Women's Preferences for Place of Delivery in Rural Tanzania: A Population-Based Discrete Choice Experiment

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Objectives. We fielded a population-based discrete choice experiment (DCE) in rural western Tanzania, where only one third of women deliver children in a health facility, to evaluate health-system factors that influence women's delivery decisions.

Methods. Women were shown choice cards that described 2 hypothetical health centers by means of 6 attributes (distance, cost, type of provider, attitude of provider, drugs and equipment, free transport). The women were then asked to indicate which of the 2 facilities they would prefer to use for a future delivery. We used a hierarchical Bayes procedure to estimate individual and mean utility parameters.

Results. A total of 1203 women completed the DCE. The model showed good predictive validity for actual facility choice. The most important facility attributes were a respectful provider attitude and availability of drugs and medical equipment. Policy simulations suggested that if these attributes were improved at existing facilities, the proportion of women preferring facility delivery would rise from 43% to 88%.

Conclusions. In regions in which attended delivery rates are low despite availability of primary care facilities, policy experiments should test the effect of targeted quality improvements on facility use. (*Am J Public Health.* 2009;99:1666–1672. doi:10.2105/AJPH.2008.146209)

Despite several decades of global health initiatives focused on maternal health, maternal mortality has proven to be an intractable problem. The Millennium Development Goal indicator of maternal health, the maternal mortality ratio, has remained essentially unchanged over the past 15 years, with an estimated mean annual decline of 0.4% since 1990—far short of the progress required to meet the Millennium Development Goal target of 75% reduction by 2015.[1] Maternal mortality ratio measures the risk of dying during pregnancy or shortly after delivery and is thus primarily a measure of the safety of childbirth. Ninety-nine percent of maternal deaths occur in the developing world, and sub-Saharan Africa has the highest maternal mortality ratio in the world (900 per 100 000 live births).[1]

There is now widespread consensus that a principal effective intervention for reducing maternal mortality is the universal use of skilled birth attendants based in functioning health care facilities who are trained to diagnose obstetric complications and manage or refer them.[2–7] Attended childbirth is a key component of most developing countries' primary care strategies and a core part of the essential package of health services.[8,9] Nonetheless, facility delivery rates in sub-Saharan Africa are some of the lowest in the world: only 47% of women delivered in a health facility in 28 sub-Saharan African countries, according to recent surveys.[10]

Tanzania is a predominantly rural, low-income country in eastern Africa. The most recent estimate of Tanzania's maternal mortality ratio is 950 per 100 000 live births.[1] In 2004, only 33.6% of women living in rural areas reported delivering their last child in a health facility.[11] Women frequently identified multiple barriers to accessing health care for themselves or their families, including the need to get permission from their husband or another family member (39%), not wanting to go alone (66%), needing money for treatment (80%), and living a long distance from the facility (76%).[11] Surveys in other rural areas of Africa similarly report that a wide variety of individual and contextual factors influence women's decisions about place of delivery.[12–15] Despite this, 97% of pregnant women in rural Tanzania use health facilities for antenatal care, suggesting high levels of utilization for some types of maternal health services.[11]

Research reporting multiple barriers to care and large variations in utilization for different maternal health services is difficult to translate into coherent health policies to reduce maternal mortality, particularly given that policymakers must prioritize among competing health-system investments. The recent influx of international donor assistance to Africa, including Tanzania, offers new opportunities to strengthen health systems and makes the need for evidence-informed policies more urgent.[16] One research tool that has the potential to suggest health-system priorities is conjoint analysis, a family of techniques that elicit individuals' stated preferences for health goods and services and estimate the contribution of different features (attributes) to that preference. A common form of conjoint analysis is the discrete choice experiment (DCE), in which respondents (e.g., patients or the general population) are presented with a choice of several competing hypothetical health-service scenarios (e.g., 2 different clinics), each characterized by several attributes (e.g., type of provider, cost, distance). Respondents are then asked to select their preferred scenario.[17]

Unlike traditional economic evaluation, which relies on health outcomes (e.g., disability-adjusted life years) to value health services, DCEs permit estimation of the value of a range of health care elements, including structural components, process components, health outcomes, and nonhealth outcomes. This approach to valuing health care is more consistent with the current consensus that health care systems should be responsive to individuals' legitimate expectations regarding, for example, waiting time, health communication, and patient choice.[18–20] Patient preferences concerning structural elements such as staffing mix and medical technology can also assist health

planners and managers in making future investments and organizational reforms.

DCEs have been shown to be easy to administer and have demonstrated good test–retest reliability.[21,22] Results from DCEs have been found to be consistent with the results of similar instruments measuring the same construct, such as standard gamble and willingness to pay (convergent validity).[22] There is also some evidence that simulations on the basis of DCEs approximate revealed preference (i.e., actual facility choice)—a measure of predictive validity—although this depends on a strong experiment design and, particularly, on choosing appropriate attributes and levels.[22]

Our objective was to use a DCE to explore the relative importance of health service characteristics to Tanzanian women living in a rural, remote region when selecting a health facility for childbirth. To verify that the DCE captured characteristics that were important in women's actual decision-making, we compared predicted facility use from data obtained in our experiment to actual place of delivery for the women's last child (congruence between stated and revealed preference). Last, we modeled the DCE data to explore how different health-system policies and investments may influence facility delivery rates in rural Tanzania.

METHODS

Kasulu District, with a population of 630 000, lies in Kigoma Region in western Tanzania. It is a primarily rural district with 1 main town, Kasulu (population 33 000).[23] There are 3 hospitals, 10 health centers, and 57 dispensaries. Government dispensaries are small primary care facilities with basic diagnostic equipment and 1 or 2 beds for deliveries. Dispensaries are staffed predominantly by clinical officers (trained to manage basic health conditions), and health centers are staffed predominantly by clinical officers, nurses, and assistant medical officers (clinical officers with additional training).[24] The poor roads and unavailability of transport combined with a scarcity of referral hospitals obliges the population to rely mainly on primary care facilities for maternal health services. The population belongs primarily to the Muha tribe and speaks both Kiswahili and the local language, Kiha.

We selected a representative cluster sample of rural households from Kasulu District, omitting the town of Kasulu. Fifty villages were chosen in the first stage, with probability proportional to size, on the basis of the 2002 Tanzania census. Within each village, 1 subvillage, each with approximately 100 households, was randomly selected. The leader of the selected subvillage provided a list of households within the subvillage from which 35 households were selected through random systematic sampling. Households in which there was a woman 18 years or older who had had a delivery in the previous 5 years were eligible for inclusion in the study. Written consent was obtained from all respondents.

Instrument Design and Fielding

The DCE was designed to estimate the relative value or utility of different features of health facilities to women from Kasulu District in considering where to deliver their next child. Before administering the DCE, we used a standard questionnaire to obtain information about (1) the women's sociodemographic characteristics; (2) their household material assets, such as animals, mosquito nets, bicycles, and type of roof (used to construct a measure of socioeconomic status); and (3) their past and planned future places of delivery.

In designing the DCE, we selected attributes (features) of the service, assigned levels to each attribute, identified the scenarios to present, and fielded the experiment to establish preferences. On the basis of a review of literature on determinants of access to health services in sub-Saharan Africa, interviews with providers, and pretesting with rural women, we selected 6 policy-amenable facility attributes: distance, cost, provider attitude (a measure of responsiveness), availability of drugs and equipment (a measure of technical quality), type of provider, and transport. (A detailed description of the selection process and fielding is provided in the appendix available as an online supplement to this article at http://www.ajph.org.) It took approximately 30 minutes to administer the full interview, including the DCE. The interviews were administered from June to mid-July 2007. The responses were recorded with pencil and paper, entered into a text file, cleaned, and imported into SAS version 9.1.13 (SAS Institute Inc, Cary, NC) and Sawtooth software version 4.4.6 (Sawtooth Software, Inc, Sequim, WA). A sample DCE card is shown in Figure 1.

Statistical Analysis

We calculated descriptive univariate statistics for demographic and place-of-delivery variables. We used SAS-callable SUDAAN to account for the survey's cluster design.[25] We used Sawtooth's Choice-Based Conjoint with Hierarchical Bayes statistical program to estimate coefficients for the individual utilities of each attribute level (details in appendix available at http://www.ajph.org).[26]

Testing for Experimental and Real-World Predictive Validity

Using market simulator software in Sawtooth's Choice-Based Conjoint with Hierarchical Bayes module, we used individual-level utilities to estimate the proportion of respondents who would prefer specific facility profiles.[26] The simulations calculate total utilities for the simulated facility for each respondent by summing attribute utilities. The respondents were repeatedly sampled to stabilize these preferences, and we added a random error term to the estimates of utilities to correct for any similarities in scenarios.[27]

We used the simulations to explore the predictive validity of the utility parameter estimates, both within the experiment and with real-life behavior. First, we compared predicted to actual facility choices within our experiment. To do this, we split our sample into 2 groups: women who received DCE versions 1 through 4 and women who received version 5, which we designated as the holdout scenarios. We estimated unstandardized parameter estimates for facility attribute levels only for respondents who were given DCE versions 1 through 4. Using these estimates, we then calculated the aggregate utility of alternative A and alternative B in each of the version 5 holdout scenarios. The facility with the higher aggregate utility was identified as the preferred facility. These predicted preferences were then compared with actual selections of preferred facilities by women who were given version 5.

Second, to assess the predictive validity of our model for real-life behavior (revealed preference), we modeled the predicted percentage of women who would choose to deliver

In this section I will show you 8 cards. Each card describes 2 possible health centers. Imagine that you are deciding where to deliver your next baby. Please tell us which of the 2 centers you would prefer to go to for your delivery. You can also decide not to use either of them. There are no right or wrong answers to these questions—we are only interested in learning about what is important to you about health centers.

Attribute	Option A	Option B	Option C
Distance	1 hour away by foot	3 hours away by foot	
Transport	Free transport is available	Free transport is not available	Neither center
Provider	Doctor	Nurse	
Attitude of provider	Does not smile or listen carefully	Smiles and listens carefully	
Drugs and equipment	Not always available	Always available	
Cost	500 shillings	3000 shillings	

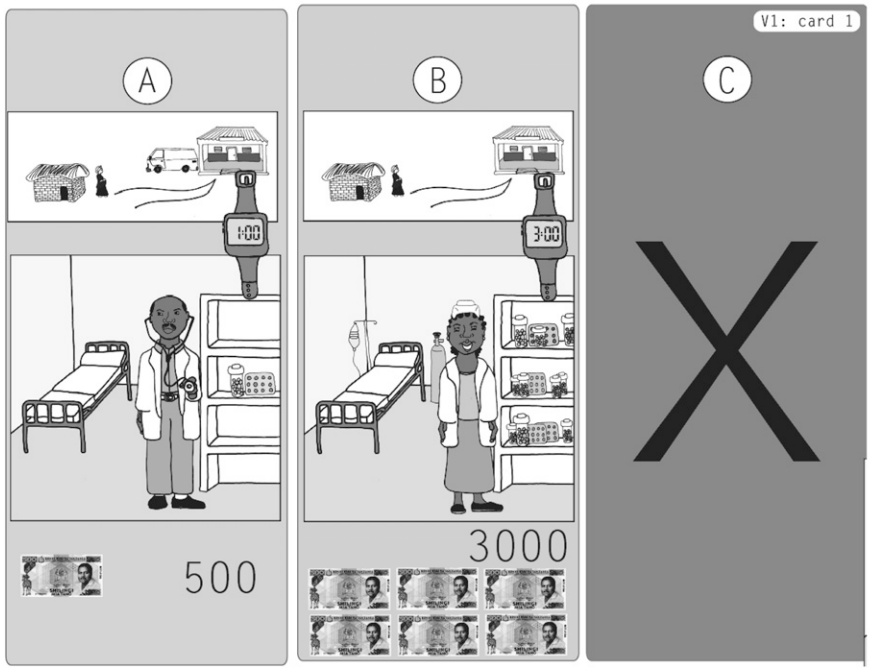

FIGURE 1—Sample discrete choice experiment card and script presented to women (N = 1203) from Kasulu District: Kigoma, Tanzania, 2007.

in a currently available health facility versus at home. We did this by assigning attribute levels corresponding to the current state of dispensaries, health centers, and hospitals available to women in Kasulu District and to attributes of home delivery, on the basis of information from local health providers.[28] We compared the predicted proportion of home and facility deliveries in the model to the actual place of delivery for women's most recent child (on the basis of this survey) and to results from the previous 2 national Demographic and Health Surveys.[11,29]

Policy Simulations

To assess the extent to which focused investments and policy reforms in the Tanzanian health system would increase utilization of the most widely available facilities—in this case dispensaries—we conducted simulations reflecting potential changes to facilities, and we calculated projected shares of women's preference for these facilities versus delivering at home. (Assumptions used in the policy simulations are shown in the appendix available at http://www.ajph.org).

RESULTS

Of 1322 eligible women, 1205 participated in the full survey, for a response rate of 91%, and 1203 completed the DCE module. Of the 9624 possible cards (1203 women × 8 cards each), 9611 were completed (respondent indicated a preferred facility), and these formed the sample for analysis. The characteristics of the respondents are shown in Table 1. The sample was ethnically and demographically homogeneous, with most women being married, of Muha ethnicity, and Christian. The majority of women who had had a pregnancy in the previous 5 years gave birth at home (60.8%).

In the DCE, women selected facility A or B (rather than "neither") for 9374 of the 9611 completed choice cards (97.5%), suggesting that the attributes captured facility characteristics important to women. The validity of the utility estimates in predicting facility selection in the experiment, i.e., comparing calculated utilities from versions 1 through 4 with actual facility choices (by a different set of women) in version 5 was high; correlation coefficients were 0.98 for both health center A and health center B.

TABLE 1—Sample Characteristics of Women (N = 1205) From Kasulu District: Kigoma, Tanzania, 2007

Characteristic	Mean (SD) or No.[a] (%)
Age, y	30.2 (8.3)
Education, y	4.7 (5.9)
Married	1154 (95.9)
Occupation: farmer	1186 (98.5)
No. living children	4.2 (2.8)
No. children born in a health facility	1.5 (4.8)
Muha ethnicity	1185 (98.6)
Religion	
Christian	1098 (91.6)
Muslim	89 (7.4)
Has health insurance[b]	151 (12.5)
Household assets	
Owns any chickens or ducks	759 (63.1)
Owns mobile or landline telephone	89 (7.4)
Place of last delivery[c]	
Home[d]	731 (60.8)
Government dispensary	100 (8.3)
Government health center	61 (5.1)
Government hospital	72 (6.0)
Mission health facility[e]	205 (17.1)
On the way to a health facility	32 (2.7)
Mean cost of facility delivery,[f] TZS	5796 (13149)

Note. TZS = Tanzanian shillings. US $1 = 1245 TZS.
[a]Unless otherwise specified. Number totals may not add up to 1205 as a result of missing values.
[b]Insurance provided by Community Health Fund, a voluntary national health insurance.
[c]Four women were excluded because their place of last delivery was unknown.
[d]Home defined as delivery in the respondent's home or another home.
[e]Mission health facility includes mission dispensaries, health centers, and hospitals.
[f]Cost includes medical, food, transport, drugs, and diagnostic test costs incurred in delivery averaged for 437 women with facility delivery.

The parameter estimates of utilities for health facility attributes are shown in Table 2. For 4 of the attributes—provider type, provider attitude, availability of drugs and equipment, and availability of transportation—the parameter estimates represented the gain (or loss) in utility compared with an omitted category. The signs on the parameter estimates were all as expected, with cost and distance having a negative effect on overall utility and an attentive provider and available drugs and transport having a positive effect. For the provider type, women overall preferred doctors to clinical officers (the omitted category) but preferred clinical officers to nurses (who had a negative coefficient). The "none" option had a large negative value, consistent with the observation that the "neither clinic" option was an infrequent choice.

The highest parameter estimates were for provider attitude and drug availability variables, at 3.32 (SE=0.09) and 2.80 (SE=0.06) respectively. This indicates that of all the attributes in the study, these 2 variables had the largest influence on women's decisions. There were no meaningful interactions between attributes. All of the attribute-level parameter estimates were significantly associated with facility choice ($\alpha < 0.01$).

National surveys in 1999 and 2004 showed that 74.9% and 66.4%, respectively, of rural women delivered their last child at home. Our survey found that 60.8% of respondents delivered at home. The modeled DCE results suggest that given the current health system, 56.7% of women would choose home delivery over facility delivery. The similarity between stated preference and revealed preference data suggests that this DCE has strong predictive validity.

The results of the policy simulations are shown in Table 3. As before, the base scenario was modeled on current conditions at government facilities and in homes. We found that providing transport to either health center or hospital had minimal impact on the percentage of women preferring to deliver at home. Decreasing costs of using a health center or hospital increased preference for both options but had little impact on home deliveries.

Providing a reliable supply of drugs and medical equipment at the dispensary dramatically increased overall preference for dispensaries (from 2.9% to 26.9% of women), but this came at the cost of preferences for health

TABLE 2—Results From Hierarchical Bayes Model for Utility of Attributes of Health Facilities for Delivery Among Women (N = 1203) From Kasulu District: Kigoma, Tanzania, 2007

	B[a] (95% CI)	SE
Travel time, h	−0.138* (−0.163, −0.112)	0.013
Cost,[b] TZS	−0.244* (−0.271, −0.216)	0.014
Provider[c]		
Doctor	0.188* (0.159, 0.218)	0.015
Nurse	−0.435* (−0.474, −0.395)	0.020
Good provider attitude or performance	3.319* (3.140, 3.498)	0.091
Available drugs and medical equipment	2.802* (2.693, 2.912)	0.056
Available transportation	0.279* (0.242, 0.317)	0.019
Neither facility (constant)	−1.978* (−2.156, −1.801)	0.091
Model statistics		
No. of observations	9611	
Root likelihood[d]	0.781	
% certainty[e]	77.4%	
P[f]	<0.001	

Note. CI = confidence interval; TZS = Tanzanian shillings. US $1 = 1245 TZS
[a]Mean of individual parameter estimates.
[b]In 1000 TZS.
[c]Clinical officer was the reference.
[d]With 3 alternatives per choice, a chance model would have a root likelihood of 1 in 3. A perfect model fit would have a root likelihood of 1.
[e]This indicates how much better the solution is than chance, as compared with a perfect solution. Zero percent corresponds to a model fit at the chance level, and 100% corresponds to a perfect model fit. A percentage certainty of 77.4% corresponds to a log likelihood of −2375.65.
[f]By the χ^2 test.
*$P < .01$.

TABLE 3—Policy Simulation Modeling Place of Delivery for Different Levels of Cost, Transport, Availability of Drugs and Equipment, and Provider Attitude Among Women (N=1203) From Kasulu District: Kigoma, Tanzania, 2007

Scenario	Home, % (SE)	Dispensary, % (SE)	Health Center, % (SE)	Hospital, % (SE)
Baseline[a]	56.7 (1.2)	2.9 (0.3)	25.7 (0.9)	14.8 (0.7)
Provide free transport				
To health center	54.5 (1.2)	2.2 (0.2)	31.7 (1.0)	11.7 (0.5)
To hospital	54.4 (1.2)	2.4 (0.2)	21.8 (0.8)	21.3 (0.8)
Reduce total delivery costs				
Cost of health center: 250 TZS[b]	54.8 (1.2)	2.7 (0.3)	28.8 (1.0)	13.7 (0.7)
Cost of hospital: 250 TZS	54.1 (1.2)	2.8 (0.3)	16.9 (0.6)	26.2 (0.9)
Provide drugs and equipment in dispensaries	52.3 (1.2)	26.9 (0.8)	11.7 (0.4)	9.1 (0.5)
Improve provider attitude in dispensaries	40.1 (0.8)	20.4 (0.6)	25.1 (0.9)	14.4 (0.7)
Provide drugs and equipment in dispensaries and improve provider attitude in dispensaries	14.5 (0.7)	71.2 (0.8)	8.4 (0.5)	5.9 (0.4)
Provide drugs and equipment in dispensaries and improve provider attitude in dispensaries, health centers, and hospitals	12.4 (0.6)	45.3 (0.6)	27.0 (0.4)	15.4 (0.5)

Note. TZS = Tanzanian shillings. We used the randomized first-choice option of Sawtooth's SMRT Market Simulator to calculate these simulations.
[a]Assumptions for attribute levels used in the baseline scenario are shown in the appendix that is available as a supplement to the online version of this article at http://www.ajph.org.
[b]US $1 = 1245 TZS.

centers and hospitals, which fell by 14.0% and by 5.7%, respectively. Providing a reliable supply of drugs and medical equipment at the dispensary only caused preferences for delivering at home to decline by 4.4%. Improving provider attitude in dispensaries increased the share of preference for dispensaries to 20.4% and reduced preference for home delivery by 16.6%. Not surprisingly, the largest decline in home delivery was achieved with simultaneous improvements in provider attitude, drug supply, and equipment in health facilities.

DISCUSSION

We used a DCE to assess women's preferences for health care facilities in which to deliver a child in rural Tanzania. We found that in making this choice, women valued reliable access to drugs and equipment and respectful, attentive providers over other facility features, including type of provider, cost, distance, and availability of transport. Provider professionalism and motivation and reliable provision of drugs are 2 features of care quality that patients can observe. Although these are partial measures of quality, they require a number of health system inputs, such as adequate basic financing, health worker training, effective staff supervision, and supply chain management. Thus, these features can be seen as signals of a functioning health system.[30,31]

Health system responsiveness and perceived technical quality have been shown to strongly influence women's use of health services in Africa.[14,32–34] For example, women's assessment of the competence of the provider, 24-hour presence of doctors, teamwork among health staff, and promptness of care were important influences on women's decisions to deliver in health facilities in southeastern Nigeria.[35] Women in Tanzania have been shown to bypass local facilities in favor of more-distant facilities providing better-quality care, as measured by prescribing practices and provider knowledge and attitude, which suggests that quality matters more to Tanzanian women than do distance or cost.[36,37] In the single extant DCE study we found of population preferences for health care in Africa, Hanson et al. found that in urban Zambia, a thorough examination, provider attitude (rude vs friendly), and availability of drugs were valued more highly in selecting hospitals than were longer waiting times and poor cleanliness.[38]

It is important to emphasize that our work does not suggest that cost and distance are not barriers to utilization. In our study, higher cost and greater travel time to care were both associated with lower probability of selecting a given facility. Free transport based at the facility was also associated with facility choice, but this attribute was less important than, for example, having a less trained provider (e.g., nurse vs clinical officer). It is possible that women discounted the availability of free transport in the DCE because there are few ambulances in the district, and they may not have had any personal experience with this feature. Consistent with other research, we found that women preferred more–highly trained providers (i.e., doctors to other providers, and clinical officers to nurses), but overall, the type of provider was less important than the provider's attitude and performance.[31]

In the policy simulations, we found that providing transport and reducing the total cost of delivery at health centers and hospitals did not substantially influence the percentage of women choosing to deliver at home. In contrast, providing drugs and equipment and staffing dispensaries with respectful providers had a large impact on facility delivery rates, with 85% of women selecting facility delivery rather than home delivery. The different shares of preference for facility type attributable to improvement in drug availability versus that attributable to improvement in provider performance suggest that there is substantial heterogeneity in this population. That is, some women in this population are more likely to

value technical quality as proxied by drugs or equipment, whereas others are more strongly influenced by nontechnical quality, such as a caring provider attitude. This heterogeneity in preferences within a group of women that is, relatively speaking, ethnically and culturally homogeneous requires further study.

Although DCE and other stated-preference methods have been used in studies of patients and small community samples in sub-Saharan Africa, to our knowledge this is the first DCE to assess preferences for health services in a large population-based sample.[38–40] The interviewers reported that women found the experiment straightforward and enjoyable, as reflected by the high item response rate for the DCE. The validity of the Bayesian model in predicting facility choice within the experiment was encouraging. Most importantly, simulated preferences for home versus facility delivery were very similar to the women's actual choices—their revealed preference—for their most recent delivery. This similarity between measures of stated and revealed preference suggests that the experimental design was appropriate.[41] In sum, our experience suggests that DCE studies are both practicable and informative in the rural-African context.

Limitations

The study had several limitations. First, although our attributes were all statistically significant in predicting facility preference and although modeling suggested high congruence with revealed preference, given the limitations on attributes and levels in DCE design, we may have omitted other important health facility characteristics in the experiment. An important area for further research in this regard would be an exploration of preferences in this population for technical aspects of care quality (e.g., quality of physical examination, quality of prescribing) versus nontechnical aspects (e.g., attitude, waiting time, cleanliness).

Second, we underestimated the range of costs we presented to women. On the basis of the standard survey the women completed, the mean reported cost of their last facility delivery was 5796 Tanzanian shillings (TZS; US$1=1245 TZS), whereas we presented a maximum level of 3000 TZS in our survey. Including higher cost values in our range may have generated a higher overall coefficient for the cost attribute than the one we obtained. Future studies measuring willingness to pay would be helpful in clarifying the range of acceptable costs.

Third, and most importantly, the assumptions used in the DCE policy simulations, such as constant availability of facilities, full knowledge of facility characteristics, and willingness to consider facility delivery (participation in the "market"), do not perfectly approximate the situation in rural Tanzania. For example, some health care facilities are inaccessible in the rainy season, hampering access to services. Furthermore, the small number of facility attributes used in any DCE by necessity omits some features that influence preference for some women. As a result, the project share of preferences for health facilities should be taken as indicative rather than predictive of future delivery preferences.

Conclusions

Our findings have several policy implications. The high value that women place on health-system responsiveness and technical quality of care (as gauged by providers' attitudes and by availability of drugs and medical equipment) in this study may explain the high rates of home delivery in a rural district well supplied with primary care facilities. There are documented problems with staff numbers, staff morale, inconsistent supply of drugs, and poor quality of equipment in primary care facilities in rural Tanzania.[28,42,43] Women may consider these quality concerns to be more problematic for a highly skilled health service, such as obstetric delivery, than for a more basic service such as antenatal care. Leonard documented that men and women in rural Tanzania demonstrated an awareness of different care requirements for different health conditions by seeking higher-level health facilities and more-knowledgeable providers for more-severe health problems.[36]

Our work supports the notion that by avoiding poor-quality facilities and instead delivering at home (generally with a supportive traditional birth attendant), women are making choices that maximize the utility they obtain from using health facilities and are thus acting as rational consumers, albeit in a highly constrained health care "market."[28] Our work suggests that these choices do not necessarily reflect women's actual preferences; they may in fact prefer to deliver in a facility, if it were staffed with motivated, respectful health workers and provided needed drugs and equipment.

An advantage of DCE over more-traditional measures of preference is that the bundling of attributes in DCEs better approximates real-life decision-making, which involves trade-offs among desirable features of a health service. In addition, attribute utilities derived from DCEs reflect a hierarchy of preferences that can directly inform policy and investment priorities. Thus, if our finding—that women are willing to trade longer distance, higher cost, having to find transport, and higher-level providers for higher-quality of care—is supported by other research, it would be particularly salient as Tanzania's government decides how to allocate funds from the health budget. For example, investing in provider training, supervision, and remuneration and improving equipment and drug supply systems may persuade substantially more women to deliver in primary care facilities than would a simple increase in the number of those facilities. Our findings call for a policy experiment to assess the impact of improving quality of care at the primary care level on facility delivery rates in rural Tanzania. Margaret E. Kruk is with the Department of Health Management and Policy, School of Public Health, University of Michigan, Ann Arbor. ■

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Contributors

M. E. Kruk, G. Mbaruku, and S. Galea jointly designed the study and coordinated the fieldwork. M. E. Kruk and S. Galea supervised data entry and analysis. M. Paczkowski led the data analysis. H. de Pinho assisted with study design and interpretation of results. All authors made critical revisions of the article.

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Human Participant Protection

This study was approved by the University of Michigan institutional review board and the Tanzania National Institute for Medical Research ethics committee. Participants gave written consent.

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