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Author(s): Michael A. Koenig, Mian Bazle Hossain and Maxine Whittaker

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# The Influence of Quality of Care upon Contraceptive Use in Rural Bangladesh

Michael A. Koenig, Mian Bazle Hossain, and Maxine Whittaker

*Efforts to develop quantitative indicators of quality of care for family planning services, and to evaluate its role in contraceptive behavior, remain at an early stage. The present study, based upon an analysis of prospective data from a sample of 7,800 reproductive-aged rural Bangladeshi women, provides empirical evidence on the importance of quality of care for contraceptive practice. The results demonstrate that the perceptions of women regarding the quality of field-worker care were significantly related to the probability of subsequent adoption of a family planning method. Women who were not using a method and who scored high on an index of perceived quality of care were 27 percent more likely to adopt a method subsequently, compared with women with a low score. Effects were even more pronounced for contraceptive continuation; high quality of care was associated with a 72 percent greater likelihood of continued use of any method of contraception. (STUDIES IN FAMILY PLANNING 1997; 28,4: 278–289)*

The potential significance of the quality of family planning services' influencing contraceptive behavior has been recognized for some time. More than two decades ago, for example, Cleland (1973: 44) noted that: "A range of situational factors also influences the decision to adopt family planning methods. These include knowledge of location of clinics and other supply sources, their proximity, the reputation of family planning personnel . . . and the suitability of field work and clinic procedures." For the most part, however, quality-of-care concerns have tended to be implicit rather than explicit, and subsumed under the broader issues of access to and availability of family planning services.

The development of a conceptual framework from which to consider quality of care, articulated in Bruce (1990), has given impetus to more concerted attention to this aspect of family planning services. Recent years have

witnessed a proliferation of descriptive research studies that have attempted to define and measure many of the dimensions of quality of care outlined in the Bruce framework. Studies examining quality of care have employed an increasingly diverse set of research methodologies. One recently developed approach is situation analysis, which consists of canvassing a representative sample of service-delivery points using a structured survey instrument to assess the availability, functioning, and quality of health and family planning services (Miller et al., 1991; Fisher et al., 1992; Askew et al., 1993 and 1994; Barge et al., 1994). A second approach is the direct observation of interactions between service providers and actual or potential clients (Simmons et al., 1988 and 1990; Gupta, 1993). A third methodology for studying quality of care is the simulated-client approach, in which specially trained individuals are sent to seek family planning information or services under the guise of being clients (Schuler et al., 1985; Huntington et al., 1990; Huntington and Schuler, 1993). A final approach is qualitative investigations or quantitative surveys that elicit information on respondents' perceptions of and experiences with the service-delivery program (Koenig et al., 1992; Vera, 1993; Visaria and Visaria, 1992; Roy and Verma, 1995).<sup>1</sup>

The client's satisfaction attained through the provision of high-quality services represents a desirable

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*Michael A. Koenig is Program Officer, The Ford Foundation, New Delhi. Mian Bazle Hossain is Demographer, Maternal and Child Health–Family Planning Extension Project, International Centre for Diarrhoeal Disease Research, Dhaka, Bangladesh. Maxine Whittaker is Senior Lecturer, Australian Centre for International and Tropical Health and Nutrition, Brisbane.*

outcome in itself. A premise that underlies much of the interest in quality of care, however, is that improvements in quality will also have beneficial effects upon clients' willingness to adopt and to continue using methods of contraception (Veney, 1993). Empirical evidence in support of this premise remains surprisingly slender. A cross-national study by Jain (1989), based upon a re-analysis of data from 72 developing countries, found that the availability of each additional contraceptive method offered by a program was associated with a rise in the overall contraceptive prevalence rate of six percentage points. A multivariate analysis from Peru that linked individual-level data from the Demographic and Health Survey with a situation analysis of service-delivery points found that higher-quality services were associated with a modest but significant increase of 16 to 23 percent in the probability of contraceptive use (Mensch et al., 1996). In a contrasting approach, a comparative study in Matlab, Bangladesh, found that in the area covered by the experimental program conducted by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B), rural women's perceptions of a much higher quality of services emerged as a prime explanation behind the area's significantly higher contraceptive prevalence level, relative to the neighboring comparison area, which was served by the regular government program (Koenig et al., 1992).

Other studies have explored the linkages between quality of care and continued contraceptive practice. In a prospective study of 1,945 women in Indonesia, Pariani and her colleagues (1991) found that among women who reported that they had been denied their choice of contraceptive method at the clinic they attended, 72 percent had discontinued use within 12 months, compared with only 9 percent of those who reported that they had received the method of their choice.<sup>2</sup> The results of two other studies suggest an apparent association between clients' receiving inadequate counseling and information and higher levels of contraceptive discontinuation. A study of 400 South Indian women who had accepted an intrauterine device (IUD) from a family planning clinic reported that women who continued using the method were significantly more likely than those who discontinued it to have received information on side effects associated with the IUD, to have been informed of alternative contraceptive methods, and to have received follow-up visits after acceptance (Prabhavathi and Sheshadri, 1988). A separate study in The Gambia and Niger reported that in both countries, contraceptive discontinuation was substantially higher among women who perceived that they had not received adequate counseling about side effects (Cotten et al., 1992).<sup>3</sup> Not all studies, however, have found a consistent association between

quality of services and contraceptive continuation. A six-country prospective study of Family Planning Association clinics, for example, found that neither comprehensive medical screening nor counseling appeared to contribute to significantly increased continuation rates among women using nonpermanent methods of contraception (Huezo et al., 1993).<sup>4</sup>

Efforts to measure empirically the dimension of quality of care and to quantify its independent influence upon contraceptive behavior thus remain at an early stage. The limited research that has been undertaken has been characterized by marked differences in levels of analysis, client populations studied, and definitions of quality of care employed. Data from rural Bangladesh provide a unique opportunity to supplement this limited body of evidence. In the present study, findings are presented from a longitudinal study of 7,800 women in rural Bangladesh on the relationship between clients' perceptions of the quality of care supplied by government service providers and contraceptive behavior. Initially, evidence on the standards of care offered by government service providers in rural Bangladesh is considered from the perspective of rural women in the study areas. Subsequently, the relationships between selected indicators of quality of care and both contraceptive adoption and method continuation are explored.

## Setting and Data

The data for the present study come from the ongoing Maternal and Child Health-Family Planning (MCH-FP) Extension Project, a collaborative experiment between the ICDDR,B and the Government of Bangladesh to improve public-sector maternal and child health and family planning services. Situated in two separate rural areas of Bangladesh—Sirajgonj District in the north-central area and Jessore District in the southwest area, the Extension Project has tested a range of interventions to improve the coverage, quality, and range of services provided by the public-sector program. Many of the service-delivery innovations that were tested have been incorporated subsequently into national policy.<sup>5</sup>

To assess project impact, a longitudinal surveillance system consisting of quarterly monitoring of a representative sample of approximately 8,000 households in three rural field sites, called the Sample Registration System (SRS), was established in 1982.<sup>6</sup> In 1984, quarterly data collection was expanded to include additional information on contraceptive use and interactions between clients and service providers of health care and family planning. In addition to a detailed baseline survey, a series of special cross-sectional surveys have been fielded over

the course of surveillance to provide extensive additional information on characteristics of both the client population and the government service-delivery system.

In 1989, a special cross-sectional survey was fielded to examine the issue of quality of care supplied by health and family planning service providers. A module of questions was developed to assess the coverage and overall quality of services provided by the program from the perspective of rural women.<sup>7</sup> Respondents were queried both with regard to their experiences with the service-delivery program in the longer term as well as during three months preceding the interview. In view of the practice of *pardah* (female seclusion) in rural Bangladesh and the resulting constraints upon women's independent movement outside of the village (Abdullah and Zeidenstein, 1982; Mandelbaum, 1988), the delivery of health and family planning services at the community level assumes paramount importance. Although the government program employs cadres of both male and female outreach workers, the culturally sensitive nature of many aspects of family planning has necessitated that male outreach workers be involved only peripherally with the delivery of family planning services to female clients.<sup>8</sup> Therefore, the primary focus of the survey was on the quality of services provided by female field-workers (called family welfare assistants), who are each responsible for providing outreach services to a population of approximately 4,000 women. Although the job descriptions of these workers include a broad range of responsibilities, their efforts have tended to concentrate on the delivery of family planning services, with maternal and child health services receiving much lower priority and attention (Simmons et al., 1990). The survey also collected limited information on clients' perceptions, based both on their experience of and on secondary information about the quality of services provided at static government clinic facilities.<sup>9</sup>

The module on quality of care was introduced in May of 1989 and incorporated as part of routine SRS household data-collection activities. Data collection continued through two full quarterly rounds of subsequent SRS surveillance, or a maximum of two household visits, with all eligible women in the SRS (defined as currently married and fecund) included as candidates for the survey. A total of the 7,829 women were successfully interviewed, resulting in an overall coverage rate of more than 90 percent of the originally enumerated sample. These data were supplemented with additional information on the socioeconomic, behavioral, and attitudinal characteristics of the population under study by linking them to results from other, earlier household surveys of the same population. Data from the ongoing system of longitudinal surveillance of these respondents on demographic events

and contraceptive behavior allows us to follow the subsequent contraceptive behavior of respondents who were surveyed from the date of the quality-of-care survey up to December 1991, or for a maximum of 30 months. This analysis is greatly facilitated by the low rate of turnover among female field-workers; more than 90 percent of all field-workers remained in the same post for the entirety of the study period.<sup>10</sup>

Some aspects of quality of care, as outlined in the Bruce framework, could be adapted readily to the collection of data from the client's perspective—for example, the choice of methods offered, the nature of client-worker interactions, and the extent to which information was provided to clients. Other aspects, such as the degree of technical competence or the appropriate constellation of services, could be less readily assessed through a client survey, and are, therefore, not considered in this analysis.

## Results

The data collected in this survey provide a wealth of information on women's perceptions of and experience with the government family planning program.<sup>11</sup> Figure 1 shows that one-half of women in this study had little or no contact with outreach services provided by the program: 18 percent of women reported never having received a visit from a female field-worker, and another 32 percent reported being visited infrequently (every six months or less often). Only one in four women reported receiving regular visits of at least once every two months.<sup>12</sup> Among ever-visited women, serious shortcomings were also evident in the amount of time field-workers spent providing services to clients. Forty-four percent of ever-visited women reported that the field-worker spent no more than five minutes with them during the most recent household visit, a length of time generally considered to be insufficient for providing adequate care for family planning or other maternal and child health needs (see Koblinsky et al., 1989). Only 19 percent of women reported that the most recent visit from a field-worker lasted for ten minutes or longer.

With regard to methods of contraception emphasized during the most recent household visit, 26 percent of women surveyed reported that the field-worker did not discuss any methods, and 21 percent reported that she emphasized only a single method.<sup>13</sup> Thus, only slightly more than one-half of clients were offered meaningful contraceptive choices by outreach workers. When queried about the quality of services provided by the nearest static government clinic facility, 44 percent of women indicated no knowledge of the clinic or the ser-

**Figure 1** Quality-of-care indicators, rural Bangladesh, 1989–91



vices provided; only 28 percent believed that the clinic provided good services most or all of the time.

Table 1 provides further information on other aspects of quality of care surrounding the interaction between field-workers and ever-visited clients. Two main findings emerge from this table. First, substantial variability exists in clients' perceptions of different dimensions of quality of care: Whereas about 60 percent or more of the women surveyed felt that the field-worker was always or usually responsive to questions or appreciative of their clients' need for privacy, only 32 percent believed that the field-worker was always or usually helpful with problems. Second, for all of the indicators of quality of care considered, a sizable minority or even a majority perceived serious deficiencies in the quality of services provided by field-workers. Highly negative

responses were reported by 16 percent to 41 percent of all women. In view of these results, it is not surprising that only one in four women looked forward "very much" to another visit and that one in three women expressed negative views concerning the possibility of a revisit (not shown).<sup>14</sup>

### Effects on Contraceptive Behavior

In examining and analyzing the relationships between selected programmatic variables and both contraceptive adoption and continuation, two main methodological challenges are confronted. The first is that clients' perceptions of quality of care are likely to be highly correlated with, and influenced by, other programmatic dimensions, such as the regularity of and time spent during household visits. In addition, quality of care may be highly related to the characteristics of individual clients as well as to contraceptive use. Separate analysis, for example, indicates that more educated women and those expressing a desire to have no more children both score significantly higher than do uneducated women and those who want more children in terms of perceived quality of care.<sup>15</sup> Therefore, in assessing the unique impact of quality of care upon contraceptive behavior, the effects of other programmatic and client characteristics must be controlled through multivariate analysis.

**Table 1** Percentage distribution of selected quality-of-care indicators, by clients' responses, rural Bangladesh, 1989

Indicator	Always/usually	Sometimes	Never	Total
<b>Is the field-worker</b>				
Responsive to questions	62.9	21.1	16.0	100.0
Appreciative of privacy	59.9	20.8	19.3	100.0
Helpful with problems	32.1	26.6	41.3	100.0
Sympathetic to needs	48.9	27.2	23.9	100.0
Providing enough information	40.0	29.8	30.2	100.0

N = 6,399.

The second issue concerns potential reverse causality or endogeneity resulting from field-workers' selectivity in their outreach visits. Field-workers who are aware of a client's motivation and propensity to practice contraception, for example, may target their visits and outreach efforts toward such clients. Although such effects might be expected to be most apparent with regard to the frequency or duration of field-workers' visits—workers may visit clients interested in adopting family planning more frequently or spend more time with such clients—clients with a strong interest in regulating fertility may tend to view service providers in a more favorable light than other women do. The strength of the association between quality-of-care variables and contraceptive behavior could, for these reasons, be overestimated. To adjust for possible endogeneity, two-stage models are estimated, as outlined in Appendix A.<sup>16</sup>

### Effects on Contraceptive Adoption

Table 2 shows the results of proportional hazards analyses of the effects of programmatic and client characteristics upon subsequent contraceptive adoption among women who were not using contraceptives at the time of the baseline survey; analysis is restricted to women who reported having ever been visited by a female field-worker. The key indicator of quality of service delivery is an index of field-workers' quality of care, based upon client responses to the five aspects of service provision (see Appendix B). Regression coefficients have been exponentiated to reflect risks relative to the omitted category, in this case, the "risk" of adopting a contraceptive method subsequent to the baseline survey. In this and subsequent tables, predicted quality-of-care index scores less than one standard deviation below the mean have been considered as poor, those between one standard deviation below and above the mean as medium, and those more than one standard deviation above the mean as representing high quality of care.

When the quality-of-care index is considered on its own (Model 1), consistent effects on the likelihood of subsequent adoption of contraception are evident. Clients who received what could be considered as high quality of care were 50 percent more likely to adopt a method subsequently, relative to those who received poor care, a highly statistically significant difference. With the introduction of controls for other programmatic variables, effects diminish somewhat, but still remain significant (Models 2–4). Even after controlling for client characteristics (Model 4), respondents who received high standards of care were still 27 percent more likely to have adopted a modern method of contraception during the subsequent period, relative to those who received poor care. Simi-

**Table 2** Proportional hazard-model estimates of relative risk of subsequent contraceptive adoption, by quality-of-care index, programmatic variables, and client characteristics, rural Bangladesh, 1989–91

Covariates	Model 1	Model 2	Model 3	Model 4
<b>Program variables</b>				
Quality-of-care index				
Low (r)	1.00	1.00	1.00	1.00
Medium	1.20*	1.16	1.10	1.10
High	1.50***	1.34***	1.24*	1.27*
Time spent during visit (minutes)				
< 5 (r)		1.00	1.00	1.00
5–10		1.11	1.12	1.04
> 10		1.33***	1.30***	1.16*
Frequency of visits				
Once in 2 months		1.30***	1.23**	1.19**
Once in 3 months		1.26***	1.22**	1.15*
Once in 3+ months (r)		1.00	1.00	1.00
Good care provided at clinic				
Don't know			0.79**	0.81*
Never (r)			1.00	1.00
Rarely			1.09	1.01
Most/all of the time			1.14	1.03
<b>Client characteristics</b>				
Desire for additional children				
Want no more				1.22**
Up to God				0.91
Want more (r)				1.00
Household area (square feet)				
<201 (r)				1.00
201–400				0.80***
401+				0.67***
Age (years)				
<20				1.33**
20–29				1.21**
30–39 (r)				1.00
40+				0.31***
Education (years)				
None (r)				1.00
1–5				1.16*
6+				1.16
Religion				
Hindu (r)				1.00
Muslim				1.28**
Prior modern method use				
Yes				1.62***
No (r)				1.00
Likelihood statistics				
–2 (log likelihood)	24272.35	24231.68	24190.26	23869.18
$\chi^2$	23.49***	64.15***	105.58***	426.66***
(N)	(3,632)	(3,632)	(3,632)	(3,632)

Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ . (r) = Reference category.

lar effects were evident with respect to other program-outreach variables, with both more time spent on visits by the field-worker and more frequent visits associated with a moderately but significantly higher likelihood of subsequent contraceptive adoption. Quality of care at the clinic exerts little effect upon contraceptive adoption; as noted, a significant number of women indicate that they have no knowledge of these facilities.

Model 4 also shows that women wanting no more

children and those with some education were somewhat more likely to accept a method subsequently, although effects were, for the most part, not pronounced. Other effects diverge from expectations. For example, clients living in smaller houses (usually meaning poorer), younger women, and Muslims were all significantly more likely than their counterparts to have adopted a method during the subsequent period. Two explanations may be offered for these counterintuitive results. First, many of the respondents most likely to adopt contraception—for example, older women, women from wealthier households, and Hindus—were already contraceptive users at the time of the baseline survey and thus were excluded from the present analysis (only baseline non-users were included).<sup>17</sup> Second, much of the sample population was exposed to an intensive intervention coordinated by the ICDDR,B during the observation period, which emphasized improved coverage, access, and outreach of services. Underserved and less highly motivated women—that is, those women less likely to undertake independent efforts to obtain contraceptives—might be expected to have been the principal beneficiaries of this effort.<sup>18</sup>

### Quality of Care and Contraceptive Continuation

The data presented here also permit investigation of the effects of quality of care upon contraceptive continuation. For this analysis, two groups of users were included: respondents who were using a modern temporary method of contraception at the time of the 1989 baseline survey and respondents who were not baseline method users but who adopted nonpermanent contraception during the prospective phase of the study.<sup>19</sup> These two groups yield a total cohort of 3,497 users of the following temporary methods: oral contraceptives, the IUD, injectables, condoms, and foam tablets. Respondents were followed from the month of initial acceptance until the time of method discontinuation, loss to follow-up, or the end of the observation period, whichever came first.

Proportional hazards analysis results of the effects of programmatic factors and client characteristics on contraceptive first-method and all-method continuation rates are shown in Tables 3 and 4. The effects of individual characteristics upon contraceptive continuation are generally consistent with expectations: Women expressing a preference for no more children, women from larger (and, presumably, wealthier) households, and older women are, with few exceptions, significantly more likely to remain contraceptive users, either with the method initially adopted or with any method. Maternal education also exerts a significant effect upon method continuation, but only in the case of all-method con-

**Table 3** Proportional hazard-model estimates of relative risk of first-method contraceptive continuation by quality-of-care index, programmatic variables, and client characteristics, rural Bangladesh, 1989–91

Covariates	Model 1	Model 2	Model 3	Model 4
<b>Program variables</b>				
Quality-of-care index				
Low (r)	1.00	1.00	1.00	1.00
Medium	1.22**	1.19**	1.20**	1.08
High	1.74***	1.68***	1.71***	1.41***
Time spent during visit (minutes)				
< 5 (r)		1.00	1.00	1.00
5–10		1.08	1.08	1.06
> 10		1.14*	1.14	1.09
Frequency of visit				
Once in 2 months		1.04	1.04	1.08
Once in 3 months		1.09	1.10	1.11
Once in 3+ months (r)		1.00	1.00	1.00
Good care provided at clinic				
Don't know			1.04	1.03
Never (r)			1.00	1.00
Rarely			0.93	0.96
Most/ all of the time			0.96	0.97
<b>Client characteristics</b>				
Desire for additional children				
Want no more				1.34***
Up to God				1.03
Want more (r)				1.00
Household area (square feet)				
<201 (r)				1.00
201–400				1.10
401+				1.23**
Age (years)				
20				0.73**
20–29				0.82**
30–39 (r)				1.00
40+				1.16
Education (years)				
None (r)				1.00
1–5				1.11
6+				1.08
Religion				
Hindu (r)				1.00
Muslim				0.90
Method used				
Oral contraceptive	0.55***	0.55***	0.54***	0.54***
IUD (r)	1.00	1.00	1.00	1.00
Injectable	0.62***	0.61***	0.61***	0.63***
Other	0.35***	0.35***	0.34***	0.31***
Likelihood statistics				
–2 (log likelihood)	24817.27	24810.25	24806.81	24708.14
$\chi^2$	143.19***	150.21***	153.65***	252.33***
(N)	(2,894)	(2,894)	(2,894)	(2,894)

Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ . (r) = Reference category.

tinuation (Table 4). This finding implies that educated women are more likely than uneducated women to remain contraceptive users not by persisting with the method initially accepted, but by exhibiting a greater propensity to switch successfully to other methods when use of the initial method proves untenable. Finally, controls introduced for specific method used indicate that the highest first-method continuation rates are associ-

**Table 4** Proportional hazard-model estimates of relative risk of all-method contraceptive continuation by quality-of-care index, other programmatic variables, and client characteristics, rural Bangladesh, 1989–91

Covariates	Model 1	Model 2	Model 3	Model 4
<b>Program variables</b>				
Quality-of-care index				
Low (r)	1.00	1.00	1.00	1.00
Medium	1.41***	1.38***	1.37***	1.22*
High	2.23***	2.21***	2.17***	1.72***
Time spent during visit (minutes)				
< 5 (r)		1.00	1.00	1.00
5–10		1.20**	1.20**	1.17*
> 10		1.35***	1.35***	1.27**
Frequency of visit				
Once in 2 months		0.94	0.94	0.98
Once in 3 months		1.10	1.10	1.12
Once in 3+ months (r)		1.00	1.00	1.00
Good care provided at clinic				
Don't know			1.01	1.01
Never (r)			1.00	1.00
Rarely			1.06	1.12
Most/all of the time			1.10	1.14
<b>Client characteristics</b>				
Desire for additional children				
Want no more				1.43***
Up to God				0.91
Want more (r)				1.00
Household area (square feet)				
<201 (r)				1.00
201–400				1.03
401+				1.32**
Age (years)				
<20				0.65***
20–29				0.78**
30–39 (r)				1.00
40+				0.95
Education (years)				
None (r)				1.00
1–5				1.10
6+				1.26*
Religion				
Hindu (r)				1.00
Muslim				0.96
Method used				
Oral contraceptive	0.43***	0.44***	0.44***	0.44***
IUD (r)	1.00	1.00	1.00	1.00
Injectable	0.44***	0.44***	0.44***	0.47***
Other	0.34***	0.34***	0.35***	0.32***
Likelihood statistics				
–2 (log likelihood)	16876.96	16857.43	16855.09	16749.46
$\chi^2$	123.44***	142.97***	145.32***	250.95***
(N)	(2,894)	(2,894)	(2,894)	(2,894)

Significant at \*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*  $p \leq 0.001$ . (r) = Reference category.

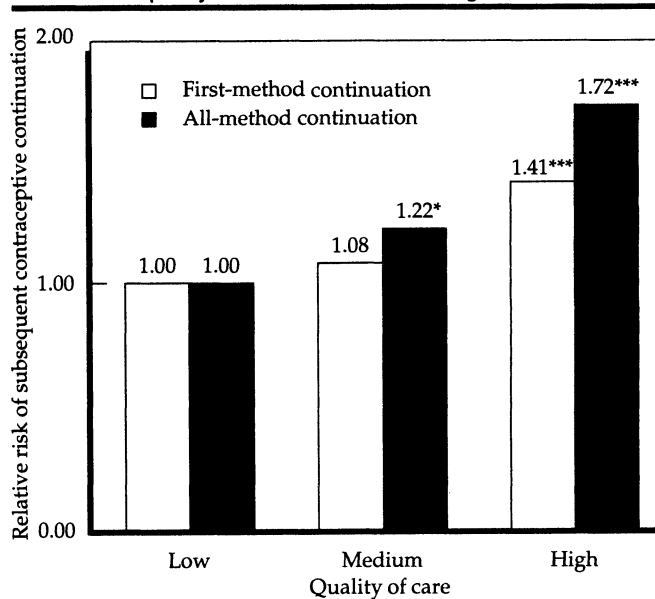
ated with the IUD and with oral contraceptives and injectables characterized by intermediate levels of continued use, and low rates of continuation associated with other methods such as condoms and foam.

Comparison of effects in these tables also yields considerable insight into the nature of the influence of quality of care upon continuity of use (Figure 2). Although significant associations are evident between field-

worker quality of care and both first- and all-method continuation, the association is more systematic with respect to the latter. Those clients who receive moderate and high standards of care are 22 percent and 72 percent more likely, respectively, to continue use of any contraceptive method, compared with those women who received lower quality of care, after controlling for the effects of other programmatic and client-characteristic variables. The corresponding figures for first-method continuation are 8 percent (not statistically significant) and 41 percent. A similar differential effect exists for the amount of time the field-worker spends with her client and first- and all-method continuation rates (see Tables 3 and 4). Other programmatic variables such as the frequency of field-worker visits or clinical quality of care fail to exert significant effects upon either first-method or all-method contraceptive continuation rates.

A simple explanation may be offered for the stronger effects of quality of care upon all-method contraceptive continuation rates. An effective and empathetic worker is likely to focus less on the use of a specific contraceptive method and more on the needs of individual clients, assisting each woman to find the method best suited to her. Thus, when a client has difficulty in adjusting to or tolerating a specific contraceptive method because of perceived or actual side effects, effective field-workers will be inclined toward, and successful in, counseling her to switch to another, more suitable method. As a consequence, clients of field-workers who provide high standards of care are likely to be characterized by

**Figure 2** First- and all-method contraceptive continuation by field-worker quality-of-care index, rural Bangladesh, 1989–91



Significant at \*  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*  $p < 0.001$ .



somewhat higher levels of first-method continuation but, as the results of the analysis indicate, substantially higher levels of all-method contraceptive continuation.

### Method Choice and Contraceptive Adoption

An issue of particular importance concerns the role of method choice in contraceptive-use dynamics. Choice of contraceptive methods has been considered a central determinant of quality of care, because it influences both client satisfaction and contraceptive acceptance and continuation. The earlier categories of the quality-of-care index are cross-classified here with the number of methods reportedly emphasized by the field-worker, and this classification is related to subsequent contraceptive continuation among baseline women practicing contraception. Figure 3 shows the relationship between quality of care, method choice, and the likelihood of subsequent all-method contraceptive continuation, net of the effects of other individual and programmatic variables. Low quality of care/one method discussed has been set as the reference category.

The results of this exercise illustrate the pivotal role that the worker–client interpersonal relationship plays in the client’s decision to continue contraceptive use, as well as the more ambiguous role of wider contraceptive choice. Significantly higher levels of method continuation were only evident among women classified as having received high standards of care. Within

the category of high quality of care, subsequent continuation levels among women who reported that the field-worker emphasized only one method were not appreciably different from women who reported emphasis upon a range of contraceptive methods. The results suggest that if a client perceives herself as receiving reasonable standards of care, an emphasis upon additional methods adds only marginally to the likelihood of method continuation.

### Conclusions

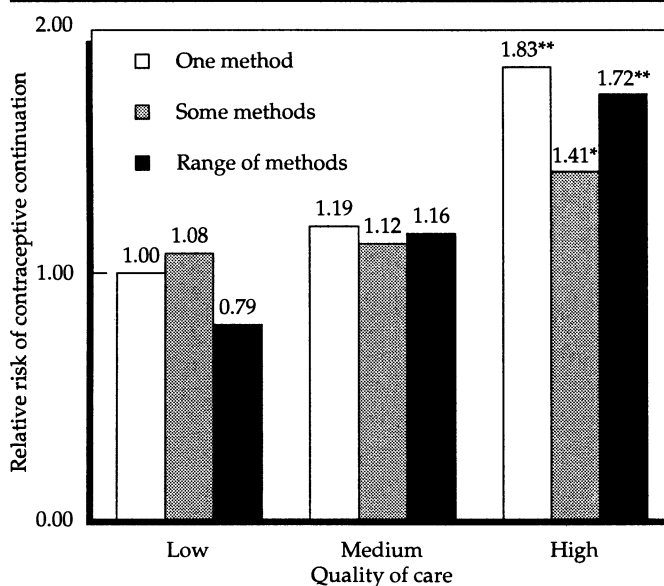
The results of the analysis provide clear and compelling evidence of the importance of quality of care for contraceptive behavior. This study also underscores the key role of the interpersonal relationship between service providers and clients in influencing women’s decision to continue use of a temporary method. Clients who received what they perceived to be high standards of care from field-workers were significantly more likely to continue using contraceptives, compared with those who felt that they received poor care.

Even stronger associations between quality of care and continuity of use might have emerged had more detailed information been available on method complications and the role of family planning personnel in their management. A second potential limitation of the present study concerns the use of proportional hazards models to assess the effects of quality of care upon contraceptive continuation. A central assumption of such models is the proportionality of quality-of-care effects over time—that is, that the effects of quality of care upon method continuation are not conditional upon time. In reality, however, the effects of quality of care may be time dependent, and quality of care may exert significantly stronger effects upon newer, as opposed to longer-term, acceptors of contraception. Although beyond the scope of the present report, future research should address both of these issues.

The effects of the quality of care provided by field-workers upon contraceptive acceptance, although not as pronounced as those upon contraceptive continuation, are also noteworthy. High standards of care are associated with a 27 percent greater likelihood of subsequent adoption. The strong effects of these quality-of-care measures, and the contrasting weak relationship between contraceptive use and perceived quality of clinical care, attest to the centrality of outreach services for family planning service delivery in settings such as rural Bangladesh.<sup>20</sup>

The findings also suggest that the relationship between contraceptive choice and continued use may be more complex than was assumed previously (see Jain,

**Figure 3** Proportional hazard-model estimates of the effects of quality of care and method choice upon all-method contraceptive continuation, rural Bangladesh, 1989–91



**Note:** Net of the effects of other programmatic and client characteristics (see Table 4). Significant at \* $p \leq 0.05$ ; \*\* $p \leq 0.01$ .

1989 and Bruce, 1990). Although the availability of a range of contraceptive methods is clearly desirable at the programmatic level in order to meet adequately the varied needs of clients, similar diversity of choice may not be a requisite at the provider–client level. The results strongly imply, instead, that what may be most critical is not the absolute number of methods offered to the client, but rather the degree of trust, rapport, and confidence established between the field-worker and the client. This relationship may frequently entail an expectation that the worker will guide the client toward the most appropriate choice of method, according to her individual circumstances and needs. This explanation would account for the observed higher levels of contraceptive continuation resulting from reasonable standards of care, even when only a single contraceptive method was discussed with the client, underscoring the key role that the interpersonal dimension occupies in the provider–client relationship.

The findings also illustrate the considerable scope that exists for further improvements in quality of care provided by the Bangladesh public-sector program. Among ever-visited respondents, only one-half could be considered to be receiving acceptable standards of care from the field-worker assigned to their area; only one-fourth welcomed a revisit by the worker. Similarly, only a minority of respondents hold positive views on the quality of services offered through government clinic facilities. Despite these generally negative statistics, however, the picture is not altogether bleak. A small but important minority of respondents feel that they are receiving very high standards of care from the program. Clearly, more research is warranted on this key group of service providers and, more specifically, on the personal, familial, and programmatic factors that contribute to their commitment and ability to provide high standards of care in an environment where such care represents the exception rather than the norm.

The results of this study also underscore the considerable gaps in the coverage and regularity of services provided by the family planning program. The conditions outlined here may represent a “best case” picture of the government program, because the population under study resided mainly in areas that were part of a special pilot project to improve public health and family planning services. In other rural areas of Bangladesh where no special interventions exist, the evidence suggests that the coverage and regularity of services provided by the government program are significantly lower.<sup>21</sup>

A final issue relates to next steps in terms of both research and policy intervention on the issue of quality of care. From the standpoint of further research, corroboration of the findings of the present study in other settings

is highly desirable. In particular, the inherent congruency and complementarity should be demonstrated between concerns for quality of care and fertility reduction, which continues to be a primary objective of many family planning programs in developing countries today.

From the standpoint of policy intervention, if meaningful improvements in service-delivery are to be achieved, the focus must shift to the identification of specific policies and aspects of the service program where changes are both realistic and likely to contribute to improvements in care. The barriers to achieving major improvements in quality of care should not be underestimated, especially in resource-poor bureaucracies such as those characterizing much of South Asia. Gaps in standards of care in such settings are unlikely to be remedied by simple interventions such as the provision of more equipment or additional training, because constraints to quality are intricately tied to the broader array of problems that reduce the overall efficiency and effectiveness of health and family planning programs. Significant and sustained improvements will necessitate fundamental changes in program philosophy and orientation. Nevertheless, the findings of the present study provide some of the strongest evidence to date that if meaningful improvements in the quality of service provision can be achieved, the returns, in terms both of meeting the reproductive needs of individual couples and of achieving broader demographic goals, will be substantial.

## Appendix A

A two-stage regression model is estimated that purges the quality-of-care index ( $Q_{it}$ ) of its correlation with unobserved determinants of contraceptive behavior. This requires the specification of variable(s) that are determinants of quality of care, yet not direct determinants of contraceptive behavior net of quality of care. These variables belong in an equation for quality of care, but not in an equation for contraceptive behavior that contains quality of care among its explanatory variables. Such variables are termed “instruments.” In this instance, the instruments chosen are the sum of contacts ( $C$ ) before time  $t$  (the time at which quality of care is measured), and the number of intervals observed ( $W$ ) over this same period after time  $t$ , because the contacts net of observations is an indicator of the level of outreach prior to the observation period of interest  $t$  to  $t+j$ . Because this level of outreach is prior to the period of interest, it does not affect contraceptive use within the  $Z$  to  $Z+j$  time range, and thus serves as a statistically appropriate instrument. Therefore, to adjust for the effects of endogeneity, a two-stage model is estimated, in which stage 1 is given by:

$$Q_{it} = \alpha_i + \beta \sum_{j=1}^t C_j + \gamma \sum_{j=1}^t W_j + \epsilon_{ij},$$

where  $Q_{it}$  = the perceived quality-of-care score of individual  $i$  at time  $t$ ;  $C_j$  = the cumulative number of contacts over time  $j$

for the period up to time  $t$ ;  $W_j$  = the corresponding number of intervals observed for individual  $i$ ; and  $\alpha$ ,  $\beta$ , and  $\gamma$  are parameters for estimation by ordinary least squares.

Stage 2 uses the quality-of-care score predicted for individual  $i$  in stage 1 to explain the waiting time to adoption or the continuity of use following time  $t$ . These are hazard models of the form:

$$\log\left(\frac{h_{it}}{1-h_{it}}\right) = \alpha(t) + \beta\hat{Q}_{it} + \sum_{k=1}^K \gamma_k X_{ik} + \sum_{l=1}^L \delta_l Z_{il}, \quad t=0, 1, 2, \dots$$

for adoption and continuity, respectively, where  $t$  defines the starting point of an interval;  $\alpha(t)$  = a function of time;  $\hat{Q}_{it}$  = the predicted quality-of-care score from stage 1;  $h_{it}$  = the odds of adopting or continuing contraception following time  $t$  for individual  $i$ ;  $X_{ik}$  = the  $k$ th characteristic of individual  $i$ ; and  $Z_{il}$  = the  $l$ th program characteristic for individual  $i$ .

## Appendix B

It is doubtful that responses to a single question can capture adequately a dimension as complex and multidimensional as quality of care. In recognition of this problem, an index was created based upon clients' responses to the following five questions included in the survey: (1) Is the field-worker responsive to your questions? (2) Is she appreciative of your need for privacy? (3) Is she someone you can depend upon to help with your problems? (4) Is she sympathetic to your problems and needs? (5) When she explains something to you, does she provide enough information?

Responses to these questions were coded in the following manner: Always = 3; usually = 2; sometimes = 1; never = 0. The scores on these five questions were then summed, creating a single index ranging in value from 0 to 15. Respondents who reported that they had never been visited by a female field-worker were excluded from the analyses using this index.

## Notes

- 1 For a critique of these approaches, see Mensch (1993).
- 2 However, in the population studied, 86 percent of all women reported having received the contraceptive method of their choice.
- 3 The corresponding figures were 51 percent versus 14 percent in The Gambia and 37 percent versus 19 percent in Niger.
- 4 The six countries were Guatemala, Hong Kong, Kenya, Jordan, Nepal, and Trinidad and Tobago.
- 5 These innovations include improved management-information systems, expanded contraceptive method choice, improved female field-worker staffing ratios, improved transportation and outreach by paramedical staff, and strengthened supervision and training. See Phillips et al. (1984) and Haaga and Maru (1996) for a description.
- 6 See Mozumder et al. (1990). The population under surveillance originally consisted of 7,400 households in two rural field sites. In 1986, 2,500 households from a third field site serving as a comparison area were added.

- 7 Other perspectives from which to assess the quality of family planning services are at the policy and service-delivery-point levels. See Kumar et al. (1989) for a discussion.
- 8 Other research has shown that the contribution of male field-workers (called health assistants) to family planning service-delivery activities in rural Bangladesh is very limited (Phillips et al., 1993; Ashraf et al., 1994).
- 9 In the government program, one clinical facility (called a Health and Family Welfare Centre) has been established per union, an administrative unit of 20–25,000 population. Each clinic is staffed by one female paramedic and one male medical assistant. These clinics are responsible for the delivery of maternal and child health and family planning, with the latter including IUD insertions but not sterilization.
- 10 Of the 60 field-workers in the study area, almost all remained in their positions for the entire 30 months of the study.
- 11 For a more detailed description of these results, see Whittaker et al. (1996).
- 12 Although the data are not strictly comparable, roughly similar levels of outreach effort were reported nationally in the 1989 Bangladesh Fertility Survey. In this survey, 41 percent of women reported receiving at least one visit, and 25 percent, more than one visit, from a female field-worker in the previous three-month period (Huq and Cleland, 1990: 71).
- 13 Information on the specific method or methods that the field-worker emphasized was not collected.
- 14 Defined as "not so much" or "not at all."
- 15 Educated women may be more likely both to demand and receive better services from providers than uneducated women.
- 16 See Phillips et al. (1996) for a description of this analytical approach.
- 17 A separate analysis of the determinants of baseline contraceptive use revealed many of the expected relationships between client characteristics and contraceptive use. Women wanting no more children, those aged 30–39, better educated, and of the Hindu religion were all significantly more likely to be using contraceptives at the time of the baseline survey.
- 18 Recent results from the Matlab study area, for example, illustrate how an intensive outreach program contributed to the elimination of differentials in contraceptive use between educated and uneducated women. See Koenig et al. (1992).
- 19 The inclusion of the former group, women who remained contraceptive users up to the baseline survey, leads to an inflation in rates of contraceptive continuation. However, the relative rates of continuation between different groups of users should remain largely unaffected.
- 20 See Simmons and Phillips (1992) and Phillips et al. (1996) for a discussion of this point.
- 21 A similar study in the comparison area of Matlab, served only by the government program, found that almost 40 percent of respondents had never been visited by a female field-worker. Among those ever visited, the quality of care provided to clients appeared to be uniformly low (Koenig et al., 1992).

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