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PAA 2016 Abstract

Individual and Facility-Level Determinants of Contraceptive Use among Young Women in Malawi

Background

Although Malawi's total fertility rate (TFR) remains high at 5.7 births per woman as of 2010,¹ the country appears to be at the incipient stage of a fertility transition. TFR fell from 6.7 in 1992,² while ever use of modern contraception increased dramatically from 6.3% in 1992² to 61.8% in 2010.¹ To understand what is driving this transition, it is important to identify the characteristics of young women who use contraception at the beginning of their reproductive lives, which will provide a clearer picture of the changing nature of fertility in Malawi.³⁻⁵

There has been much debate in the demographic literature regarding the relative contributions of access to quality family planning services vs. individual characteristics, such as women's education, in decreasing fertility in developing countries.^{6,7} Policymakers who believe greater use of contraception is due to increasing individual demand advocate investments in economic and social development.⁷⁻¹¹ Others assert that improving the accessibility, availability, and quality of family planning services will increase contraceptive use.⁸ Previous analyses attempting to quantify the effect of availability of family planning services on fertility have typically focused on all reproductive aged women,^{6,9,12} or have used data from Asia,^{13,14} despite the fact that younger women may behave differently and have different experiences interacting with family planning providers than older women, and despite the fact that sub-Saharan Africa's fertility transition may present unique challenges.^{15,16}

Main Question

We will assess the relative contributions of individual characteristics and availability of services to young women's contraceptive use in Malawi through linkage of the Malawi Schooling and Adolescent Study (MSAS) 2013 survey data with the Malawi Service Provision Assessment (SPA)¹⁷ collected in 2013-2014 as part of the country's Demographic and Health Survey.

Data

The MSAS is a longitudinal survey that followed 2,649 adolescents aged 14-17 when interviewed at baseline in 2007. The in-school sample was comprised of 1,764 students at baseline who were randomly selected from enrollment rosters in randomly selected primary schools in Balaka and Machinga, two rural districts in southern Malawi. Also selected were 885 adolescents not enrolled in school who lived in those schools' catchment villages. The survey collected data on schooling, marital and birth histories, contraceptive use, and fertility intentions, among other topics. Audio computer-assisted self interviews (ACASI) were conducted for sensitive topics, including sexual behavior.

The Malawi SPA was designed to be a census of all formal health care facilities in the country. It collected data from 977 health facilities of varying types—e.g. hospital, health center, and clinic—under various managing authorities—e.g. government, Christian Health Association of Malawi, and the private sector. It included a facility inventory, health provider interview, observation protocols, and patient exit interviews.

These analyses combine Round 6 data collected from MSAS females in 2013 when respondents were aged 20-23 with 2013-2014 SPA data, offering an assessment of the service environment at the time that MSAS respondents reported contraceptive use. MSAS data on contraception at Round 6 included knowledge, ever use, and current use of methods, place from which methods were obtained, partner's knowledge of respondent's use of family planning, who made the decision to use contraception, and knowledge of a place to obtain contraception among non-users.

Methods

In this analysis, we initially examine the datasets separately. The MSAS sample used was limited to those who were not currently pregnant and had never had sex ($n = 999$). We describe key demographic and socioeconomic characteristics of young women in the MSAS sample, such as marital status, parity, and education, and assess associations between these characteristics and current contraceptive use. Using the SPA dataset, we also present characteristics of facilities providing family planning services¹, such as facility type and location. Additionally, we describe both the number of methods offered (meaning a facility provided, prescribed, counselled on or referred for a method), and the number available (meaning on the day of the survey the interviewer observed at least one of a given method in stock and not expired).

Next, we link the datasets using GPS coordinates. The MSAS coordinates were documented at the location of the interview (primarily the respondent's home). If the respondents had not moved between Rounds 5 and 6, Round 5 (2011) coordinates were used. If respondents had moved, coordinates from Round 6 (2013) were used.² The SPA dataset included the GPS coordinates of each facility. Thus, we

¹ Described in the DHS as including modern contraceptive methods, fertility awareness methods, and male or female surgical sterilization.

² The majority of GPS coordinates at Round 6 were documented in degrees and decimal minutes, however, a few interviewers documented in decimal degrees. For respondents who did not move between rounds, we have used

were able to determine the distance between each MSAS participant and the nearest health facility that provided family planning services.

In this paper, variance-components models will be used to evaluate the proportion of variation in contraceptive use attributable to individual-level vs. facility-level factors.¹⁸ Multilevel logistic regression models will be used to assess the relative contribution of individual and facility-level characteristics to the probability of using contraception in Round 6 of MSAS. In addition to demographic and socioeconomic characteristics, distance to the nearest health facility will be included as an individual-level determinant of contraceptive use. Facility-level characteristics will include facility type, number of methods provided, and quality score, among others. Additionally, we will make use of the fact that MSAS respondents who were currently using contraception in 2013 indicated where they obtained their current method, and match these data to the SPA facilities to assess the facility-level factors that influence where young women obtain contraception in our sample. Among women who were currently using contraception, we will also assess the characteristics of the facilities from which they obtained contraception compared to the facility nearest them (if these differed). Factors such as distance, availability of methods, and facility quality will be examined.

Preliminary Results

Among the MSAS sample, 56.8% (n=568) were currently using a modern method of contraception (including pill, IUD, injectable, implant, male condom, or female condom) at the time they were interviewed in 2013 when aged 20-23 (Table 1).

Bivariate results from MSAS data showed characteristics of women who currently were and were not using contraception. A majority, 88.7%, of users were currently married, as opposed to 62.6% of non-users ($p<0.001$). Among the ever-married, age at marriage was lower among those using contraception ($p<0.001$). Almost all (98.2%) of those using contraception had ever given birth, as compared to 80% of non-users ($p<0.001$). Furthermore, among those who had ever given birth, mean parity was higher among users than non-users (2 vs. 1.7, $p<0.001$). Reflecting differences in marital status, contraceptive users were less likely to be in school than non-users (1.9% vs. 10.7%, $p<0.001$), which likely explains why non-users had higher grade attainment and scored better on Chichewa reading comprehension measures than users ($p<0.001$ and $p<0.1$, respectively). (Preliminary multivariable models show that grade attainment was not significantly associated with contraceptive use in our sample controlling for other demographic variables.) Among women using contraception in 2013, the most common methods used were injectables (74.7% of users), followed by implants (15.9%) (Table 2). Distance to the nearest facility offering either any family planning services or offering both implants and injectables was not associated with contraceptive use in bivariate analyses (Table 1).

Round 5 coordinates, as they were all documented in degrees and decimal minutes. For those who had moved, we have identified the interviewers who appear to have recorded in decimal degrees and used that metric for respondents they interviewed. We have done further consistency checks as well to ensure the most accurate coordinates were used.

SPA data showed that 82.9% (n=810) of facilities in Malawi offered some type of family planning services. Of these facilities (shown in Table 3), most were health centers (51.1%), followed by clinics (39.1%), and hospitals (9.7%). The majority of facilities were government-run (55.7%) and located in rural areas (70.7%). The most widely offered and available methods were injectables and pills. For comparison, the characteristics of the 133 facilities that offered some type of family planning services and were nearest to MSAS respondents based on GPS coordinates are listed in Table 3 as well. Figure 1 is a map of these facilities and the location of MSAS respondents highlighting the two districts in Malawi from which we obtained our baseline sample. While the sample has been highly mobile, approximately 87% (n=865) of the respondents lived in Balaka and Machinga districts at the time of interview in 2013. As shown on the map, there are 12 facilities in Balaka and 26 in Machinga that offer family planning services.

Preliminary variance-components models indicated that approximately 4.6% of the variation in contraceptive use among MSAS respondents was attributable to facility-level characteristics ($\rho=0.046$; $p<0.01$), when facilities that provided both injectables and implants were linked to MSAS respondents based on geographic proximity. Future analyses using multilevel multivariable logistic regression models will assess the contribution of individual and facility-level characteristics to the probability of using contraception.

Finally, MSAS facility codes are being matched to SPA facility codes to produce descriptive results of the characteristics of the facilities where respondents obtained contraception.

Discussion

Contraceptive users were much more likely than non-users to be married and to have given birth. Stigmatization of premarital sex may be a barrier to contraceptive use.³ Also, those who have given birth may more likely be offered contraception than those who have not. Such provider “bias” might partially be addressed by sensitizing and expanding programs themselves. However, if absence of use prior to first birth is primarily due to social context, specifically stigma of unmarried use and pressure on married women to demonstrate fertility,¹⁹ altering the service environment may have little effect.

Multivariable models will shed more light on patterns that emerged in the bivariate data. It is notable that age at marriage was higher among those who did not use contraception. This may be because those who married at younger ages had had more children than those who married at older ages, and were therefore more likely to use contraception. It may also be that those who married later had their first birth at an older age and, because of pressure to bear children, had less desire to space their births. Our multivariable models will further explore the relationship between education and contraceptive use in our sample.

Results from the multilevel multivariable logistic regression models will provide evidence of the relative contribution to contraceptive use of individual demographic characteristics versus characteristics of the service environment among young women in this population, with potentially important policy implications. If the service environment is an important determinant of contraceptive use, improving the availability of contraception and quality of services could reduce fertility by addressing unmet need; if

individual-level characteristics primarily drive contraceptive use, altering the service environment may do little to increase uptake of contraception. In that case, family planning programs in this setting might be more successful if they were to focus on increasing individual demand for contraception and addressing societal norms that influence fertility preferences.

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Table 1. MSAS sample characteristics by contraceptive use in Round 6 (2013)

Current Use of Contraception	No n=431	Yes n=568	p-value
Age (mean)	21.3	21.3	
Current marital status (%)			***
Never married	20.4	2.6	
Currently married	62.6	88.7	
Separated, Divorced, or Widowed	16.9	8.6	
Age at Marriage (among ever married) (mean)	18.2	17.6	***
Ever given birth (%)	80.0	98.2	***
Parity (among ever given birth) (mean)	1.7	2.0	***
Household items count (mean)	3.8	3.6	
Last grade attended in school (mean)	7.4	6.7	***
Currently attending school (%)	10.7	1.9	***
Age at school leaving (among those who left school) (mean)	19.6	19.2	
Chichewa reading comprehension (out of 6 items) (mean)	4.3	4.1	†
Tribe: Yao (%)	45.7	40.3	†
Distance to nearest facility offering family planning services (%)			
0-4.9 km	66.6	64.4	
5-9.9 km	30.8	31.5	
10-15 km	2.6	4.1	
Distance to nearest facility offering both implant and injectable (%)			
0-4.9 km	54.9	55.2	
5-9.9 km	39.9	37.2	
10-14.9 km	5.3	6.7	
15-20 km	0.0	0.9	

***p<.001; **p<.01; *p<.05; †p<.10

Table 2. Contraceptive method currently used among female MSAS respondents reporting use of a modern method at Round 6 (2013)
(% among those using contraception)

Method	n	%
Injectable	422	74.7
Implant	89	15.9
Male condom	39	7.0
Pill	14	2.5
IUD	9	1.6
Female condom	4	0.7

Table 3. Characteristics of Malawian facilities that offered family planning services according to the 2013 DHS SPA (%)

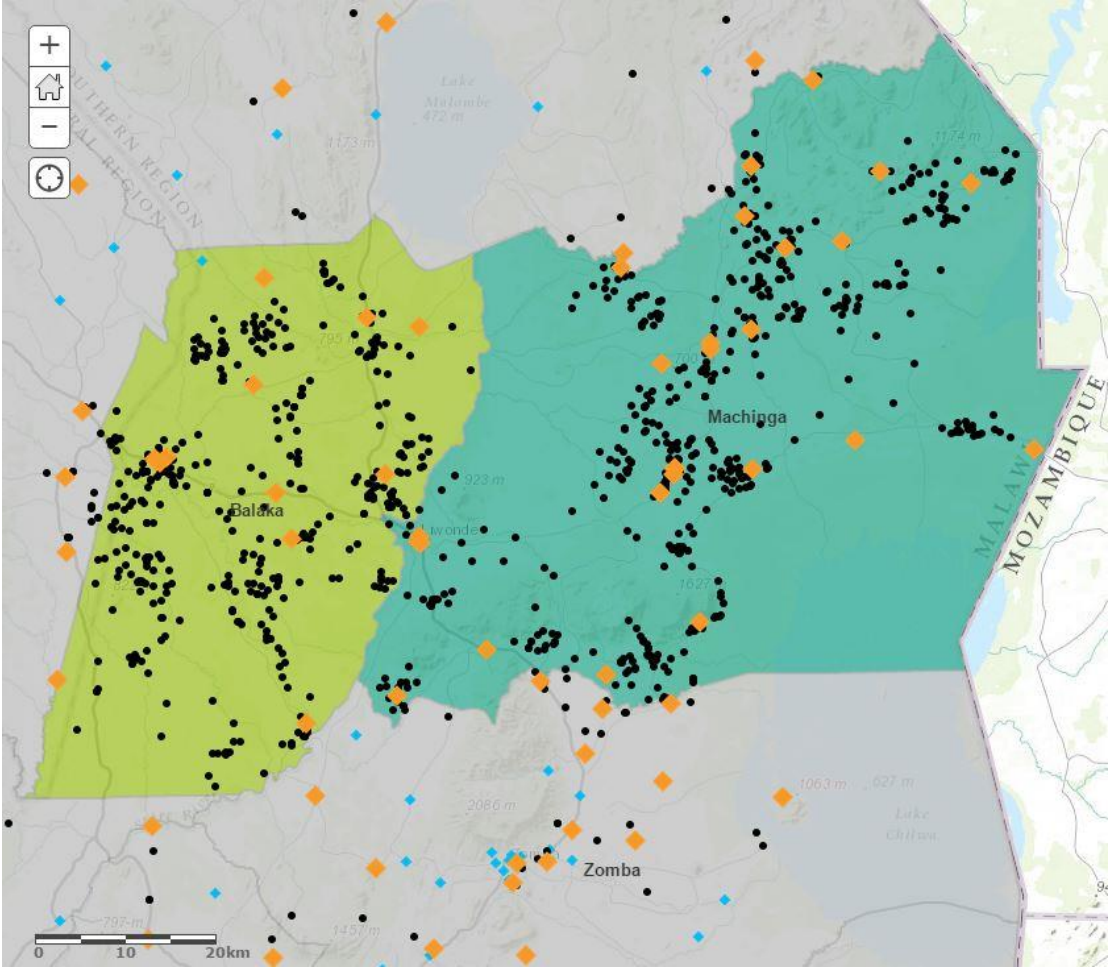
	Malawi ^a n=810		Nearest to MSAS Sample n=133	
Facility type				
Hospital	9.7		14.3	
Health center	51.1		47.4	
Clinic/Other	39.1		38.3	
Managing authority				
Government/Public	55.7		54.1	
Christian Health Association of Malawi (CHAM)	10.8		12.0	
Private for profit	21.1		28.6	
NGO/Other faith-based organization	6.6		5.3	
Company	5.8		0.0	
Urban	29.3		34.6	
Rural	70.7		65.4	
Number of methods offered ^b (mean)	7.4		6.8	
Number of methods available ^c (mean)	4.9		4.9	
Methods	Offered	Available	Offered	Available
Injectable	98.9	89.4	99.2	87.9
Implant	80.4	67.5	80.5	72.0
Male condom	88.2	68.3	82.0	63.6
Pill	95.6	84.6	91.7	81.8
IUD	40.5	14.3	35.3	16.7
Female condom	81.7	61.3	79.7	63.6

^aWeighted by SPA sample weight

^bOffered includes providing, prescribing, counseling or referring for a method

^cAvailable requires at least one of method type in stock and not expired on day of survey

Figure 1. Map of MSAS respondents and health facilities that provided family planning services in Balaka and Machinga Districts, 2013³



- Legend
- Health facilities nearest MSAS respondents
 - Other health facilities
 - MSAS Respondents

³ The map focuses on Balaka and Machinga districts because the entire sample resided there at baseline, and the largest concentration of MSAS respondents continued to live there at Round 6.