A New Composite Index to Measure National-Level Quality of Family Planning Programs

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CONTEXT: *Despite efforts to use facility surveys to measure the quality of family planning programs, routine, reliable measurement and monitoring of national-level quality has not been possible.*

METHODS: *A new composite index to measure national-level quality, the National Quality Composite Index (NQCI), is proposed and used to compare program quality in 30 developing countries. Index scores represent the unweighted average of scores from indicators of three different dimensions of quality—structure, process and outcome. The structural indicator, the Method Availability Index, used data from the 2014 Family Planning Effort survey, while the process indicator (the Method Information Index) and outcome indicator (the Method Success Index) used data from the most recent Demographic Health Surveys conducted in the included countries. Correlations between these and other indicators were examined.*

RESULTS: *The unweighted average NQCI score for the 30 countries was 60; scores ranged from 50 in Pakistan to 72 in Cambodia. The average scores for the three NQCI components were 52 for Method Availability (range, 40–73), 41 for Method Information (range, 13–71) and 86 for Method Success (range, 70–99). Scores for these components were not correlated with each other, suggesting that they measure distinct dimensions of program quality. Overall NQCI scores were correlated with existing measures of national-level quality, but not with total fertility rate and modern contraceptive prevalence rate.*

CONCLUSIONS: *The NQCI and its three components use data routinely collected through national surveys, and can be used to measure and monitor national-level quality of family planning programs.*
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All individuals have the right to have children if, and when, they want, and many use contraceptives as a preventive measure and as an aid in fulfilling their family planning goals. Many, however, cannot exercise this right, often in part because of community, familial and religious impediments, and because of obstacles they face in gaining access to and using family planning services. In developing countries, public-sector family planning programs offer contraceptive information and services at little or no cost to a growing number of clients. Private-sector providers, including pharmacies, have also grown in coverage, largely as distributors of condoms and pills. Globally, the prevalence of modern contraceptive use has risen to 64% among in-union women, and fertility has declined to 2.5 births per 1,000 women.[1] One factor that may be contributing to declining fertility and to increasing contraceptive prevalence is the quality of care provided by national family planning programs.

Although reinvigorated by the 2012 London Summit on Family Planning,[2,3] interest in and work on quality of care in family planning programs began more than 20 years earlier, when Judith Bruce articulated a client-centered framework for assessing the quality of family planning care.[4] Her framework consists of six elements: choice of contraceptive methods, information given to clients, technical competence, interpersonal relations, mechanisms for follow-up and continuity, and provision of an appropriate constellation of services. The framework focuses largely on interactions between clients and providers, and on improving the quality of care offered to and received by women (and, theoretically, men) seeking contraceptive services; those who cannot or do not come into contact with services are not considered in this framework. Although the framework has become a cornerstone of family planning programming, very little is known about how well countries have done in providing quality family planning services, in part because of the absence of an index to measure national program quality.

The purpose of this article is to propose a new composite index to measure national-level quality of family planning programs. The index can be used to compare quality among countries, as well as to monitor progress within a country. The need for such an index has become especially urgent in light of the global goal set at the London Summit of helping 120 million additional women in developing countries use contraceptives by 2020.[3]

Prior Research

Considerable work has been done during the past 25 years in developing and applying methods to measure, monitor and improve quality of care;[5] however, most of this effort

concerned services available and care provided at health facilities or service delivery points. For example, Miller and colleagues developed a methodology—termed Situation Analysis[6]—to collect data on the quality of services available from, and the quality of care clients receive at, service delivery points.

First used in Kenya in 1989, Situation Analysis subsequently has been employed extensively to describe the quality of family planning services in countries in Sub-Saharan African, Asia and Latin America. The methodology has been used to create indicators of elements of quality of care,[7–10] as well as overall quality of care.[10–12] For example, Askew et al. used Situation Analysis data to create more than 40 indicators of various elements of quality,[8] while Mensch and colleagues used such data to describe the functioning of subsystems of family planning in Nigeria, Tanzania and Zimbabwe.[13] Similarly, Miller et al. used 28 indicators to describe infrastructure and facility readiness, and 36 indicators to describe the quality of care received by clients.[14]

Recognizing that using a smaller number of indicators would provide greater utility and lower costs, researchers at Tulane University developed the Quick Investigation of Quality methodology, which they used to describe quality of care in Ecuador, Turkey, Uganda and Zimbabwe.[15] However, the number of indicators used, although lower than in earlier studies, remained high (25).

Given their complexity and cost, both the Situation Analysis and the Quick Investigation of Quality methodologies are no longer in common use, except in research studies. These methodologies were ostensibly replaced by Service Provision Assessment, a tool designed and administered by the Demographic and Health Survey (DHS) program.[16] However, Service Provision Assessment has been used in only about 15 countries, including Kenya, Namibia, Senegal, Ethiopia, Haiti, Malawi and Tanzania.[17–19] Similarly, under the Family Planning 2020 program, the Performance Monitoring and Accountability 2020 initiative collects facility-level data in 11 high-priority countries.[20] Much effort has also been made to document the nature of client–provider interactions by having independent observers assess these interactions, by interviewing women as they leave health facilities after receiving services and by using the simulated-client approach.[21,22] Although the information gathered through these techniques has provided valuable information to program managers about the nature of service provision and has identified gaps in service delivery, it has not been used to create a national indicator of quality, perhaps in part because these efforts focused on measuring each element of quality and on using facility surveys to improve quality.

In her articulation of the quality framework, Bruce followed Donabedian's approach[23] in suggesting that assessments of quality examine three different aspects of family planning programs: the structure of the program, the service-giving process and the outcome of care.[4] In this conceptualization, program structure refers to the extent to which a program is ready to provide the intended level of quality (such readiness is sometimes denoted by the phrase "quality of services"). The service-giving process refers to the extent to which clients receive the intended level of quality (this is sometimes equated with "quality of care").[7] Finally, outcome refers to the program's effects on clients' knowledge, behavior and satisfaction.

Jain and Hardee recently suggested making five modifications to the original quality of care framework to make it consistent with rights-based family planning.[24] Four of the recommendations concerned individual elements of quality outlined in the framework; for example, they suggested broadening the element of interpersonal relations to explicitly include treating clients with dignity and respect, and ensuring their privacy and confidentiality. The fifth recommendation was to divide the elements in the quality of care framework between the structural and process levels, according to their appropriateness for measurement and improvement. While all six elements are important at both the structural and process levels, it has been difficult to measure each element at both levels separately. The task of operationalizing and measuring quality can be facilitated if we recognize that some elements of quality are more relevant to the structural level than to the process level; these include the availability of methods to ensure choice, of trained and competent providers to ensure safe provision of clinical methods and to ensure proper treatment of clients, of space to ensure privacy and of additional appropriate reproductive health services. The other elements—information exchange, interpersonal relations and follow-up mechanisms—are more relevant to the process level. However, information exchange and interpersonal relations—together, broadly categorized as client–provider interactions—remain the main vehicles to operationalize the six elements of quality at the point of care. For example, multiple contraceptive methods may be available at a particular service delivery point, but whether the client receives the information she needs and the method she chooses depends on the interaction between the client and the provider.

Bruce suggested that service outcomes be measured along a timeline ranging from short term to long term;[4] however, some current outcome measures are not optimal because they do not provide sufficient differentiation. For instance, one commonly used short-term outcome—knowledge of contraceptive methods—is nearly universal: In one study, among women with unmet need, lack of knowledge of a method or of a source was cited as a reason for nonuse by only 1% of those in Latin America and the Caribbean, 2% of those in Asia and 6% of those in Africa.[25] Similarly, use of a single question to assess whether a client was satisfied with services usually solicits normative responses, such that more than 90% of women report being satisfied, irrespective of quality of care received.[9,12]

Other measures are suboptimal because they require hard-to-collect data. One example is HARI (Helping individuals Achieve their Reproductive Intentions), a measure of long-term outcomes that was proposed in 1994 to assess

success or failure of family planning programs that have a reproductive health orientation.[26] This indicator, which applies the principle of individual rights and well-being to evaluation of these programs, has two components: It assesses whether women achieve their reproductive intentions and whether they avoid severe health problems associated with their efforts. Although HARI has been used to examine program success in Peru,[27] it has not been used widely, perhaps because estimation of the first component requires panel data.

Need for a National Indicator of Quality

Although measuring and monitoring national-level quality has become especially important in the wake of the Family Planning 2020 partnership,[3] a single indicator need not be useful both for monitoring quality and for identifying interventions to improve quality. For example, two commonly used indicators in the family planning and demographic literature are the contraceptive prevalence rate (indicating the level of contraceptive use) and the total fertility rate (indicating the level of fertility). These indicators are used to monitor differences among countries, as well as trends within countries, but do not provide information useful for making programmatic changes required to raise contraceptive prevalence or to reduce fertility. Similarly, although an index is needed to assess national-level program quality, such an indicator need not provide information on how to improve quality.

Two indices to gauge national-level quality are currently available. Both use information collected through Family Planning Effort surveys, which began in 1972 and have been conducted approximately every five years since 1989 by the Futures Group and, more recently, by Avenir Health and the Health Policy Project.[28] For each developing country included in a given round (the most recent round included 90 such countries), the survey collects information from 10–15 persons knowledgeable about the national family planning program. Data from various rounds have been widely used for such purposes as determining the association between method availability and contraceptive use.[29–31]

The first index is based on responses to a Family Planning Effort survey question asking participants to rate the general quality of a country's family planning services on a 10-point scale. The instructions to respondents mention that a good-quality program focuses on client needs and encompasses counseling, information on and availability of a range of methods, and provision of safe clinical procedures.

The second country-level indicator is the quality component of the National Composite Index for Family Planning (NCIFP).[32] Created to measure the overall strength of family planning programs, the NCIFP assesses five dimensions of programs: strategy, data, quality, equity and accountability. The NCIFP questionnaire was added to the end of the latest (2014) Family Planning Effort survey; the quality dimension of the NCIFP is measured using 12 questions.

This article proposes another index, the National Quality Composite Index (NQCI), to gauge national-level quality. The NQCI measures quality of national family planning programs at each of the three levels identified by Donabedian[23] and Bruce[4]—structure, process and outcome—and then provides an overall quality score, using the most recent and best sources of comparative data available for a large set of developing countries. Specifically, the program's structure is assessed by a Method Availability Index that measures the readiness of a program to offer choice of contraceptive methods; the service-giving process is assessed by a Method Information Index that reflects the type of information contraceptive users report having received at the time of contraceptive initiation; and client-level outcomes are assessed by a Method Success Index that reflects the degree of success contraceptive users have in avoiding unintended births. The NQCI uses not only data collected in Family Planning Effort surveys, but also data collected from women who participated in DHS surveys. Thus, it incorporates women's reports on some elements of quality and, like the two currently available indices, can be used to compare quality across countries or to monitor quality over time within a country, but not for identifying interventions to improve quality. Finally, unlike the HARI index's achievement of reproductive intentions component, the new index does not require panel data.

METHODS
Computation of Index and Components
• *Method Availability Index*. The Method Availability Index is estimated using information obtained from Family Planning Effort surveys. The 2014 survey[28] collected data on availability of eight contraceptive methods— the pill, IUD, injectable, condom, implant, emergency contraceptive pills, and male and female sterilization— and on availability of removal services for two methods, the IUD and implant. The availability of a method (or of removal services) was ascertained from responses to a survey item that asked respondents to rate, on a 10-point scale, the extent to which the entire population had easy access to that method or its removal. To calculate a country's Method Availability Index score, the average ratings for the availability of each of the eight methods and the two removal services are added, and the sum is divided by 10. Availability of removal services is included in the index because these services are essential for quality provision of clinical methods.
• *Method Information Index*. This index, which is one of the core indicators used by Family Planning 2020,[33] evaluates the quality of the service-giving process using women's reports of the information they received at the time of contraceptive initiation.

DHS surveys routinely collect data from individuals who are using a modern method (the pill, IUD, injectable, implant and sterilization) and who had initiated its use within the past five years. In particular, respondents are asked whether, at the time of initiation, they

had been told about another method, about side effects associated with the method they selected and about how to manage these side effects. The Method Information Index score indicates the percentage of contraceptive users who responded yes to all three questions,[32] and has been used to document variations among developing countries, changes within a country and differences by socioeconomic characteristics among women within a country.[33–35]

• *Method Success Index.* The Success Index indicates the percentage of contraceptive users who avoided an unintended birth during a specified period (e.g., five years). The index is thus similar to the first component of the HARI index (achievement of reproductive intentions). Values are calculated using retrospective data from DHS surveys, which utilize reproductive calendars to collect information about contraceptive use and births during the prior five years; such data have been used to estimate the contribution of contraceptive discontinuation to unintended births in 36 developing countries.[36]

Estimation of a country's Success Index score (using a five-year time period) is as follows. Let t denote the time of survey, and let $t–5$ (i.e., five years before the survey) denote the start of the period of potential use of a modern contraceptive method (the pill, injectable, implant, IUD or

sterilization). All subsequent segments of use (irrespective of method) and nonuse are included.

Women who were using a modern method at time $t–5$ are divided into three groups according to whether they had a birth between $t–5$ and t, and whether they reported that their most recent birth was unintended (mistimed or unwanted). Thus, the three groups are those who had no births between $t–5$ and t, those who reported that their most recent birth was intended and those who reported that their most recent birth was unintended. Only a woman's most recent birth is included, to minimize recall bias; if a woman was pregnant at the time of the survey, that pregnancy is classified as her most recent birth.

Contraceptive users' reporting that their most recent birth between time $t–5$ and t was unintended is considered a failure of contraceptive use, an approach similar to that used by Tietze and Lewit in estimating the extended use-effectiveness of a method.[37] Conversely, those who avoided an unintended birth between time $t–5$ and t are considered to have been successful, and the Success Index indicates the percentage of contraceptive users who reported such success. Note that the Success Index incorporates the reproductive intentions of contraceptive users retrospectively (whereas the HARI index assesses the achievement of intentions prospectively), and that because some unintended pregnancies may have ended in miscarriage or abortion, the Success indicator reflects the occurrence of those events.

• *Composite Index.* The NQCI combines the Availability, Information, and Success indicators, and is estimated by simply taking the unweighted average score for those three indicators.

Data and Variables

To illustrate the estimation and utility of the NQCI, this analysis calculated index values for all developing countries for which recent data were available. Data from the 2014 Family Planning Effort survey were used to calculate Method Availability Index scores, while data from the most recent DHS surveys were used to calculate the Method Information Index and Method Success Index scores. Data for the Method Success Index were available for 37 developing countries; data for the Method Availability Index were not available for six of these countries, and data for the Method Information Index were not available for one additional country. The analysis is thus based on the remaining 30 countries (Table 1).

Because a country's total fertility rate (TFR) and modern contraceptive prevalence rate (mCPR) are commonly used to assess the effectiveness of family planning programs, these two variables were included in this analysis to ascertain their associations with the NQCI. The data for these variables were taken from the latest DHS surveys.[38] The two existing indices of national program quality—those from the 2014 Family Planning Effort survey and from the NCIFP[32]—were also included, to ascertain their associations with the NQCI and with TFR and mCPR.

TABLE 1. National Quality Composite Index overall and component scores, by region and country

Region/country	Survey year	NQCI	Component		
			Availability	Information	Success
All	**na**	**59.7**	**52.2**	**40.7**	**86.2**
Sub-Saharan Africa	**na**	**59.8**	**52.2**	**43.6**	**83.5**
Rwanda	2010–2011	71.0	73.2	57.7	82.1
Benin	2011–2012	65.6	59.9	45.0	91.7
Senegal	2014	64.1	65.4	41.4	85.3
Zambia	2013–2014	63.1	42.1	71.0	76.3
Tanzania	2010	62.8	52.1	51.5	85.0
Mozambique	2011	62.8	45.5	53.6	89.3
Madagascar	2008	62.8	47.9	45.1	95.3
Malawi	2010	61.8	50.5	64.6	70.3
Nigeria	2013	59.4	39.6	50.2	88.4
Kenya	2008–2009	58.9	53.3	43.2	80.2
Namibia	2013	58.6	49.1	40.8	85.8
Ghana	2008	57.5	50.3	41.9	80.1
Zimbabwe	2010–2011	57.1	53.7	35.9	81.8
Niger	2012	55.9	49.4	28.5	89.8
Uganda	2011	55.9	48.6	43.9	75.1
Lesotho	2009	54.6	45.2	27.8	90.9
Burundi	2010	53.3	58.4	26.3	75.2
Ethiopia	2011	50.9	54.8	17.1	80.7
Other regions	**na**	**59.6**	**52.3**	**36.2**	**90.3**
Cambodia	2010	72.1	57.9	63.9	94.6
Jordan	2012	64.3	61.5	49.3	82.2
Nepal	2011	64.3	54.0	42.2	96.7
Bolivia	2008	61.4	49.9	51.4	82.9
Egypt	2014	60.3	53.9	38.1	88.7
Peru	2012	60.0	43.5	52.4	84.2
Timor-Leste	2009–2010	58.2	37.0	40.2	97.5
Bangladesh	2004	58.1	67.1	19.5	87.5
Indonesia	2012	56.5	54.7	20.9	94.0
Honduras	2011–2012	56.1	52.9	28.2	87.2
India	2005–2006	54.4	49.0	15.6	98.7
Pakistan	2012–2013	49.7	45.9	13.2	89.8

Notes: NQCI=National Quality Composite Index. na=not applicable.

Analysis

Simple percentages and averages were calculated for relevant variables. Values were calculated not only for the 30 countries but also for two regional groups: Sub-Saharan African countries and non–Sub-Saharan African countries; values for these groups are simple unweighted averages of country-specific percentages or values (i.e., each country was assigned the same weight). The NQCI scores are indicative of the level of program quality in countries, and no attempt was made to test the statistical significance of differences between countries. Simple coefficients were estimated for correlations among values for the NQCI, TFR, mCPR and the two other indices of quality, to indicate the degree of observed or gross association between these variables. Statistical significance was assessed using a two-tailed test measured at the .01 and .05 levels of significance; however, a sample size as small as the one in this analysis (30 countries) can result in correlations that are not statistically significant even when the value of the correlation coefficient is high.

RESULTS

Descriptive Analysis

The unweighted average value of the NQCI for the 30 countries was 60 (Table 1). The value for individual countries ranged from 50 in Pakistan and 51 in Ethiopia to 71 in Rwanda and 72 in Cambodia. The unweighted averages for the three components of NQCI were 52 for Method Availability, 41 for Method Information and 86 for Method Success. Method Availability scores varied from 37 in Timor-Leste to 73 in Rwanda. Values for the Method Information Index varied from 13 in Pakistan to 71 in Zambia. Success Index scores varied from 70 in Malawi to 99 in India.

Unweighted NQCI averages did not differ between the 18 Sub-Saharan African countries and the 12 other countries (60 in both). Similarly, the average Method Availability scores in these two groups were essentially identical (52). However, average Method Information scores were higher in Sub-Saharan Africa than in other regions (44 vs. 36), whereas the reverse was true for Success Index scores (84 vs. 90).

Relatedly, the NQCI values for two countries can be the same despite differences in the Availability, Information and Success indices. For example, Kenya and Peru have very similar NQCI scores (59 and 60); however, the Method Availability score is much lower for Peru than for Kenya (43 vs. 53), whereas the Method Information score is much higher for Peru than for Kenya (52 vs. 43). Moreover, the value of the NQCI can be relatively low even if one of the component scores is quite high. For example, India's NQCI score is 54—second lowest among non–Sub-Saharan African countries—even though the country's Success Index score (99) is the highest among the full sample of 30 countries (because of the predominant use of sterilization). This anomaly is due to India's extremely low scores on the Availability and Information indices.

The Success Index has two components—the percentage of contraceptive users who did not have a birth and the percentage who reported their most recent birth as intended—and the relative contribution of these components may differ among countries with similar Success Index scores. For example, the value of the Success indicator is high in both Niger and Nepal (90 and 97, respectively). However, the value for Niger is due almost entirely to the high proportion (82%) of contraceptive users who reported that their most recent birth had been intended; only 8% of users reported having no births during the reference period (not shown). In contrast, just 7% of contraceptive users in Nepal indicated that their most recent birth had been intended; the high value of the country's Success Index score is due to the 89% of users who reported having had no births.

Three Sub-Saharan African countries—Ethiopia, Malawi and Rwanda—have been making steady progress in increasing contraceptive prevalence (Table 1).[38] However, they rank quite differently in NQCI scores. Rwanda had the highest scores among Sub-Saharan African countries (71), while Ethiopia had the lowest (51) and Malawi fell in the middle (62). Ethiopia has done better than Malawi in making contraceptive methods available (their Availability scores were 55 and 51, respectively), but it has not done as well in providing information to users (its Information score was 17, compared with 65 for Malawi). Rwanda, in contrast, is doing better than average in both making methods available (Availability score, 73) and providing information to users (Information score, 58).

Correlations Between Measures

None of the correlations between the three components of the NQCI (Availability, Information and Success) achieved statistical significance (Table 2). Thus, these components seem to reflect three different dimensions of quality, and the NQCI index similarly reflects three different dimensions—structure, process and outcome. Overall NQCI scores were correlated with values for two of the component indices, Availability (0.38) and Information (0.79), but not with those for the Success index.

The unweighted average NQCI score for the 30 countries (60; Table 3) was similar to the corresponding quality scores from the Family Planning Effort survey (56) and the NCIFP (55). Moreover, NQCI scores were positively associated with scores for the other two indicators of quality (coefficients, 0.41–0.47; Table 4). However, the correlation

TABLE 2. Coefficients of zero-order correlations between National Quality Composite Index component and overall scores, from analysis of data from 30 developing countries

NQCI component	NQCI component			NQCI
	Availability	Information	Success	
Availability	1.00	−0.07	−0.14	0.38*
Information	—	1.00	−0.32	0.79**
Success	—	—	1.00	0.08

*p<.05. **p<.01. *Note:* NQCI=National Quality Composite Index.

TABLE 3. Comparison of National Quality Composite Index scores with values of other indicators of family planning program quality and effectiveness, by region and country

Region/country	Year	Quality indicators			TFR	mCPR
		NQCI	FPE14	NCIFP		
All	**na**	**59.7**	**55.8**	**54.8**	**4.3**	**35.6**
Sub-Saharan Africa	**na**	**59.8**	**56.6**	**58.8**	**5.1**	**29.7**
Rwanda	2010–2011	71.0	74.7	85.9	4.2	45.1
Benin	2011–2012	65.6	63.0	63.9	4.9	7.9
Senegal	2014	64.1	63.2	69.9	5.0	20.3
Zambia	2013–2014	63.1	56.5	50.0	5.3	44.8
Tanzania	2010	62.8	55.6	52.4	5.4	27.4
Mozambique	2011	62.8	50.5	52.8	5.9	11.3
Madagascar	2008	62.8	51.3	59.1	4.8	29.2
Malawi	2010	61.8	58.6	62.2	5.7	42.2
Nigeria	2013	59.4	45.4	49.2	5.5	9.8
Kenya	2008–2009	58.9	50.0	52.7	4.6	39.4
Namibia	2013	58.6	58.6	41.4	3.6	55.3
Ghana	2008	57.5	60.7	72.0	4.0	16.6
Zimbabwe	2010–2011	57.1	65.7	60.2	4.1	57.3
Niger	2012	55.9	53.2	59.0	7.6	12.2
Uganda	2011	55.9	46.2	64.8	6.2	26.0
Lesotho	2009	54.6	56.6	43.2	3.3	45.6
Burundi	2010	53.3	52.8	62.4	6.4	17.7
Ethiopia	2011	50.9	56.3	57.7	4.8	27.3
Other regions	**na**	**59.6**	**54.7**	**48.8**	**3.2**	**44.4**
Cambodia	2010	72.1	57.8	55.4	3.0	34.9
Jordan	2012	64.3	67.7	72.7	3.5	42.3
Nepal	2011	64.3	64.8	48.8	2.6	43.2
Bolivia	2008	61.4	62.7	50.6	3.5	34.6
Egypt	2014	60.3	57.9	61.4	3.5	56.9
Peru	2012	60.0	46.3	42.8	2.5	51.8
Timor-Leste	2009–2010	58.2	37.8	30.0	5.7	21.1
Bangladesh	2004	58.1	59.5	43.2	2.3	52.1
Indonesia	2012	56.5	44.4	38.5	2.6	57.9
Honduras	2011–2012	56.1	68.4	60.1	2.9	63.8
India	2005–2006	54.4	43.2	45.8	2.7	48.5
Pakistan	2012–2013	49.7	45.3	36.0	3.8	26.1

Notes: NQCI=National Quality Composite Index. FPE14=2014 Family Planning Effort survey. NCIFP=National Composite Index for Family Planning. TFR=total fertility rate. mCPR=modern contraceptive prevalence rate. na=not applicable.

TABLE 4. Coefficients of zero-order correlations among quality indicators and other measures, from analysis of data from 30 developing countries

Quality indicator	Quality indicator			Total fertility rate	mCPR
	NQCI	NCIFP	FPE14		
NQCI	1.00	0.41*	0.47**	−0.071	−0.017
NCIFP	—	1.00	0.67**	0.250	−0.157
FPE14	—	—	1.00	−0.220	0.262

*p<.05. **p<.01. *Notes:* NQCI=National Quality Composite Index. NCIFP=National Composite Index for Family Planning. FPE14=2014 Family Planning Effort survey. mCPR=modern contraceptive prevalence rate.

coefficients for the relationships between these three indicators of quality and both TFR and mCPR were small and not statistically significant, suggesting that the dimensions of service measured by TFR and mCPR differ from those measured by the three indices of quality.

The Method Success indicator and its two components (having no births and having only intended births) were significantly correlated with TFR (not shown). Specifically, TFR was negatively associated with the Method Success score (correlation coefficient, −0.36; p<.05) and with the percentage of contraceptive users who had not had a birth (−0.82; p<.01), and positively associated with the percentage

of users who reported that their most recent birth had been intended (0.84; p<.01). The percentage of users without a birth was positively associated with mCPR, as well as with the percentage using a long-acting or permanent method. However, because the percentage of contraceptive users whose most recent birth had been intended was negatively associated with both mCPR and the proportion using a long-acting or permanent method, the Success indicator was not correlated with those two measures.

LIMITATIONS

This analysis has some limitations. First, equal weights were assigned to the Availability, Information and Success indicators in estimating the composite NQCI score. This approach may not be optimal, although it is preferable to alternatives in the absence of any theoretical or empirical evidence about the relative importance of the three components.

Second, the Method Information Index score is calculated using retrospective responses to three questions asked of women who were using contraceptives, an approach that has limitations.[35] For example, the question concerning whether a woman had been told about another method can be interpreted in multiple ways; some potential pill users might have answered yes if the provider had simply told them that the facility also offered the injectable and implant, while others might have responded affirmatively only if the provider had given specific information about these methods (e.g., the injectable will protect you for three months and the implant will protect you for up to five years). Moreover, the predictive validity of the index and the extent to which it captures the most important aspects of information exchanged between providers and clients (e.g., the possibility of switching) are not known.

Third, scores on the Method Success Index are calculated using information from women who had been classified, according to data collected via reproductive calendars in DHS surveys, as having been contraceptive users 60 months prior to the survey. This approach may underestimate contraceptive use if women who had been using contraceptives five years earlier are misclassified as nonusers.[39] I explored this possibility by comparing the proportion of women who reported having been contraceptive users in each country with estimates of contraceptive prevalence from a DHS survey conducted about five years earlier. The two estimates were different but highly correlated (r=0.96; p<.001), suggesting that errors in classifying women as contraceptive users or nonusers were infrequent and are unlikely to have distorted the findings of this study.

Fourth, scores for the Method Success indicator may reflect factors beyond the quality of care provided by a program. For example, one of the two components of the Success indicator—the percentage of contraceptive users who did not have a birth—may reflect not only the effective use of contraceptives, but also such factors as the frequency of sex, the absence of a partner, and the availability and use of abortion services.

Similarly, the second component of the Success indicator uses data on retrospective reports of whether a woman's most recent birth was wanted then, wanted later or never wanted. Unwanted births may be underreported retrospectively, because women may be reluctant to describe a birth as unwanted. However, many of these unwanted births are likely reported not as intended, but as mistimed; because the Success indicator treats mistimed births the same as it does unwanted births (i.e., neither is considered a successful event), such instances of misclassification would not affect the index score. Furthermore, the effect of recall bias on reports of intendedness in this study was minimized by the analysis's focus on a woman's most recent birth.

Whether a woman retrospectively reports a birth as intended or unintended also likely reflects prevailing fertility norms in a country. For example, under high-fertility conditions, most births are likely to be reported as intended. If fertility norms change such that desired family size begins declining, the proportion of births that are intended may decline as well. However, toward the later stages of a fertility transition, contraceptive users may primarily have intended births, and women may use abortion to terminate unintended pregnancies. Thus, the Success indicator may have high values both when desired fertility is high and when it is low. Nonetheless, the scores for the Success indicator and its two components are highly correlated with TFR.

DISCUSSION

The NQCI index proposed here offers a way to measure and monitor national-level quality routinely. It incorporates three important dimensions of quality—the structure of a program, the service-giving process and client behavioral outcomes. The data used to create indicators of these dimensions are available from cross-sectional surveys like the DHS and the Family Planning Effort survey. The structure indicator reflects availability of methods to all women, although the other two indicators reflect the experience only of contraceptive users.

Because the NQCI score is based equally on scores from its three component indices, one would expect the NQCI to be correlated with each of them. The NQCI is indeed correlated with the Availability and Information indices, but not with the Success Index. Moreover, one would expect scores for the three component indicators to be correlated with each other; however, they are not.

The lack of correlations among the three component indicators may reflect that we are dealing with ecological (macro-level) correlations, which do not always reflect the relationships observed at the individual-woman level. For example, research on contraceptive users in the Philippines who had had an unwanted birth—an outcome similar to the NQCI's success indicator—found the relationship between structure and process indices at the individual level to be weak, but the relationship between process and outcome indicators at that level to be strong.

One may be tempted to conclude that the lack of correlation between Success Index and NQCI scores, or between values on the Success and Information indices, suggests that fertility outcomes are not strongly influenced by quality, but rather reflect the influence of other, more important factors (such as demand for and motivation to use contraceptives). However, this may not be the case, because the NQCI's Information and Success indices are both based on the experiences of contraceptive users, who presumably are motivated to regulate their fertility. Furthermore, scores on the Success index and its two subcomponents are correlated with TFR. Thus, the Success index may accurately reflect the degree of success women have in achieving their reproductive goals—i.e., having a child if and when they want, which is consistent with rights-based family planning.

Data from Service Provision Assessment–type facility surveys are not strictly comparable to the data used to calculate scores for the three components of the NQCI, and were not used to validate the Method Availability and Method Information indices used in this study. A recent analysis compared self-reports of information on side effects from DHS surveys with similar reports from observation and exit interviews in Service Provision Assessment surveys in four countries.[40] The author found that the DHS estimates of the percentage of women who reported having received information on side effects at the time contraceptive initiation were comparable to the estimates drawn from observations of client-provider interactions. However, the DHS reports overestimated the prevalence of counseling in three out of five cases once information about how to manage side effects was included. The author noted that these comparisons "imply that population-based surveys may be a reasonable data source when facility survey data are unavailable." Additional work is needed to validate the indices used in this study.

Traditionally, the success of family planning programs has been indicated by a rise in mCPR and a decline in TFR. However, a good program needs to pay attention to both dimensions of services—quantity and quality—and can measure its success by monitoring its NQCI score along with mCPR. For example, the high values of the mCPR and NQCI observed for Rwanda illustrate that the country's family planning program has been successful in addressing these two dimensions.

Scores for all three indicators of quality (NQCI, NCIFP and the Family Planning Effort quality indicator) were correlated with each other and seem to move in the same direction, despite there being very little overlap between the data used in the NQCI and those used in the other indicators. In fact, only two items—those related to the availability of removal services for IUDs and implants—are included in both the NQCI and the quality component of NCIFP. None of the three indicators of quality were correlated with TFR or mCPR, which may be because of the small number of countries included in this study. Nevertheless, from the rights perspective, the family planning programs in a country needs to pay attention to improving the quality of the care clients receive.

Each of the three indicators of quality have some pros and cons. The quality indicator in FPE surveys is based on just one question—a feature that is attractive because of the simplicity of data collection, but that may reduce the indicator's predictive validity related to the diverse dimensions of quality. The quality indicator of the NCIFP is based on 12 questions and constitutes a refinement of the Family Planning Effort survey's indicator of quality. However, the data for these two quality indicators are collected from knowledgeable persons in each country, and neither indicator directly reflects women's experiences. In contrast, two of the NQCI's three dimensions of quality are measured using the responses of women themselves, which may be an attractive feature.

The development and validation of a national-level quality of care index that encompasses multiple elements of quality and multiple levels of assessment is an area of inquiry requiring further research, testing and validating. The NQCI—which uses data routinely collected from various sources—is a promising avenue that merits exploration in the coming years. The NQCI can be used for comparing levels of quality among countries, as this analysis illustrates, but also be used to monitor changes in quality within a country when data from multiple points in time are available. Moreover, estimates of NQCI and component scores can be refined as additional data becomes available.

Although facility surveys have been collecting data on women's perceptions of the quality of services and care they receive, these surveys have not been used for national-level estimates of quality. The focus of future research may include creation of a national-level quality index using data being collected under the Performance Monitoring and Accountability 2020 and DHS-Service Provision Assessment programs. In addition, researchers and others need to agree on common metrics for process quality that go beyond the current questions included in the Method Information Index; population-based, cross-sectional surveys should collect data on these agreed-upon metrics, which then can be used to measure the process quality of the care that women receive.

A national-level index of quality will help make donors and national policymakers accountable for the quality of various family planning programs. It will also help to rank countries according to program quality. Such comparisons will encourage national policymakers and program managers to improve quality in their programs, and encourage donors to invest in making such improvements. Finally, the index may help to track changes resulting from donor investment and programmatic improvements.

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RESUMEN

Contexto: *A pesar de los esfuerzos para utilizar encuestas de las instituciones de salud para medir la calidad de los programas de planificación familiar, no se ha podido realizar la medición y el monitoreo de la calidad de los programas a nivel nacional de manera rutinaria y confiable.*

Métodos: *Se propone y utiliza un nuevo índice compuesto para medir la calidad a nivel nacional, el Índice Compuesto de Calidad Nacional (ICCN), con el propósito de comparar la calidad del programa de planificación familiar en 30 países en desarrollo. Los puntajes del índice representan el promedio no ponderado de los puntajes de indicadores de tres dimensiones diferentes de calidad −estructura, proceso y resultado. El indicador de estructura, el Índice de Disponibilidad del Método, utilizó datos de la encuesta de Esfuerzo de Planificación Familiar 2014, mientras que el indicador de proceso (Índice de Información sobre el Método) y el indicador de resultados (Índice de Éxito del Método), utilizaron los datos de las encuestas demográficas de salud más recientes realizadas en los países incluidos en el estudio. Se examinaron las correlaciones entre estos y otros indicadores.*

Resultados: *El puntaje ICCN promedio no ponderado para los 30 países fue de 60; los puntajes variaron de 50 en Pakistán a 72 en Camboya. Los puntajes promedio para los tres componentes ICCN fueron 52 para la Disponibilidad del Método (rango, 40–73), 41 para la Información sobre el Método (rango, 13–71) y 86 para el Éxito del Método (rango, 70–99). Los puntajes de estos componentes no se correlacionaron entre sí, lo que sugiere que miden distintas dimensiones de la calidad del programa. Los puntajes globales de ICCN se correlacionaron con medidas existentes de calidad a nivel nacional, pero no con la tasa de fecundidad total y la tasa de prevalencia de uso de anticonceptivos modernos.*

Conclusiones: *El ICCN y sus tres componentes utilizan datos recolectados rutinariamente a través de encuestas nacionales y pueden usarse para medir y monitorear la calidad a nivel nacional de los programas de planificación familiar.*

RÉSUMÉ

Contexte: *Malgré les efforts déployés pour mesurer la qualité des programmes de planification familiale sur la base des enquêtes menées auprès des établissements, il n'a pas été possible d'assurer la mesure et le suivi réguliers et fiables de cette qualité au niveau national.*

Méthodes: *Un nouvel indice composite de mesure de qualité au niveau national (l'indice NQCI) est proposé et utilisé pour comparer la qualité des programmes dans 30 pays en développement. Les scores d'indice représentent la moyenne non pondérée des scores d'indicateurs de trois dimensions distinctes de qualité: structure, processus et résultat. L'indicateur de structure (l'indice de disponibilité des méthodes) repose sur les données de l'enquête 2014 sur l'effort de planification familiale, tandis que l'indicateur de processus (l'indice d'information sur les méthodes) et celui de résultat (l'indice de succès des méthodes) viennent des données des dernières Enquêtes démographiques et de santé effectuées dans les pays à l'étude. Les corrélations entre ces indicateurs et d'autres ont été examinées.*

Résultats: *Le score NQCI moyen non pondéré des 30 pays a été calculé à 60, sur une étendue comprise entre 50 au Pakistan et 72 au Cambodge. Les scores moyens des trois composants de l'indice sont 52 pour la disponibilité des méthodes (étendue 40–73), 41 pour l'information sur les méthodes (13–71) et 86 pour le succès des méthodes (70–99).*

Les scores de ces composants ne sont pas apparus corrélés entre eux, laissant entendre qu'ils mesurent des dimensions distinctes de la qualité des programmes. Les scores NQCI globaux étaient corrélés avec les mesures de qualité existantes au niveau national, mais pas avec l'indice synthétique de fécondité ni le taux de prévalence contraceptive moderne.

Conclusions: *L'indice NQCI et ses trois composants reposent sur des données collectées régulièrement à travers les enquêtes nationales; ils peuvent servir à mesurer et suivre la qualité au niveau national des programmes de planification familiale.*

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