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Bridging user and provider perspectives: Family planning access and utilization in rural Mozambique

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Abstract

Objectives—To examine how the contraceptive behavior of women in rural southern Mozambique is shaped by their individual and household characteristics; community characteristics; access to family planning services; and characteristics of health facilities.

Methods—Quantitative and qualitative data were collected mostly between January 20 and December 15, 2011, in rural areas of four districts in Gaza Province, Mozambique. The data included: a retrospective household-based survey of women of reproductive age (the analytical sample consisted of 1554 non-pregnant women in marital union); qualitative interviews with a subsample of surveyed women; a survey of communities where the women resided (n = 56); and a survey of all health facilities in the study area (n = 56). Binomial and multinomial logistic models were fitted to predict current use of modern contraceptive methods. Statistical analyses were complemented by insights from qualitative data.

Results—Positive associations were detected between contraceptive use and education, household wealth, and perceived HIV infection status. Distance to the clinic was negatively associated with contraceptive use. These effects were additive, with some varying by type of contraceptive method. Examination of qualitative data highlighted frequent cognitive dissonance between service providers and users.

Conclusion—A simultaneous consideration of user-level and provider-level perspectives on contraceptive use improves our understanding of contraceptive dynamics and can usefully inform policy.

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Keywords

Contraceptive methods; Family planning; Mozambique; Mixed methods; Provider-user interaction; Rural areas; Sub-Saharan Africa

1. Introduction

Despite advances in the provision of effective contraceptive options to couples living in rural Sub-Saharan Africa, the prevalence of modern contraception in this region remains low [1–3]. Limited contraceptive use is attributable in part to individual and household characteristics, such as low levels of education among women, scarce financial resources, and poor communication between husbands and wives [3–5]. At the same time, institutional factors related to healthcare systems—such as limited or unreliable supplies of contraception and difficulty in accessing clinics—have been identified as important determinants of contraceptive prevalence [3,6]. Individual and institutional factors might also interact to contribute to low contraceptive prevalence; for example, if the existing counseling and information services are insufficient to overcome fears about the adverse effects of contraception or disapproval of family planning. Most studies examine individual-level and/or household-level determinants of contraceptive use (e.g. parity, marital status, education, and wealth) separately from institutional characteristics (e.g. contraceptive supply and the location and set-up of family planning clinics). However, an integrated analysis of different types of data that bridge the perspectives of both users and providers is necessary to fully understand the complex dynamics of the demand for, and the use of, family planning services. Such analysis might consequently inform the design of effective policy interventions.

The aim of the present study was to assess determinants of contraceptive behavior and barriers to family planning uptake among women in rural Mozambique by considering individual, household, community, and institutional characteristics derived from diverse types of data.

2. Materials and methods

A retrospective analysis was performed using data collected in rural areas of four districts in Gaza Province, southern Mozambique, mostly between January 20 and December 15, 2011. The project was approved by the Institutional Review Board of Arizona State University, Tempe, AZ, USA, and the Research Ethics Board of the Ministry of Health, Maputo, Mozambique. Oral informed consent was obtained from all participants.

The present study area comprised a population of approximately 650 000, and was characterized by a total fertility rate of 5.3 children per woman [7]. The local economy is defined by low-yield subsistence agriculture and large-scale labor migration of men primarily to neighboring South Africa. Gaza Province has the highest adult HIV prevalence among all of Mozambique's provinces (25%), partly owing to large-scale labor migration [8]. Health services in the study area were provided through state-run clinics; all reproductive and sexual health services, including family planning, were offered in those

clinics free of charge, and rural women tended to use services at their nearest clinics, unless referred elsewhere.

Data assessed in the present study included individual, household, community, and institutional components. The individual and household data came from the third wave of a longitudinal survey of rural women (the first and second waves were conducted in 2006 and 2009, respectively). The total sample of the 2011 wave comprised 1978 women of reproductive age residing in 56 rural communities (villages) in the four selected districts of Gaza (Chibuto, Chókwè, Guijà, and Mandlakazi). A survey of each of the 56 communities was carried out in parallel with the longitudinal survey of women; this survey collected basic information on each community's economy and infrastructure. For the institutional component, all state-run clinics that provided family planning and other sexual and reproductive health services within the study area (n = 56) were surveyed. The geographic coordinates of both the household survey respondents' residences and the locations of the clinics were recorded. All data collection was carried out by the Centre for African Studies of Eduardo Mondlane University, Maputo, Mozambique, under a contract with Arizona State University.

The present study sample included non-pregnant respondents who were in a marital partnership at the time of data collection (n = 1554). The analyses used logistic regression to model two outcomes: current use of any modern contraceptive and current method-specific contraceptive use. The first outcome was a dichotomy; namely, using any modern method of contraception at the time of survey versus not using any modern method. The second outcome was a trichotomy; namely, oral contraceptives versus other long-duration methods (injections of medroxyprogesterone, intrauterine devices, and tubal ligation) versus none of these methods (this category included a small number of women who reported using male condoms or other methods). These outcomes were defined on the basis of a corresponding question in the 2011 survey of rural women. Outcomes were modeled as a function of individual and household characteristics, community characteristics, distance to clinics that offered family planning services, and characteristics of these clinics.

The individual-level covariates included age, number of living children, years of education, and employment outside of subsistence agriculture. Although the survey respondents were not tested for HIV, they were asked to assess their likelihood of infection. Based on the responses to that question, a dichotomous variable was created that distinguished respondents who thought that they were certainly, likely, or possibly infected with HIV from those who thought that it was impossible for them to be infected. Although such assessment might not accurately reflect the actual HIV status of individual women, it is directly relevant to their reproductive preferences and choices because such preferences and choices are formulated on the basis of what women know or think about their health.

The marital union and household covariates included type of current marital union (monogamous or polygamous); partner's migration status (migrant or not), and household material status (a four-level scale based on the household's ownership of key consumer assets). The model controlled for the woman's desire not to have another child in the near future. This covariate was a dichotomy; namely, she wanted to have another child within 2

years versus she wanted to have another child later, did not want to have a child at all, or was not sure.

The community-level covariates were public transportation fare in the local currency (Mozambican metical) to the nearest town (a measure of remoteness) and difficulty in getting to the nearest village during the rainy season (expressed as a three-level scale on the basis of the community survey response). These covariates captured some of the structural characteristics of respondents' communities.

The institutional covariates included distance to the nearest clinic in kilometers; a composite indicator of services at the nearest clinic that incorporated clinic size, type of physical facility, and approximate ratio of patients to staff; and the number of weeks that contraceptives were out of stock at the nearest clinic (overall and by method) in a 12-month period. The service indicator and the contraceptive stock measures were constructed on the basis of the clinic survey data. For a small number of respondents (n = 109), their nearest clinic was located outside of the present study area and no information was available about the levels of contraceptive stock. Consequently, values for the number of weeks that contraceptives were out of stock were imputed on the basis of the data from similar clinics within the study area. The statistical tests used accounted for this imputation. The binomial and multinomial logistic regression models were generated using Stata version 13 (Stata, College Station, TX, USA) and accounted for clustering of respondents within communities. In addition to estimating the models with additive effects, interactions between individual and household-level characteristics and clinic-level factors were tested. The cut-off value for statistical significance used in this study is $P < 0.05$.

The statistical models were complemented with analysis of responses to open-ended questions from the clinic survey. Questions focused on the clinic staff members' experience of interaction with patients and their perceptions of patients' willingness and ability to use family planning. In addition, in-depth interviews conducted by interviewers from Eduardo Mondlane University with 72 women randomly selected from the quantitative sample were assessed. These interviews sought to explore nuances of reproductive and contraceptive decision-making among both women and couples. Each interview, which was conducted in the local language (Changana), lasted approximately 1 hour and was audio recorded. Interview transcripts were translated and transcribed verbatim in Portuguese. The interview content was coded for recurrent themes and patterns by V.A. Further analysis was informed by abundant field observations and conversations with providers and patients conducted at the clinics and in the communities.

3. Results

3.1. Statistical analysis

The characteristics of the 1554 women included in the present analysis are outlined in Table 1. Modern contraceptive prevalence was 23%; 12% of women were using oral contraceptives, 9% were using other long-term methods (predominantly injections of medroxyprogesterone), and 2% were using another method (mainly male condoms).

Table 2 displays the results of two binomial logistic regression models predicting the odds ratio (OR) of currently using any modern contraceptive method. Model A included only individual and household characteristics. Education emerged as a strong predictor of contraceptive use. The odds of using a modern contraceptive method among women with 1–4 years of education was almost twice that of uneducated women (OR 1.93; 95% CI, 1.34–2.77), and the OR further rose among respondents with at least 5 years of education, although this additional increase was comparatively small (OR 2.27; 95% CI, 1.52–3.39). Employment outside subsistence agriculture was not associated with contraceptive use. By contrast, household material status showed a marked association with contraception: the higher a household ranked on the material possessions scale, the more likely a woman from that household was to use a modern contraceptive method (OR 1.34; 95% CI, 1.18–1.52). This result was noteworthy given that all family planning services in the present study area were provided free of charge. Women in polygamous marriages were appreciably less likely to use contraceptives than women in a monogamous union (OR 0.60; 95% CI, 0.45–0.8). Confirmed or suspected HIV infection was associated with an increased probability of contraceptive use (OR 1.44; 95% CI, 1.08–1.91). Neither woman's work outside agriculture nor husband's migration status showed a statistically significant relationship with contraceptive use.

The second binomial logistic regression (Model B) included the covariates from Model A, and added the following covariates: public transportation cost to nearest town; difficulty of getting to respondent's village in rainy season; distance to the nearest clinic; service index of the nearest clinic; and the number of weeks that any contraceptive was out of stock during a 12-month period (Table 2). The results show that neither the cost of transportation to nearest town nor the accessibility of the village during rainy season had an association with the likelihood of contraceptive use. Clinic service indicator was not related to the likelihood of contraceptive use either. The direction of the coefficient for contraceptive stockouts suggested a positive relationship, but this effect was not statistically significant. By contrast, the association between contraceptive use and distance to the nearest clinic was found to be highly significant: the farther a woman lived from a clinic, the lower the chances of her using modern contraception (OR 0.92; 95% CI, 0.88–0.97). The addition of the clinic-related covariates to Model B did not alter the effects of the individual and household characteristics.

The relative risk ratios (RRR) from a multinomial logistic regression model in which the outcome can take three possible values—use of oral contraception, use of long-term contraception, and non-use of either type of contraception—are shown in Table 3. This model examined individual, household, community, and clinic determinants of the use of specific types of contraceptive methods versus no contraceptive use. They also controlled for lack of stock of oral contraceptives and of long-term contraceptives separately.

Education level was significantly associated with the use of oral contraceptives (RRR 2.53; 95% CI, 1.66–3.86 for 1–4 years of schooling; RRR 2.53; 95% CI, 1.66 – 3.86 for 5 or more years of schooling, relative to no education) but not long-term methods. Confirmed or suspected infection with HIV increased the likelihood of oral contraceptive use only (RRR 1.50; 95% CI, 1.03–2.19), whereas a polygamous union was associated with a decreased

probability of using this method of contraception (RRR 0.51; 95% CI, 0.35–0.75). Household material status was strongly associated with use of both oral (RRR 1.39; 95% CI, 1.19–1.61) and long-term contraceptives (RRR 1.37; 95% CI, 1.16–1.62).

The community characteristics did not affect the likelihood of using either type of method. Distance to the nearest clinic showed an association only with long-term method use: the probability of using such methods decreased as the distance between the respondents' residence and the nearest clinic grew (RRR 0.88; 95% CI, 0.82–0.93). The RRR for the nearest clinic service index was not statistically significant for either type of contraceptive method. Finally, the number of weeks that oral contraceptives were out of stock at the nearest clinic had a positive association with the likelihood of using this method (RRR 1.02; 95% CI, 1.00–1.03).

In addition to these additive models, the data were tested for possible interactions among the individual, household, community, and institutional factors. Potential moderating effects of education level and household wealth on institutional barriers to family planning use were of particular interest. However, no statistically significant interactions were found between factors operating at different levels, suggesting the independence of their effects.

3.2. Insights from qualitative data

The qualitative data illuminate the complexity of rural women's family planning itineraries. These data pointed to pervasive cognitive dissonance between clinic staff and service users. Women attending clinics were frequently depicted by the providers as too traditional and incapable of setting and pursuing rational reproductive goals. They were also often perceived as unable or unwilling to negotiate contraceptive use with their marital partners, especially with those partners who were seasonal migrants and, therefore, spent a considerable time away from the marital home. When family planning advice was offered, specific contraceptive recommendations were predominantly based on parity, with high-parity women typically encouraged to use injections of medroxyprogesterone and low-parity women offered oral contraception.

On the user end of the provider–user relationship, in-depth interviews with a subsample of survey respondents and field observations suggested considerable uncertainty and misgivings regarding benefits and adverse effects of contraceptives that were not always resolved by women's interactions with clinic staff. Although the authority of the family planning nurses was rarely questioned, adapting their standard advice to real-life health and social constraints posed challenges to many of the women.

4. Discussion and conclusion

The present study brought together the characteristics of individuals, their households, and communities with institutional characteristics of health clinics and the perceptions of health providers to illustrate the challenges to scaling up family planning programs in rural Sub-Saharan Africa. The results highlighted the pervasive importance of socio-economic characteristics—such as education, household wealth, and marital arrangements—for

contraceptive use. In addition, the effects of at least some of these factors were found to be method-specific.

The present analysis did not detect any influence of the overall location (remoteness) of the community of residence; nevertheless, the results underscored the critical importance of distance to health facilities for using family planning services. The effect of geographic access to clinic was method-specific, as it was more strongly associated with the use of long-acting methods than with the use of oral contraceptives. This finding was surprising, as distance to clinic might be expected to be a more important factor for determining the use of short-term methods, for which respondents must make frequent visits to health facilities.

No association was found between contraceptive use and the clinic service index. Interestingly, a lack of stock of oral contraceptives at the nearest clinic was positively associated with individuals' chances of using this method. Increased use of contraception in the population possibly produced shortages of contraceptives in local clinics; however, the nature of the matched individual and institutional data used in the present analysis precluded any conclusion about the causality of this relationship.

No statistically significant interactions were detected between individual or household characteristics and the institutional-level characteristics. For example, women with a higher level of education or household wealth were not better able to overcome clinic-level barriers to the use of contraception. Conversely, closely located and well-functioning clinics did not help to mitigate individual-level and household-level challenges.

The inclusion of qualitative data enabled the identification of cultural disjunctions between providers and users that hindered contraceptive uptake. These results echoed earlier findings regarding frequent socio-cultural disconnects between family planning providers and users that obstructed wide contraceptive uptake in settings such as rural southern Mozambique [8,9].

Several limitations of the present study must be acknowledged. No direct measures of partners' preferences were available because a large proportion of the women surveyed were married to migrants; consequently, interviewing husbands was not feasible. The community survey did not collect information on the dominant community socio-cultural norms, which could have important implications for individual contraceptive use. The available quantitative measures of access to, and features of, clinic services could not fully capture service quality. Most importantly, the data did not allow for direct matching of user and provider perceptions and experiences.

In conclusion, the findings of the present study contribute to the development of comprehensive, multidimensional, and context-adapted approaches to family planning programs in Sub-Saharan settings.

Acknowledgments

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Table 1

Characteristics of 1554 non-pregnant women in marital union resident in rural areas of four districts of Gaza Province, Mozambique, 2011.[a]

Characteristic	No.	Distribution	Range
Current contraceptive use (percent)			
Currently uses any modern method	357	23.0	0.0–100
Currently uses oral contraception	195	12.5	0.0–100
Currently uses long-term contraception	134	8.6	0.0–100
Age, y (mean)	1554	32.5	21–49
No. of living children (mean)	1554	3.5	0–10
Education level (percent)			
No education	397	25.5	0.0–100
1–4 y	703	45.2	0.0–100
5 y	455	29.3	0.0–100
Works outside of agriculture (percent)	528	34.0	0.0–100
Does not want children within next 2 years (percent)	980	63.1	0.0–100
Perceived HIV infection status (percent confirmed or suspected HIV+)	640	41.2	0.0–100
Polygamous union (percent)	413	26.6	0.0–100
Husband is a migrant (percent)	547	35.2	0.0–100
Household material conditions, scale of $1-4$, (mean)	1554	2.1	1–4
Public transportation cost to nearest town, MZN [b]	1554	50	10–300
Difficulty of getting to the nearest town in the rainy season, scale of $1-3$, (mean)	1554	1.7	1–3
Distance to nearest clinic, km (mean)	1554	4.9	0.13–17.27
Service index of nearest clinic, scale of $1-4$ (mean)	1554	2.0	1–4
Cumulative duration that any contraceptives were out of stock in a 12-month period in nearest clinic, wk (mean)	1554	14.0	0–120
Cumulative duration that oral contraceptives were out of stock in a 12-month period in nearest clinic, wk (mean)	1554	8.1	0–120
Cumulative duration that long-term contraceptives were out of stock in a 12-month period in nearest clinic, wk (mean)	1554	2.8	0–30

Abbreviation: MZN, Mozambican metical.

[a] Data were collected mostly between January 20 and December 15, 2011.

[b] The exchange rate for 1.00 MZN is approximately US $0.04 at the time of data collection.

Table 2

Binomial logistic regression of current use of any modern contraceptive method among 1554 non-pregnant women in marital union resident in rural areas of four districts of Gaza Province, Mozambique, 2011.[a]

Characteristic	Model A	Model B
Age, y	0.95 (0.93–0.97)[b]	0.94 (0.93–0.96)[b]
No. of living children	1.14 (1.04–1.25)[b]	1.16 (1.06–1.27)[b]
Education, y		
0	Reference	Reference
1–4	1.93 (1.34–2.77)[b]	1.95 (1.37–2.76)[b]
5	2.27 (1.52–3.39)[b]	2.19 (1.49–3.21)[b]
Employment outside subsistence agriculture		
Works	1.03 (0.74–1.43)	1.02 (0.73–1.42)
Does not work	Reference	Reference
Desire for more children within 2 years		
Does not want children within 2 years	2.77 (2.03–3.77)[b]	2.86 (2.05–3.98)[b]
Wants children within 2 years or is unsure	Reference	
Perceived HIV infection status		
Confirmed or suspected HIV+	1.44 (1.08–1.91)[b]	1.44 (1.09–1.91)[b]
HIV–	Reference	Reference
Type of marital union		
Polygamous	0.60 (0.45–0.80)[b]	0.63 (0.47–0.84)[b]
Monogamous	Reference	Reference
Husband is a migrant		
Yes	0.87 (0.64–1.18)	0.85 (0.63–1.14)
No	Reference	Reference
Household material status (1 – 4 scale based on ownership of key consumer assets)	1.34 (1.18–1.52)[b]	1.34 (1.18–1.52)[b]
Public transportation cost to nearest town	NA	0.99 (0.99–1.00)
Difficulty of getting to the nearest town in the rainy season (1–3 scale)	NA	1.11 (0.78–1.57)
Distance to nearest clinic, km	NA	0.92 (0.88–0.97)[b]
Service index of nearest clinic	NA	1.10 (0.94–1.28)
Duration that any contraceptives were out of stock in a 12-month period, wk	NA	1.00 (0.99–1.01)

Abbreviation: NA, not applicable.

[a]Values are odds ratios (95% confidence interval).

[b]Statistically significant ($P < 0.05$).

Table 3

Multinomial logistic regression of current modern contraceptive use by method among 1554 non-pregnant women in marital union resident in rural areas of four districts of Gaza Province, Mozambique, 2011.[a]

Characteristic	Using oral contraceptives vs not using any contraception	Using long-term contraceptives vs not using any contraception
Age, y	0.93 (0.9–0.95)[b]	0.96 (0.93–0.99)[b]
No. of living children	1.18 (1.03–1.36)[b]	1.18 (1.06–1.32)[b]
Education, y		
0	Reference	Reference
1–4	2.53 (1.66–3.86)[b]	1.33 (0.85–2.09)
5	2.53 (1.55–4.12)[b]	1.53 (0.91–2.58)
Employment outside subsistence agriculture		
Works	0.84 (0.56–1.26)	1.05 (0.69–1.59)
Does not work	Reference	Reference
Desire for more children within 2 years		
Does not want children within 2 years	2.42 (1.52–3.83)[b]	3.59 (2.01–6.42)[b]
Wants children within 2 years or is unsure	Reference	Reference
Perceived HIV infection status		
Confirmed or suspected HIV+	1.50 (1.03–2.19)[b]	1.03 (0.72–1.46)
HIV−	Reference	Reference
Type of marital union		
Polygamous	0.51 (0.35–0.75)[b]	0.82 (0.53–1.25)
Monogamous	Reference	Reference
Husband is a migrant		
Yes	0.86 (0.59–1.25)	1.02 (0.74–1.39)
No	Reference	Reference
Household material status (1–4 scale based on ownership of key consumer assets)	1.39 (1.19–1.61)[b]	1.37 (1.16–1.62)[b]
Public transportation cost to nearest town	0.99 (0.99–1.00)	1.00 (0.99–1.00)
Difficulty of getting to the nearest town in the rainy season (1–3 scale)	0.92 (0.64–1.33)	1.31 (0.88–1.94)
Distance to nearest clinic, km	0.96 (0.90–1.01)	0.88 (0.82–0.93)[b]
Service index of nearest clinic	1.11 (0.92–1.33)	1.20 (0.96–1.51)
Duration that oral contraceptives were out of stock in a 12-month period, wk	1.02 (1.00–1.03)[b]	1.00 (0.98–1.03)
Duration that long-term contraceptives were out of stock in a 12-month period, wk	0.98 (0.95–1.00)	0.97 (0.93–1.02)

[a] Values are relative risk ratios (95% confidence interval).

[b] Statistically significant ($P < 0.05$).