Willingness to pay for IUDs among women in Madagascar – a comparative analysis

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Background:

Long acting reversible contraceptive methods (LARC), such as the IUD, are being increasingly promoted in low income countries, and settings with significant unmet need [1]. In this context, organizations supporting reproductive health service delivery are training providers in public and private sector contexts in the safe insertion and removal of IUDs, as well as ensuring that the appropriate supplies and commodities are available to meet demand.

In Madagascar, the overall contraceptive prevalence rate has been increasing dramatically over the past 20 years, however as of 2008, only 29.2% of married women and 28.6% of unmarried sexually active women are using a modern method of contraception [2]. At that time, the majority of women were acquiring the modern method in the public sector, although the private sector provided over 20% of contraceptives. In 2008, Population Services International (PSI) introduced a program to promote high quality LARC services through the public sector as well as a franchise network of private sector providers. The private sector providers charge a fee for the IUD insertion, and PSI was subsidizing the providers through a combination of monetary and non-monetary support in order to keep client fees affordable. The subsidy, and client fee, varied widely across the country. In the same markets, clients paid differential prices through the use of vouchers given by outreach workers. In this context, understanding the appropriate pricing strategy for clients could help PSI provide IUDs sustainably, while meeting unmet need.

Willingness to pay for contraceptives has been assessed in a handful of low and middle income countries, for a range of products[3,4]. Most studies have used a contingent valuation method detailed by Forteit and Forteit, which eventually asks the client an open ended question about their maximum willingness to pay, but frames it around a target price [5]. No other study which assessed the willingness to pay for contraceptives in Madagascar, or nearby countries, was found. The purpose of this study is to rationally determine the price point for IUDs in the private sector, balancing demand and provider subsidy. By gathering data from two locations, the study aims to see if there are differences in willingness to pay between the capital and other (smaller urban and peri-urban) areas where private providers practice.

Methods:

100 women each in the capital city (Antananarivo) and a smaller city on the north-west coast (Mahajunga), stratified by current IUD users (n=50 per city) and non-users (n=50 per city), were interviewed. IUD users were randomly selected from the lists of outreach workers. Women not using IUDs were sampled from municipalities with a PSI franchised private sector provider. In Antananarivo, a multistage process was used, first selecting 10 municipalities with probability proportionate to the

population size, and then randomly selecting households within each municipality, until 5 households meeting inclusion criteria were found. In Mahajunga, 10 randomly selected households meeting inclusion criteria, from each of the 5 municipalities where a PSI network provider was present, were sampled. If several women in the household met eligibility criteria, one was randomly selected. Eligibility criteria for non-IUD users were that they were between 15-49 years old, used or intended to use family planning in the next 2 years, had heard of the IUD, and had not been specifically approached by an outreach worker. Eligibility criteria were followed in order to create a sample of likely users from which to determine WTP.

Socio-economic and demographic characteristics, recent family planning history, and information on health care expenditure were obtained. Women were asked how much they were willing to pay, beginning either with the amount they actually paid (if greater than zero), or with a starting price of 5000 Ariary (US$1=2185 Ar). The contingent valuation method was followed, as in the example flowchart below.
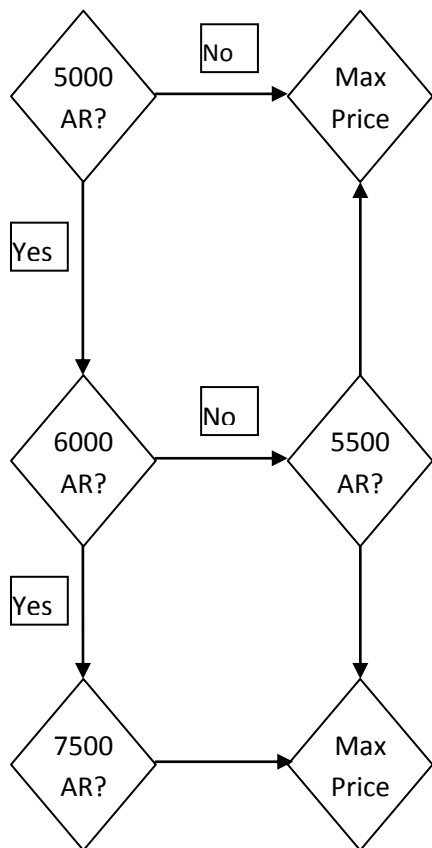
The demand curve and mean value of maximum willingness to pay for various strata (Antananarivo vs Mahajunga; IUD users vs non-users) was compared using a log-rank test equally weighting each maximum price, and t-test to compare means. Medians were compared using a nonparametric K-sample test with the null hypothesis that medians were drawn from the same populations. Values at the median were equally split between above and below the median for the test. Descriptive characteristics between groups were compared using t-test for continuous variables and χ^2 test of equality of proportions for categorical variables. First, IUD users and non-users in the same city were compared, and then mean values between the two cities were compared. One outlier among willingness to pay values, of 100,000 Ar, was dropped in the willingness to pay results reported.

Results:

Sampled women in the four groups were fairly similar, with a mean age of 30.5 years, and living in a household of approximately 5 people. As compared to IUD users, non-users of IUDs in Antananarivo had significantly fewer children (2.0 vs. 2.8, p=0.01), while non-users in Mahajunga had significantly fewer children less than 5 (0.7 vs. 1.0, p=0.01). All groups had a similar proportion of household heads who were salaried employees (as opposed to self-employed or unemployed), and women in Antananarivo were similarly likely to live in a house which was owned as opposed to rented. IUD non-users in Mahajunga were more likely to live in a house which was owned as opposed to IUD users (50% vs 28%, p($\chi^2_{2,100}$= 0.01) (Table 1).

The total cost of IUD insertion, including any supplementary medicine prescribed, ranged from 0 to 5000Ar in Antananarivo, and 8000Ar in Mahajunga. 9 women in Antananarivo and 6 women in Mahajunga received an IUD completely for free, a difference which is not statistically significant. Mean cost of IUD insertion was greater in Mahajunga than Antananarivo (2136Ar vs 1420Ar, p<0.01).

Table 2 shows mean, and quartile specific willingness to pay for an IUD, by city and whether or not the woman was an IUD user. Mean values between IUD users and non-users in each city were not statistically different from each other, and mean values of women between the two cities were not statistically different from each other. The median value, at which 50% of the women sampled would be willing to pay for an IUD, was significantly different between users and non-users in each city, with non-users willing to pay significantly more than users (p=0.025 in Antananarivo, and p<-0.001 in Mahajunga). Combined results from each city showed no significant difference in medians.

Table 1: Population characteristics (Means and proportions, by city and IUD use)

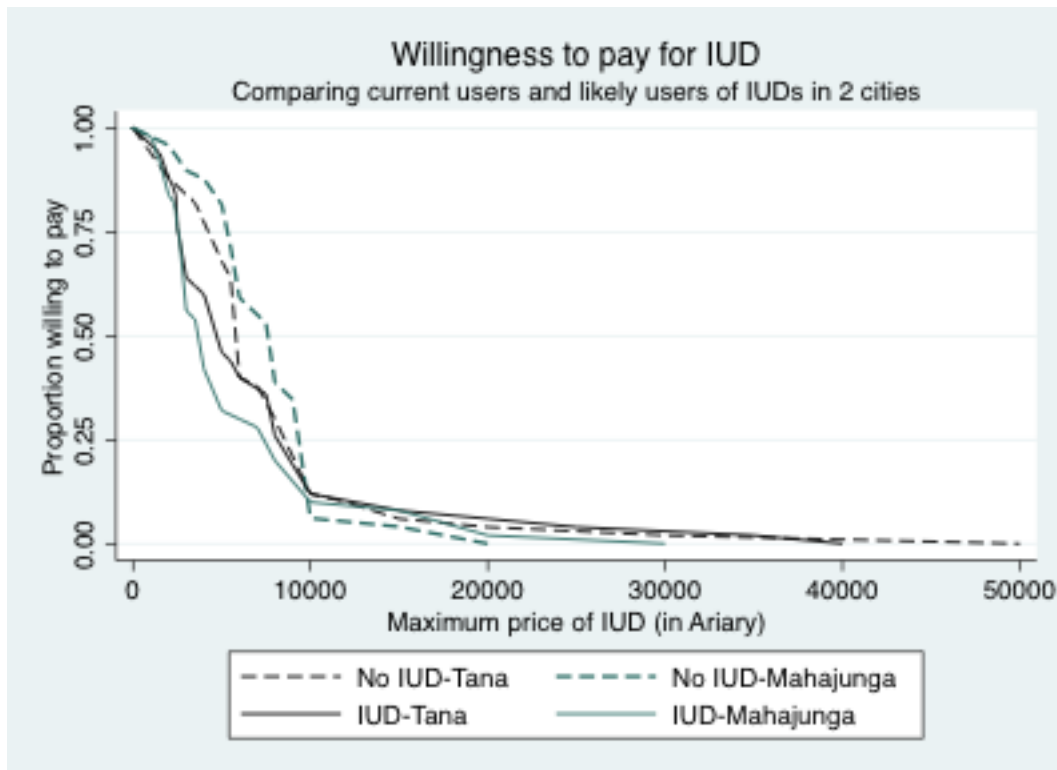|	Antananarivo			Mahajunga		
	IUD User (n=50)	Non-user (n=49)	Overall	IUD User (n=50)	Non-user (n=50)	Overall
Age of respondent	31.3	29	30.2	29.2	31.7	30.5
Size of household	5.2	4.5	4.8	4.7	5.4	5
Number of living children	2.8	2.0 *	2.4	2.7	2.4	2.5
Number of children <5	0.9	0.9	0.9	1	0.7 *	0.9
Household head salaried employee	40%	56%	48%	44%	52%	48%
House is owned	52%	42%	47%	28%	50% *	39%

Significant differences between users and non-users in the same city are indicated with a * in the "Non-user" column. No significant differences between overall values between cities.

Table 2: Willingness to pay for IUD, by city and IUD use (mean, quartile)

		Mean	25%	50%	75%
Antananarivo	IUD User	7563	3000	5000	10000
	Non-user	8150	5000	6000 *	10000
	Overall	7856	3000	6000	10000
Mahajunga	IUD User	6096	2600	4000	8000
	Non-user	7877	5500	8000 *	10000
	Overall	6977	3000	6000	10000

Significant differences in mean or median between users and non-users in the same city are indicated with a * in the "Non-user" row. No significant differences between overall values between cities.

The differences between current IUD users and likely future users, between Antananarivo and Mahajunga are seen graphically. A log-rank test of the four strata confirms that the demand curves themselves are significantly different (p<0.001). As seen in the graph below, current IUD users and non-users in Antananarivo have price curves which are closer together, than those in Mahajunga.

Willingness to pay for IUD
Comparing current users and likely users of IUDs in 2 cities

Legend:
- No IUD-Tana
- No IUD-Mahajunga
- IUD-Tana
- IUD-Mahajunga

Discussion:

There is evidence that the population of likely IUD users in these two urban areas is willing to pay a positive price for the IUD. However, it appears that the majority of likely users still prefer prices that are lower than what private doctors wish to charge. Private doctors in the social franchise networks are currently charging patients 5000Ar or more, and receive a top-up payment from PSI to make the service provision more viable. Although mean values for willingness to pay are not significantly different among the four groups, the median value, and the demand curves themselves, are significantly different. PSI could consider taking advantage of relative demand inelasticity by lowering the amount of the top-up payment and allowing providers to charge higher prices for clients who can afford it. The tradeoff between a reduction in IUD users and increased financial sustainability must be considered and examined. Furthermore, access for the poor should not be compromised, and a sliding scale payment system or successful referrals to the public sector, would be an important part of the overall price structure.

References:

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Short Abstract (150 words)

A study to assess willingness to pay for an IUD among four groups of women was conducted in Madagascar, in order to help determine the appropriate price point and level of subsidy required for continued growth and availability of this underused contraceptive. Women who had received the IUD for a highly subsidized price and likely users of the IUD in two cities were asked about their willingness to pay, using a contingent valuation method. Likely users in the smaller city had a significantly greater median willingness to pay than current users, while in the capital city, the two groups were not different. Demand curves for the four groups of women were significantly different, however the data showed that a high proportion of women would be willing to pay 5000Ar ($2.25) or more, making the promotion of IUDs feasible in the private sector.