 2009). In 2005, the Ministry of Health in Kenya conducted a mapping exercise and found only three doctors and 49 nurses per 100 000 people—significantly lower than the WHO recommended ratio of 143 nurses to 100 000 people (Dal Poz *et al.* 2007; Chankova *et al.* 2009). Exacerbating the low numbers of health professionals is a highly inequitable distribution of health workers in Kenya with the majority practising in urban centres despite the majority of the population living in rural areas (Diallo *et al.* 2003). The Ministry of Health has recognized the need for an improved health workforce, and there have been efforts to increase both the numbers of clinical workers as well as support for leadership and management for health workers (Kenya Ministry of Health 2007; Ndavi *et al.* 2009; Nzinga *et al.* 2009; Seims *et al.* 2012).

Utilization of facility-based reproductive health care is relatively high compared with other countries in sub-Saharan Africa. About 92% of women in Kenya have at least one antenatal care visit, and 43% of deliveries occur in a health facility. With a modern contraceptive prevalence rate of 39%, 82% of users obtain their methods from health facilities (57% and 25% from public and private facilities, respectively) and 17% obtain them from pharmacies [James and Muchiri 2006; Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010]. Of those using modern contraception, the majority use male condoms (18%) followed by injectables (16.8%) and oral contraceptive pills (5.8%) [Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010]. A minimal percent of users get contraceptive methods through the community-based distribution system [Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010]. However, about one-quarter of women still have an unmet need for FP meaning that they wish to limit or space their pregnancy but are not using a contraceptive method [Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010].

Description of data

Data came from the Kenya SPA conducted in 2010. The SPA is a national-level sample survey of formal sector health facilities that includes both public and non-public facilities as well as primary, secondary and tertiary levels facilities. The SPA is conducted as part of the MEASURE Demographic and Health Surveys (DHS) project, supported by the US Agency for International Development (MEASURE DHS 2013). Standardized methodology and instruments are used, providing comparable data across time and countries. As with other household surveys the MEASURE DHS project provides technical assistance to host country implementing partners to conduct the SPA, ensuring data quality and comparability, and data are freely available to the public (MEASURE DHS 2013).

SPA provides comprehensive data on availability of services at facilities, readiness of facilities to provide essential health services, and quality of care, using four types of questionnaires: (1) facility inventory, (2) consultation observation protocols, (3) client exit interviews and (4) health worker interview. Facility audit collects data on available HR, basic amenities, infection control measures, and availability of essential equipment, commodities and medicines. Then, a systematic sample of patients is selected in four select services—FP, antenatal care, sick child care and sexually transmitted infections (STI), in order to observe the clinical consultations and to interview the clients. The observation protocols are used to assess providers' adherence to clinical guidelines, and exit interviews are conducted to collect background information on the clients and perceived satisfaction. Finally, for a representative sample of providers at each facility as well as those whose service provision was observed, health worker interviews are done to collect data on background characteristics as well as training and supervision. The sample sizes for facilities, observation and exit interview, and health workers are determined to provide estimates for select indicators by managing authority as well as facility level.

SPA data have been used to address various health systems research issues including medicine availability (Choi and Ametepi 2013), quality of care (Hong *et al.* 2011; Sipsma *et al.* 2013) and facility management practices (Cherlin *et al.* 2011).

The 2010 Kenya SPA was the third conducted in the country, following the 1999 Kenya SPA and the 2004 Kenya SPA.

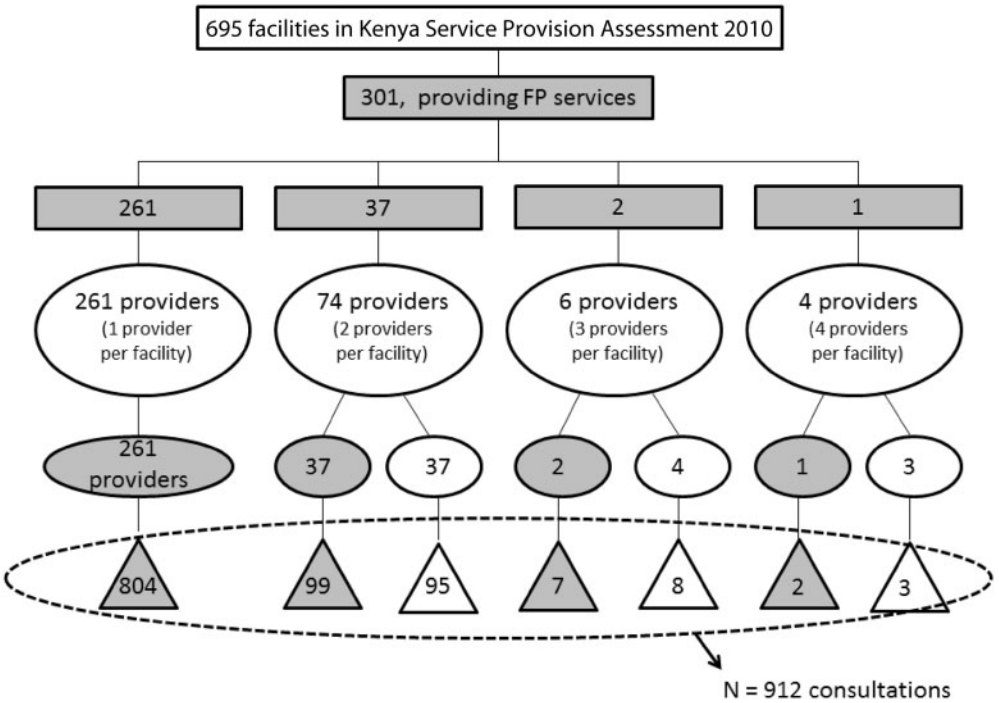

Figure 1 Analysis sample. All numbers are unweighted. Rectangle, facility; circle, provider; triangle, consultation. A total of 912 consultations in grey-shaded triangles were included in analyses. Consultations in white triangles were excluded from analysis due to potential inter-provider and inter-facility correlation in outcome

Between January and May of 2010, a nationally representative sample of 695 facilities was assessed, including hospitals, health centres, maternity clinics, dispensaries, and stand-alone voluntary counselling and testing clinics. Among them, 301 facilities provided FP services. Regarding FP services, surveyors collected data on types of FP services offered at the facility as well as availability of clinical guidelines, basic equipment and contraceptive methods to provide those services. Then, depending on the reported average number of FP clients per day, up to four providers per facility were selected for observation. For each selected provider, up to five consultations were systematically chosen for observation—that is, every *n*th consultation depending on the reported average number of FP clients. Surveyors observed a total of 1018 FP consultations by 345 providers (Figure 1), who were then all included in the health worker interview. During the consultation, surveyors observed whether providers asked about reproductive and clinical history (eight items), performed physical examination (six items) and counselled about prevention of STI (five items) (Table 1). Then, depending on the method prescribed, it was further observed whether they provided method-specific information. For example, in 906 consultations, pills or injectables were prescribed and six method-specific counselling points were observed (Table 1).

Finally, in the health workers' interviews, surveyors collected information on background characteristics and employment such as the length of experience overall as well as in the current position. Data on HR management included receipt of training of specific services within the last 1 and 3 years before the survey, receipt of personal supervision within the last 6 months and existence of a written job description for the current position.

Measurement

Dependent variables

In order to measure FP service quality, we assessed providers' adherence to FP guidelines for counselling and screening. By adding the binary outcome of each observation item (0: no, 1: yes) (Table 1), three discrete variables were created to measure adherence to guidelines on history taking (range: 0–8), physical examination (range: 0–6) and counselling for STI prevention (range: 0–5). Among consultations in which pills or injectables were prescribed, an additional index was constructed to measure adherence to method-specific counselling (range: 0–7). Then, each of the four indices was standardized into a scale of 0–100 for comparative purposes.

Independent variables

To measure HR management, binary variables were created on training of select FP topics in the past year, in-person supervision in the past 6 months and having a written job description. The three FP topics included general counselling for FP, clinical management for FP methods (including side effects) and FP for HIV positive women. In addition to the reporting of in-person supervision, further variables were created to assess how 'supportive' the supervision was based on the content of the visit. In trying to stay consistent with definitions for supportive supervision, supervision components included the provision of feedback, provision of technical updates and discussion of problems (Marquez and Kean 2002; PATH CsVPa 2003; WHO 2006). In-person supervision with all three components was categorized as supportive supervision.

Control variables

In order to assess and control for background characteristics of clients, providers and facilities, further variables were created.

Table 1 FP service quality indices

For all consultations:

Reproductive history taking: asked about or the client volunteered information on the following items:

1. Age of client
2. Number of living children
3. Last delivery date or age of youngest child
4. History of complications with pregnancy
5. Desire for a child or more children
6. Desired timing for birth of next child
7. Breastfeeding status
8. Regularity of menstrual cycle

Physical examination: performed any of the following physical examinations or asked any of the following health questions:

1. Took the client's blood pressure
2. Weighed the client
3. Asked the client about smoking
4. Asked the client about symptoms of STIs
5. Asked the client about chronic illnesses (health disease, diabetes, hypertension, liver or jaundice problem, breast cancer)
6. Looked at the clients health care (either before beginning the consultation or while collecting information or examining the client)

STI prevention discussed any of these issues related to sexual partners and choice of family planning method:

1. Partner's attitude towards family planning
2. Partner status (number of sexual partners for client or for client's partner, partner's absence)
3. Risk of STIs/HIV
4. Use of condoms to prevent STIs/HIV
5. Using condoms as along with another method (dual method) to prevent pregnancy and STIs/HIV

For consultations in which pills or injectables were prescribed:

Method-specific information discussed:

1. When to take (pill daily; injection either every month or every 2 months or every 3 months)
2. Changes that may occur with menstruation (decreased flow or amenorrhoea, spotting)
3. Initial side effects that may occur (such as nausea, weight gain and breast tenderness)
4. What to do if forget pill or do not get injection on time
5. Methods does not protect against STIs
6. Should return to clinic if side effects continue
7. A return visit

We constructed variables on clients' age (5-year categorical), education (<primary school completion vs ≥primary school completion) and new clients (yes vs no). Variables on health workers included sex, age (10-year categorical), length of experience at current position (<5 years vs ≥5 years) and occupation. There were 11 occupations reported among interviewed health workers, and they were classified into four groups of occupations based on the level of training and qualification: (1) specialist, medical officer, clinical officer and nurses with a Bachelors of Science in Nursing (BSN nurse); (2) registered nurses and registered midwives; (3) enrolled nurses and enrolled midwives; and (4) nurse aid, lab technician and others. BSN nurse were categorized with the highest skilled providers given that they are university educated and have more training than registered or enrolled nurses (M Solomon, personal communication). Registered nurses and midwives were categorized separately from enrolled nurses and midwives in order to account for the new requirements and higher training standards set for the 'registered' cadres of health workers compared with the previously categorized 'enrolled' cadres (M Solomon, personal communication). At the facility level, variables included sector (public vs non-public), level (primary, secondary or tertiary), availability of all three short-term contraceptive methods (yes vs no), and availability of clinical guidelines on both FP and STI prevention (yes vs no). The three short-term contraceptive methods included pills, condoms and injectables,[1] and availability refers to at least one valid unit observed for each method on the day of survey.

Analysis

The unit of analysis was a consultation, and analyses were restricted to 912 consultations out of 1018 observed in total (Figure 1). In most facilities ($n = 261$), one FP provider was selected for the SPA data collection. However in 40 of the facilities providing FP services, two to four providers were selected.

Table 2 Percentage of family planning consultations by background characteristics of clients, providers and facilities ($n = 912$)

Background characteristics	%	SE
Client level		
Age (years)		
≤20	15.5	1.7
21–25	32.1	2.1
26–30	28.7	2.1
31–35	11.3	1.3
≥36	12.4	1.6
Education		
≥Primary completion	67.3	2.2
≥Secondary completion	22.1	1.7
New patient	30.7	2.1
Provider level		
Age (years)		
≤30	17.3	1.7
31–40	27.0	2.0
41–50	38.2	2.2
51+	17.4	1.7
Female	76.8	1.9
Experience ≥5 years at current position	38.5	2.3
Occupation		
Doctor/BSN	3.0	0.8
Registered nurse/registered midwife	36.7	2.1
Enrolled nurse/enrolled midwife	59.5	2.2
Other	0.8	0.4
Facility level		
Managing authority: non-public	20.4	1.9
Level		
Primary	41.9	2.4
Secondary	24.2	1.9
Tertiary	33.8	1.8
Have clinical guidelines on		
Family planning	57.1	2.3
STI prevention	46.9	2.2
Both family planning and STI prevention	34.5	2.1
Have short-term contraceptive methods in stock		
Pills	90.0	1.2
Condoms	88.0	1.3
Injectable	88.3	1.3
All three above	82.0	1.6

SE, Standard error.

In these 40 facilities, we randomly selected one provider for our analysis sample. Thus, the analysis sample included one provider per facility, and an average of 3.0 consultations were observed per provider (Standard Deviation (SD): 1.8, $n = 301$). Exploratory analyses suggested no meaningful difference in results between the analysis ($n = 912$) and the full sample ($n = 1018$).

Descriptive analyses were conducted to assess characteristics of the analysis sample. Distributions of the quality indices were examined and differential quality by HR management variables was tested using *t*-tests. Finally, multivariate linear regression analyses were conducted to estimate the coefficient of HR management variables on each of the four quality indices, adjusting for background characteristics described earlier. A recent study noted better productivity of health workers earlier in the day compared with later (Frimpong *et al.* 2011) so an additional variable was created to measure the order of observation within each provider and was introduced to control for any differential behaviour of the provider as observations during the day progressed. In order to adjust for clustering at provider/facility level, generalized estimating equation model was used. All descriptive analyses were adjusted for sampling weight, provided in the data files. A *P*-value of < 0.05 was considered statistically significant. STATA 11.0 statistical software (Stata Corporation, College Station, TX, USA) was used for the analysis.

Table 3 Percentage of family planning consultations by providers who had following human resources management characteristics ($n = 912$)

	%	SE
Provider trained within the last year on:		
General counselling for family planning	29.2	2.0
Clinical management for family planning methods, including side effect	25.7	1.9
Family planning for HIV positive women	26.2	1.9
All three family topics above	23.3	1.8
Provider received supervision within last 6 months		
In person	82.1	1.6
In person with feedback	70.3	2.0
In person with updates	56.3	2.3
In person with problem discussion	75.0	2.0
In person with feedback, updates and problem discussion[a]	52.1	2.3
Provider had written job description of current position	37.7	2.2

[a]Supportive supervision.
SE, Standard error.

Results

Sixty per cent of clients were women between 21 and 30 years old and 30% of consultations were for new FP clients (Table 2). The majority of consultations was provided by enrolled nurses or midwives (60%), occurred at public sector facilities (80%) and occurred in primary-level facilities (42%). Table 3 shows HR management characteristics. Less than one-quarter (23%) of consultations were conducted by providers who had been trained on the three FP topics in the past year. For the majority of consultations, providers had received some in-person supervision in the previous 6 months (82%), but only 52% of consultations were done by providers who had received supportive supervision. Only 38% of consultations were conducted by providers who had written job descriptions.

Figure 2 illustrates the distribution of the four quality indices on a scale of 0–100. Overall, the mean quality score was low across the four indices. The average scores were 33 for history

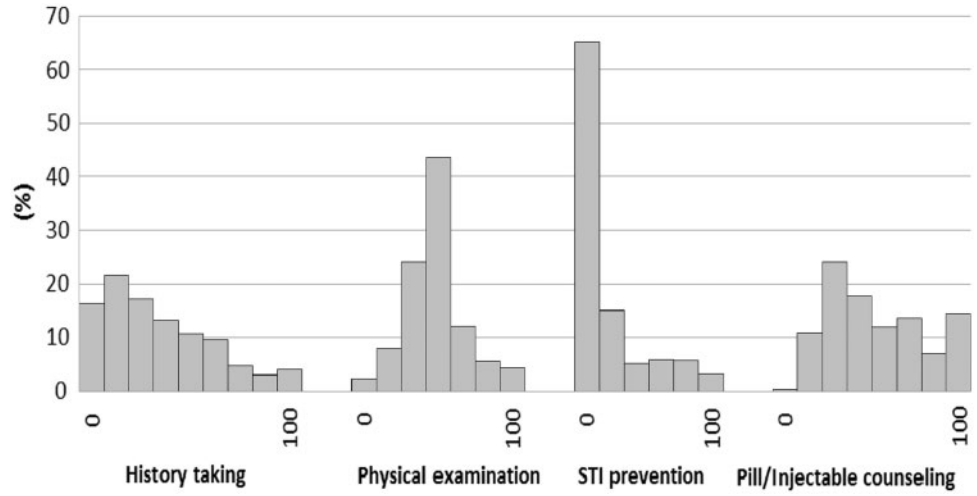

Figure 2 Histogram of quality index scores (range: 0–100)

Table 4 Quality index scores (0–100) among family planning consultations by human resource management characteristics ($n = 912$)

	Among all consultations							Among consultations where pills/injectable described		
	n	Quality index						*n*	Quality index	
		History taking		Physical exam		STI prevention			Method-specific discussion	
		Mean	SE	Mean	SE	Mean	SE		Mean	SE
All	912	33.3	1.3	48.2	0.9	16.3	1.3	817	53.0	1.4
Trained on all three FP topics[a] within 1 year										
No	691	33.0	1.6	48.7	1.0	15.6	1.5	617	53.7	1.6
Yes	221	34.4	2.0	46.6	1.7	18.5	2.5	200	50.7	2.4
Received supervision in person within 6 months										
No	191	34.1	3.5	49.5	2.2	13.6	3.1	170	53.3	3.4
Yes, but not supportive	261	32.3	2.0	49.4	1.8	14.7	2.2	228	49.5	2.4
Yes, supportive[b]	460	33.6	1.8	47.1	1.1	18.1	1.8	419	54.9	1.8
Have written job description of current position										
No	551	28.3	1.4	45.2	0.9	14.3	1.4	498	50.4	1.6
Yes	361	41.6[c]	2.3	53.2[c]	1.7	19.5	2.4	319	57.5	2.3

[a]Three FP topics include: general counselling for family planning; clinical management for family planning methods, including side effect; and family planning for HIV positive women.

[b]In-person feedback supervision with feedback, updates and problem discussion.

[c]*t*-Test *P*-value < 0.05.

taking, 48 for physical examination, 16 for STI prevention counselling and 53 for pill/injectable specific counselling. Bivariate analysis of the HR management characteristics on service quality indices showed no significant difference in history taking, physical exam or pill/injectable specific counselling by training or supervision status (Table 4). However, in consultations by providers with written job descriptions, quality scores for history taking and physical examination were significantly higher than their counterparts without job descriptions (41.6% vs 28.3% and 53.2% vs 45.2%, respectively).

Finally, multivariate regression analysis suggested that after controlling for all other factors, consultations by providers that had written job descriptions had significantly higher scores in three indices. Coefficients of HR management variables on each of the four quality indices, adjusting for background characteristics of clients, provider and facilities are highlighted in Appendix 1. In consultations provided by those with written job descriptions, compared with their counterparts, quality index score was higher by 11 points in history taking, 9 points in physical examination, and 8 points in counselling on pills and injectables (Table 5). Neither supervision nor training had any significant association with service quality indices (Table 5).

Discussion

The role of HR management is widely recognized as an important investment to improve FP services in developing country settings. This analysis provides empirical evidence on

Table 5 Adjusted coefficient on service quality index scores by providers' human resource management characteristics: multivariates linear regression

	History taking ($n = 893$)		Physical examination ($n = 893$)		STI prevention ($n = 893$)		Pill/injectable specific counselling ($n = 798$)	
	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value
Trained on all thee FP topics[a] within 1 year								
No (reference)								
Yes	1.7	0.563	−2.1	0.379	5.7	0.059	0.3	0.922
Received supervision in person within 6 months								
No (reference)								
Yes, any	2.8	0.453	0.9	0.780	2.6	0.502	0.7	0.861
Yes, supportive[b] (interaction)	−3.1	0.298	−4.7	0.052	0.4	0.899	0.8	0.815
Have written job description of current position								
No (reference)								
Yes	10.5	0.000[c]	8.8	0.000[c]	4.3	0.106	8.4	0.004[c]

See Appendix 1 for full multivariate linear regression results.

[a]Three FP topics include: general counselling for family planning; clinical management for family planning methods, including side effect; and family planning for HIV positive women.

[b]In-person feedback supervision with feedback, updates and problem discussion.

[c]*t*-Test *P*-value < 0.05.

the potential role of HR management practices on FP service quality. In Kenya, few FP consultations were conducted by providers who practised under good HR management conditions. Only 23% of consultations were conducted by providers that had been trained in the past year, 38% had written job descriptions and about half (52%) had received supportive supervision in the past 6 months. Overall quality of FP service delivery was alarmingly low. On average, providers met only about half of pill/injectable specific counselling guidelines and even less for physical examination, history taking and STI prevention counselling. Having a written job description was significantly associated with higher service quality, but neither training nor supportive supervision showed any relationship with service quality indices.

There were no significant differences in quality of FP services by facility in which consultations occurred. Consultations from both public and private facilities and those from primary to tertiary levels exhibited similar service quality measures and similar HR management measures. This is consistent with previous assessments in Kenya that have shown no difference in quality between public and private facilities. However, previous analysis has noted that public sector facilities are more likely to have better management structures in place whereas private facilities were better at managing 'interpersonal aspects of care' such as client satisfaction (Agha and Do 2008), which was not observed in this analysis.

Previous research has indicated that training alone, while potentially beneficial in the short term, has little effect on long-term provider performance unless it is coupled with other management interventions (Dieleman and Harnmeijer 2006). Similarly, supervision has effects on provider performance and retention only when supervision includes opportunities to provide feedback and is conducted with an understanding of mutual respect or support between the provider and supervisor (Dieleman *et al.* 2009; Frimpong *et al.* 2011). A recent supervisor training intervention in Kenya indicated improvements in provider performance. The robust training programme targeted towards supervisors included many important elements such as how to define, assess and evaluate provider performance. In addition, supervisors were given tools to supplement training such as checklists, and examples of a job description. Providers in the intervention group performed significantly better in quality measures around infection control, communication with clients and maintaining confidentiality. Although results were positive, it was unclear whether supplemental tools such as the job descriptions and checklists were used uniformly and which specific aspects of the supervisor training resulted in the positive outcomes (Reynolds *et al.* 2008).

Interestingly, our analysis revealed that having a written job description was significantly associated with higher service quality even when controlling for all other factors. Job descriptions that provide health workers with clear roles and responsibilities have been associated with achieving organizational goals not only because they help clarify roles but they also ensure a means of accountability when responsibilities are not fulfilled (Franco *et al.* 2002). And, when combined with a strong support system and enabling environment, job descriptions can contribute to increased worker satisfaction, motivation, retention and even service quality (WHO 2006). A simple intervention study in Indonesia that developed job descriptions for nurses and midwives in a package of in-service training found that the package led to greater satisfaction among providers and improved quality of health services (Dolea and Zurn 2004). Our analysis showed the effect of job descriptions on better quality services even when controlling for supervision and training. It is possible that facilities that have provider job description are more managerially competent and therefore attract and retain higher performing service providers.

An important strength of this study is the use of SPA data, a nationally representative facility assessment. The analysis relied on multiple portions of the SPA such as the facility audit, direct observation of consultations and the health worker interview.

In addition, measures of service quality were based on provider observations rather than self-report which eliminated reporting biases. In addition, HR management was separated into key intervention components (training, supervision and job description) in order to enable analysis of each component on quality. Articulating the effects of individual management components is important to inform programmatic improvements. Isolating 'having a written job description' was also noteworthy given how important yet often overlooked job descriptions are as part HR management, and the limited evidence of this practice on service quality.

There are also limitations to this study. First, analysis of cross-sectional survey data prohibits any conclusions to be made on causation and is limited to rule out any reverse causality such as poorly performing health workers receiving more training and/or supervision. Second, all health worker level HR management information was dichotomous and self-reported, and there was no assessment of the quality of the supervision, training, or the written job description. The conceptual framework of the analysis assumes that adequate HR management practices improve health workers' knowledge and competencies—which was not measured in the data—and thus improve service quality. It is possible that receiving training and supervision was not associated with health workers' knowledge and competencies thus qualitative studies that further explore the content and quality of supervision and training is warranted. Third, the management data collected in the SPA are limited and may not capture the breadth of all management practices. In particular, facility-level variables in the current analyses are limited to measure and control for other management characteristics that may be associated with quality of care and/or HR management. Thus, our estimated differential quality of care score by HR management variables might have been biased due to such unobserved characteristics at the facility level. Fourth, this analysis did not control for patient load, but it is possible that quality may be compromised when faced with a heavy load of patients. Finally, provider behaviour may be different when not observed and absolute quality may actually be lower. Nevertheless, our focus was on differences by HR management variables, and we assume that the relative difference would be similar whether under observation or not.

Conclusions

Written job descriptions may provide clear roles and responsibilities for providers contributing to improved health worker performance, and may be an important practice to enhancing good management and ultimately improving service delivery. Supervision and training are still critical aspects of HR management, and better measurement of the quality of all these management practices is imperative to fully understand the complex relationship of HR management and service quality. There has been some research on the impact of creating competition to improve quality of management practices in facility settings (Bloom *et al.* 2011), thus performance-based schemes focused on management outcomes may be an area for further exploration. Additional qualitative research to understanding how job descriptions are used for monitoring performance is needed as it may be that job descriptions are 'necessary but not sufficient' to ensure good quality FP services.

Disclosure

Views and opinions expressed in this paper are the authors'. They do not necessarily represent the views and opinions of the US Agency for International Development.

Conflict of interest statement: None declared.

Supplementary Data

Supplementary data are available at *HEAPOL* online.

Endnote

[1] Facilities provide, prescribe, or counsel clients on any of the following contraceptive methods: contraceptive pills (combined or progestin-only), injectables (combined or progestin-only), implants, intrauterine devices (IUCDs), male condoms, or female condoms (Kenya SPA 2010, p. 90). Analysis included only short-term methods (pills, injectables and condoms), which are the most commonly used methods in Kenya.

References

Agha S, Do M. 2008. The quality of family planning services and client satisfaction in the public and private sectors in Kenya. *International Journal for Quality in Health Care* **21**: 87–96.

Anand S, Bärnighausen T. 2004. Human resources and health outcomes: cross-country econometric study. *Lancet* **364**: 1603–9.

Bloom N, Propper C, Seiler S, Van Reenan J. 2011. *The Impact of Competition on Management Quality: Evidence from Public Hospitals*. London England: Center for Economic Performance. Discussion Paper 983.

Bloom N, Van Reenan J. 2007. Measuring and explaining management practices across firms and countries. *Quarterly Journal of Economics* **122**: 1351–408.

Brinkerhoff DW, Bossert TJ. 2010. *Health Governance: Concepts, Experience, and Programming Options: Interventions to Improve Governance in Health Systems*. Bethesda Maryland USA: US Agency for International Development (USAID) Publication Health Systems 20/20.

Bosch-Capblanch X, Garner P. 2008. Primary health care supervision in developing countries. *Tropical Medicine and International Health* **13**: 369–83.

Chankova S, Muchiri S, Kombe G. 2009. Health workforce attrition in the public sector in Kenya: a look at the reasons. *Human Resources for Health* **7**: 1–8.

Chen L, Evans T, Anand S *et al.* 2004. Human resources for health: overcoming the crisis. *Lancet* **364**: 1984–90.

Cherlin EJ, Allam AA, Linnander EL *et al.* 2011. Inputs to quality: supervision, management, and community involvement in health facilities in Egypt in 2004. *BMC Health Services Research* **20**: 282.

Choi Y, Ametepi P. 2013. Comparison of medicine availability measurements at health facilities: evidence from Service Provision Assessment surveys in five sub-Saharan African countries. *BMC Health Services Research* **13**: 266.

Cleland J, Bernstein S, Ezeh A *et al.* 2008. Family planning: the unfinished agenda. *Lancet* **368**: 1810–27.

Combary P, Newman C, Glover K. 1999. *Technical Report 7: Study of the Effects of Technical Supervision Training on CBD Supervisor's Performance in Seven Regions of Ghana*. Chapel Hill: Intrahealth.

Dal Poz ML, Kinfu Y, Dräger S, Kunjumen T. 2007. *Counting Health Workers: Definitions, Data, Methods and Global Results*. Geneva, Switzerland: Department of Human Resources for Health, World Health Organization.

Department for International Development (DFID). 2012. *Landmark Summit Puts Women at Heart of Global Health Agenda: Global Leaders Unite to Provide 120 Million Women in the World's Poorest Countries with Access to Contraceptives by 2020*. London: London Summit on Family Planning.

Diallo K, Zurn P, Gupta N, Dal Poz M. 2003. Monitoring and evaluation of human resources for health: an international perspective. *Human Resources for Health* **1**: 3.

Dieleman M, Gerretsen B, Jan van der Wilt G. 2009. Human resource management interventions to improve health workers' performance in low and middle income countries: a realist review. *Health Research Policy and Systems* **7**: 7.

Dieleman M, Harnmeijer JW. 2006. *Improving Health Worker Performance: In Search of Promising Practices*. KIT—Royal Tropical Institute, The Netherlands for the WHO, Geneva.

Dolea C, Zurn P. 2004. *Mission to Evaluate the Project of Clinical Professional Development and Management System (CPDMS) for Nurses and Midwives in Hospitals and Health Centers in Indonesia*. Geneva: World Health Organization.

Egger D, Travis P, Dovlo D, Hawken L. 2005. *Strengthening Management in Low-Income Countries*. Geneva: World Health Organization (WHO/EIP/health systems/2005.1).

Franco LM, Bennett S, Kanfer R; Health Sector Reform and Public Sector Health Worker Motivation. 2002. A conceptual framework. *Social Science and Medicine* **54**: 1255–66.

Frenk J. 2010. The global health system: strengthening national health systems as the next step for global progress. *PLoS Medicine* **7**: 1–3.

Frimpong JA, Helleringer S, Awoonor-Williams JK, Yeji F, Phillips JF. 2011. Does supervision improve health worker productivity? Evidence from the Upper East Region of Ghana. *Tropical Medicine and International Health* **16**: 1225–33.

Ghaffar A, Tran NT, Reddy KS *et al.* 2013. Changing mindsets in health policy and systems research. *Lancet* **381**: 436–7.

Gupta N, Zurn P, Diallo K, Dal Poz MR. 2003. Uses of population census data for monitoring geographical imbalance in the health workforce: snapshots from three developing countries. *International Journal of Equity in Health* **29**: 11.

Haines A, Sanders D, Lehmann U *et al.* 2007. Achieving child survival goals: potential contributions of community health workers. *Lancet* **369**: 2121–31.

Hong R, Mishra V, Fronczak N. 2011. Impact of a quality improvement programme on family planning services in Egypt. *Eastern Mediterranean Health Journal* **17**: 4–10.

Jacobstein R, Curtis C, Spieler J, Radloff S. 2013. Meeting the need for modern contraception: effective solutions to a pressing global challenge. *International Journal of Gynaecology and Obstetrics* **121**: 9–15.

Jain AK, Ramarao S, Kim J, Costello M. 2012. Evaluation of an intervention to improve quality of care in family planning programme in the Philippines. *Journal of Biosocial Science* **44**: 27–41.

James J, Muchiri S. 2006. *Human Resource Mapping of the Health Sector in Kenya: The Foundation for Effective HR Management*. Nairobi, Kenya: Technical Brief, HLSP, 1–4.

Kabene SM, Orchard C, Howard JM, Soriano MA, Leduc R. 2006. The importance of human resources management in health care: a global context. *Hum Resour Health.* **27**: 20.

Kenya Ministry of Health. 2007. *Human Resources for Health Strategic Plan*. Nairobi, Kenya.

Kenya National Bureau of Statistics (KNBS) and ICF Macro. 2010. *Kenya Demographic and Health Survey 2008–09*. Calverton, MD: KNBS and ICF Macro.

Leatherman S, Ferris TG, Berwick D, Omaswa F, Crisp N. 2010. The role of quality improvement in strengthening health systems in developing countries. *International Journal for Quality in Health Care* **22**: 237–43.

Marquez L, Kean L. 2002. Making supervision supportive and sustainable: new approaches to old problems. *Supplement to Population Reports*, Washington DC: MAQ Paper No 4.

McConnell KJ, Lindrooth RC, Wholev DR, Maddox TM, Bloom N. 2013. Management practices and the quality of care in cardiac units. *JAMA Internal Medicine* **173**: 684–92.

MEASURE DHS. 2013. *Demographic and Health Surveys*. www.measuredhs.com, accessed 31 July 2013.

National Coordinating Agency for Population and Development [Kenya], Ministry of Health, Central Bureau of Statistics, ORC Macro. 2011. *Kenya Services Provision Assessment Survey 2010*. Nairobi, Kenya. Ministry of Public Health and Sanitation, Kenya National Bureau of Statistics and ICF Macro.

National Coordinating Agency for Population and Development (NCAPD) [Kenya], Ministry of Medical Services (MOMS) [Kenya], Ministry of Public Health and Sanitation (MOPHS) [Kenya], Kenya National Bureau of Statistics (KNBS) [Kenya], ICF Macro. 2011. *Kenya Services Provision Assessment Survey 2010*. Nairobi, Kenya: National Coordinating Agency for Population and Development, Ministry of Medical Services, Ministry of Public Health and Sanitation, Kenya National Bureau of Statistics, and ICF Macro.

Ndavi PM, Ogola S, Kizito PM, Johnson K. 2009. *Decentralizing Kenya's Health Management System: An Evaluation*. Kenya Working Papers No. 1. Calverton, MD, USA: Macro International Inc.

Nzinga J, Mbindyo P, Mbaabu L, Warira A, English M. 2009. Documenting the experiences of health workers expected to implement guidelines during an intervention study in Kenyan hospitals. *Implementation Science* **4**: 44.

PATH Children's Vaccine Program (PATH CsVPa). 2003. *Guidelines for Implementing Supportive Supervision: A Step-by-Step Guide with Tools to Support Immunization*. http://www.path.org/vaccineresources/files/Guidelines_for_Supportive_Supervision.pdf, accessed 8 July 2013.

Pattinson RC. 2006. *Audit and Feedback: Effects on Professional Practice and Health-Care Outcomes: RHL Commentary*. The WHO Reproductive Health Library. Geneva: World Health Organization.

Powell-Jackson T, Acharya A, Mills A. 2013. An assessment of the quality of primary health care in India. *Economic & Political Weekly* **17**: 53–61.

Reynolds H, Toroitich-Ruto C, Nasution M, Beaston-Blaakman A, Janowitz B. 2008. Effectiveness of training supervisors to improve reproductive health quality of care: a cluster-randomized trial in Kenya. *Health Policy and Planning* **23**: 56–66.

Rowe AK, de Savigny D, Lanata CF, Victora CG. 2005. How can we achieve and maintain high-quality performance of health workers in low-resource settings? *Lancet* **366**: 1026–35.

Seims LR, Alegre JC, Murei L *et al.* 2012. Strengthening management and leadership practices to increase health-service delivery in Kenya: an evidence-based approach. *Human Resources for Health* **10**: 10–25.

Sipsma HL, Curry LA, Kakoma JB *et al.* 2013. Identifying characteristics associated with performing recommended practices in maternal and newborn care among health facilities in Rwanda: a cross-sectional study. *Human Resources for Health* **9**: 1–13.

Tavrow P, Kim YM, Malianga L. 2002. Measuring the quality of supervisor–provider interactions in health care facilities in Zimbabwe. *International Journal for Quality in Health Care* **14**: 57–66.

Trap B, Todd CH, Moore H, Laing R. 2001. The impact of supervision on stock management and adherence in treatment guidelines: a randomized controlled trial. *Health Policy and Planning* **16**: 273–80.

Waddington C, Egger D, Travis P, Hawken L, Dovlo D. 2007. *Towards Better Leadership and Management in Health: Report on an International*

Consultation on Strengthening Leadership and Management in Low-Income Countries. Making Health Systems Work: Working paper No. 10, WHO/HSS/health systems/2007.3. Geneva, Switzerland: World Health Organization.

WHO. 2006a. Chapter 4: Making the most of the existing health workforce. *World Health Report*. http://www.who.int/whr/2006/06_chap4_en.pdf, accessed 8 July 2013.

WHO. 2006b. Quality of care: a process for making strategic choices in health systems. http://www.who.int/management/quality/assurance/QualityCare_B.Def.pdf, accessed 18 July 2013.

WHO. 2007. Everybody's business: strengthening health systems to improve health outcomes: WHO framework for action. http://www.who.int/healthsystems/strategy/everybodys_business.pdf, accessed 5 May 2013.

WHO. 2010. Monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies. http://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf, accessed 5 May 2013.

Willis-Shattuck M, Bidwell P, Thomas S *et al.* 2008. Motivation and retention of health workers in developing countries: a systematic review. *BMC Health Services Research* **8**: 247.

Appendix

Appendix 1 Adjusted coefficient on service quality index scores: multivariate linear regression

	History taking ($n=893$)		**Physical examination** ($n=893$)		**STI prevention** ($n=893$)		**Pill/injectable specific counselling** ($n=798$)	
	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value
Client level								
First observation on the survey day								
No (reference)	–		–		–		–	
Yes	0.8	0.568	1.5	0.165	3.1	0.034[c]	1.2	0.412
New client								
No (reference)	–		–		–		–	
Yes	19.2	0.000	4.4	0.000[c]	9.7	0.000[c]	13.3	0.000[c]
Education								
Less than primary completion (reference)	–		–		–		–	
≥Primary completion	2.9	0.095	4.9	0.000[c]	2.5	0.153	4.6	0.011[c]
≥Secondary completion	3.0	0.111	−1.7	0.237	0.7	0.708	0.3	0.874
Age (years)								
≤20	1.1	0.650	−0.4	0.830	−1.1	0.633	2.4	0.326
21–25 (reference)	–		–		–		–	
26–30	−2.6	0.159	−1.5	0.291	−1.1	0.535	0.0	0.995
31–35	−4.2	0.061	−1.7	0.323	0.4	0.871	−1.3	0.601
≥36	−3.0	0.226	2.8	0.128	1.1	0.649	−1.1	0.672
Provider level								
Sex								
Male (reference)	–		–		–		–	
Female	−4.7	0.146	−3.6	0.171	−4.6	0.163	−7.5	0.037[c]
Experience ≥ 5 years at current position								
No (reference)	–		–		–		–	
Yes	2.2	0.468	3.9	0.106	6.5	0.034[c]	6.2	0.061
Age (years)								
≤30	−3.5	0.347	−1.4	0.657	−1.7	0.656	−1.0	0.819
31–40 (reference)	–		–		–		–	
41–50	2.8	0.396	0.4	0.881	5.5	0.104	−1.9	0.616
>51	2.8	0.500	−0.8	0.802	1.2	0.778	−2.3	0.605
Occupation								
Medical doctor, BSN	6.1	0.417	−3.4	0.573	2.2	0.769	−11.5	0.175
Registered nurse, registered midwife	6.7	0.027[c]	3.6	0.140	6.9	0.026[c]	7.8	0.021[c]
Enrolled nurse, enrolled midwife (reference)	–		–		–		–	
Other	−13.7	0.161	−17.1	0.030[c]	−9.1	0.358	−18.5	0.078

(continued)

Appendix 1 Continued

	History taking ($n=893$)		Physical examination ($n=893$)		STI prevention ($n=893$)		Pill/injectable specific counselling ($n=798$)	
	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value	Coefficient	*P*-value
Provider level: human resources management								
Trained on all thee FP topics within 1 year[a]								
No (reference)	–		–		–		–	
Yes	1.7	0.563	−2.1	0.379	5.7	0.059	0.3	0.922
Received supervision in person within 6 months								
No (reference)	–		–		–		–	
Yes, any	2.8	0.453	0.9	0.780	2.6	0.502	0.7	0.861
Yes, supportive[b] (interaction)	−3.1	0.298	−4.7	0.052	0.4	0.899	0.8	0.815
Have written job description of current position								
No (reference)	–		–		–		–	
Yes	10.5	0.000[c]	8.8	0.000[c]	4.3	0.106	8.4	0.004[c]
Facility level								
Managing authority								
Public (reference)	–		–		–		–	
Non-public	−0.8	0.820	2.5	0.370	−7.6	0.028[c]	−2.2	0.564
Type								
Primary (reference)	–		–		–		–	
Health centre	−4.7	0.253	−1.2	0.730	−2.0	0.627	0.7	0.879
Hospital	−3.7	0.286	1.1	0.683	−1.7	0.619	3.3	0.398
Has condoms, pills, injectables in stock								
No (reference)	–		–		–		–	
Yes	2.6	0.417	3.2	0.226	5.1	0.127	−0.6	0.868
Has a clinical guideline for both STI and FP services								
No (reference)	–		–		–		–	
Yes	−1.1	0.682	5.8	0.008[c]	2.2	0.435	0.4	0.882
Constant	19.7	0.002[c]	37.7	0.000[c]	−1.3	0.843	41.0	0.000[c]

[a]Three FP topics include: general counselling for family planning; clinical management for family planning methods, including side effect; and family planning for HIV positive women.

[b]In-person feedback supervision with feedback, updates and problem discussion.

[c]*t*-Test *P*-value < 0.05.