

Measuring lay people's perceptions of the quality of primary health care services in developing countries. Validation of a 20-item scale

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Abstract

Introduction. Methodologies that have been developed and validated in accordance with accepted scientific standards are needed to monitor and assess the quality of primary health care in developing countries.

Objective. To present the results of reliability and validity testing of a new instrument of measurement intended to document the user's opinion on the quality of primary health care services.

Methods. The 20-item scale includes three subscales related to health care delivery, personnel and facilities. There were 241 people in one city and two villages in Upper Guinea who responded to the questionnaire. An item analysis preceded the test of psychometric properties of the three subscales and of the total score. Reliability was estimated by analyses of internal consistency and the Cronbach's alpha coefficient. A variety of statistical procedures were used to test factorial validity, trait validity (convergent and discriminant) and nomological validity.

Results. The reliability of the subscales ranged from 0.71 to 0.88. The validity analyses supported the initial dimensionality and suggested good construct validity.

Conclusion. Results confirm the value of the use of the scale developed and highlight the need to take into account the diversity of how quality is perceived by lay people in developing countries. It is suggested that the process of formalization of this type of measurement scale be pursued.

Keywords: consumer perception, developing countries, measurement, primary health care, quality of care

The notion of quality of care, which has been characterized as a social construct [1] or a multifaceted concept [2], takes on several meanings. These meanings vary across actors, professionals, managers, governments, users, among others [3–5] and in relation to the type of care under consideration [6] as well as to the social [3] and technological [7] context in which the care is delivered. In view of this, it is easy to see that a variety of definitions and approaches to the evaluation of quality of care coexist.

Among these approaches, the analysis of user perception of quality offers a useful complement to those evaluations conducted from the point of view of professionals or public health authorities. This approach lends itself to the search for an optimal balance between the services offered and user expectations and thus contributes to the 'process of

democratization of health services' [8,9]. In developing countries, where quality is one of the major challenges to be met under the current health care reforms, the measurement of perceived quality is also justified by the powerful influence that these perceptions have on utilization of services [10–16]. In contexts where policies aimed at revitalizing the health systems (like the Bamako Initiative) usually lead to an increase in the consumers' financial contributions, the public's opinion on the quality of care conditions both the success and the sustainability of these policies.

Several studies offer evidence of the growing interest in users' perception or satisfaction in developing countries. We found 16 publications [10–12,14,17–28] whose main characteristics are listed in Table 1. In nine instances, measurement of users' perception is coupled with other methods of

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Table 1 Methodological characteristics of 16 published studies measuring lay people's perceptions of quality of care

Author, country	Services evaluated	Subjects interviewed	Data type	Data collection	Number of items	Response format	Psychometric evaluation	Dimensions of perceived quality or satisfaction	Remarks
Askew <i>et al.</i> , Burkina Faso	FP services ¹	193 clients	?	Exit interviews	?	?	No	Choice of methods, information, technical competence, interpersonal relations, continuity, appropriate constellation of services	Combined with other approaches in a 'situation approach' analysis
Atkinson <i>et al.</i> , Tanzania	Public, private, traditional	250 women	Qualitative	?	Free	Open	No	Free: opinions about the services	
Bitran, Senegal	Health facilities ¹	25	?	Exit interviews	?	?	No	Patient satisfaction?	Combined with structure and process measures
Bryce <i>et al.</i> , 11 countries	Health facilities ¹	?	?	Exit interviews	?	?	Inter-rater reliability = 95%	?	Combined with other approaches in a 'facility based assessment' method
Gilson <i>et al.</i> , Tanzania	PHC services	In each village: three to six key informants, three to six focus groups, 20 mothers, informal discussions	Qualitative	Key informants and randomly selected mothers	Standardized questionnaires, question guides	Open	No	Perceptions about quality. Special reference to medications and maternal care	
Haddad <i>et al.</i> , Zaïre	PHC services ¹	105	Qualitative	Household interviews	Free	Open	No	Personnel conduct, integrity and competence; equipment, buildings	Combined with structure and process measures
Huntington <i>et al.</i> , Ghana	FP services ¹	18 women (mystery clients). 36 interviews	Qualitative	Exit interview of mystery clients	6	Open	No	Information provided by personnel, personnel attitudes	Combined with clinic observation
Kanji <i>et al.</i> , Sudan	Urban health facilities ¹	316 users	?	Exit interviews	?	?	No	?	Combined with structure and process measures

cont'd

Table 1 *contd*

Author, country	Services evaluated	Subjects interviewed	Data type	Data collection	Number of items	Response format	Psychometric evaluation	Dimensions of perceived quality or satisfaction	Remarks
Kaufman <i>et al.</i> , China	FP services ¹	318 women	?	Exit interviews	?	?	No	Information received, other aspects (?)	Combined with structure and process measures
Kim <i>et al.</i> , Nigeria	FP program	480 women	Quantitative	Exit interviews	7	Yes/No?	No	Information provided by personnel, personnel attitudes and conduct, interpersonal relations	
Maynard-Tucker, Haiti	FP services, clinics and health posts	Three women (mystery clients). 72 interviews	Quantitative	Exit interviews (mystery clients)	32	Four-point scale	No	Environment, information, satisfaction	
Okafor <i>et al.</i> , Nigeria	FP program	160 Focus groups	Qualitative	Focus groups	Free	Open	No	Perceptions about health services	
Peperall <i>et al.</i> , Lesotho	Outpatient services ¹	34	Qualitative	At home after leaving the facility	Guidelines with a list of topics	Open?	No	Perceptions about quality at the hospital and health centres	Combined with structure and process measures
Schuler <i>et al.</i> , Nepal	FP services	35 interviews of three couples and two women (mystery clients)	Quantitative	Exit interviews	4	Three-point scale	No	Accuracy, completeness of the information provided, attitudes of the staff	
Van Lwijk <i>et al.</i> , Kenya	Hospital	Baseline: 330 Post-test: 372	Quantitative	After leaving the hospital	17 items including five on satisfaction	Dichotomous	No	Waiting and treatment time, treatment received, treatment outcomes	
Wouters, Niger	PHC services ¹	220 users (?)	?	Exit interviews	?	?	No	Perceptions about quality in general	Combined with structure and process measures

¹ Studies involving other structure and/or process measures.

?, Information not given or not clearly expressed; FP, family planning; PHC: primary health care; FA, factor analysis.

evaluation of quality. In all 16 studies, the services evaluated are modern health services, and in close to half, they are family planning services. Some of the studies focus on general components of quality of care, while others deal with specifics, in particular the attitudes, conduct, and competency of health care workers, the quality of patient information, and the availability of human and physical resources (mainly drugs). Some of the studies use qualitative approaches with open interviews, while others use quantitative approaches based on structured questionnaires.

The methods used are often presented in very general terms, which makes them difficult to replicate. The measurement instruments are usually poorly described and they are only rarely reported. The dimensions,¹ the number of items, the response formats, as well as the rules used to construct the global scores are not always clearly stated. One study does mention a preliminary analysis of respondents' views of quality [25]; it does not, however, provide sufficient methodological details. Only one study, Bryce *et al.* [20], reports a formal evaluation of the adequacy of the measurements resulting from the use of these instruments. This study reports an inter-rater reliability of 95%. However, the authors do not present the characteristics of their measurement scale and do not discuss its validity.

The quality of a measurement scale is usually judged according to two criteria: reliability and validity [30]. Reliability reflects a scale's ability to reproduce an observation in a consistent manner. There are different procedures (tests-retests, internal consistency) that can be used to evaluate reliability. The validity of a scale is the ability of an observation to capture the underlying phenomenon. There are three forms of validity: content validity, criterion validity and construct validity. Content validity consists of evaluating the capacity of the scale to reflect all relevant facets of an issue (the construct). For example, this means that a measure of perceived quality must portray the vision that the public has of the services considered rather than reproducing the images that researchers, or health care professionals or managers have of these qualities [8]. Criterion validity refers to the capacity of the scale to be correlated with a criterion of interest or a reference criterion, an association which can be strictly empirical [31]. We speak of concomitant validity if the criterion is contemporary and of predictive validity if the criterion is situated in the future. Construct validity deals with the theoretical relationships between the measurements and the constructs they are supposed to operationalize. Several procedures can contribute to its evaluation. One of them consists of positing a certain number of hypotheses on the results that one should be able to observe with the instrument, in certain conditions and for certain populations (nomological

validity). Another consists of verifying that the measures obtained of the phenomenon being considered are close to those obtained by an independent method (convergent validity) and/or distinct from measures dealing with another phenomenon. A third procedure consists of arranging the items in relation to the information that they have in common, using a mathematical technique called factor analysis, and then verifying the coherence of these groupings as compared to dimensions defined *a priori* (factorial validity).

This paper reports the results of a study whose purpose was to evaluate the properties of a new scale for measuring perceived quality of primary health care services. This evaluation constitutes the last of four phases in a research program conducted in two rural prefectures of Guinea, a country which recently faced a large-scale reorganization of its primary health care system [32,33]. The objective of the early phases was to maximize the content validity of the scale and to ensure the congruence of its items with lay people's representations of quality [34,35].

An exploratory study was first conducted to identify the criteria lay people use to judge the quality of care. Twenty-one homogenous focus groups (stratified by sex and age), interviews with 17 key informants and six exit interviews with health service users were held in 11 villages selected at random. The debates were recorded, translated into French, and transcribed under the supervision of experienced national trainers. Analyses were performed using manual and computer procedures with the goal of preserving the entire content of the transcripts. Exchanges revealing respondents' views on quality were located and those that resulted from suggestive interventions from moderators were excluded from the analysis. The team selected 664 exchanges that were related to 44 quality attributes referring to aspects as varied as the reception of patients, availability of drugs, and health outcomes.

A validation process, which included an analysis of inter-rater agreement (using two outside experts), followed by a seminar for researchers, professionals, public health authorities, and cooperative organizations, led to the identification of three additional attributes. The 47 attributes were then grouped by the seminar participants into five categories, using existing taxonomies [29,36,37]: technical competence, attitudes and conduct of personnel, availability and adequacy of resources and services, accessibility, and effectiveness of care. Each category was divided into subcategories involving a variable number of items. *A posteriori* this categorization appears to be somewhat similar to those proposed recently in writings dealing with the criteria mobilized by communities in developing countries for judging quality of care [11,18,38].

In the second phase, a survey using role-playing was undertaken to rank these criteria according to the degree of importance the users ascribe to them when judging quality of care. Seventy-two randomly selected respondents were recruited in nine villages that were not involved in the previous phase. The data gathered allowed for confirmation of the predominant role of certain criteria that it is therefore important to include in the measurements of perceived quality:

¹The only exceptions to this general failure to present design and methodological details are the studies in the field of family planning which follow the framework originally developed by Bruce [29]. This framework includes six components: choice of methods, information given to clients, technical competence, interpersonal relations, follow-up and continuity mechanisms, and the appropriate constellation of services. While this is extremely interesting, it remains highly specific to the area of family planning and is not as well suited to the more general PHC activities.

Table 2 Sampling design: number of respondents for each method, location and type of facility

Method	Location and type of facility			
	City of Kerouane		Village 1	Village 2
	Hospital	Urban health center	Rural health center	Rural health center
Exit interviews	68	—	30	30
Household interviews	55	42	30	30

effective care (leading to cure); good diagnosis; good follow-up of hospitalized patients; prescribing of the correct drugs; use of diagnostic equipment; reception extended; compassion, sympathy for patients; reduced costs; access to credit; availability of drugs, personnel, facilities (buildings, rooms) and diagnostic equipment.

The questionnaire was produced in the third phase. It was drafted simultaneously in French and in the local language (Malinké), following a process of back translation. It was then pretested on 12 people to allow for adjustment of wording. Each question refers to one of the 47 attributes identified in the previous phase. The questions were worded so that they could be administered during individual interviews, with the interviewer recording the answers. For each question, respondents could express one of three opinions: unfavorable (−1), neutral (0), or favorable (+1). Two versions of the questionnaire were written so that it could be used either to question a user immediately after a service was delivered (exit interviews), or with people recruited in the community (household interviews). This article presents the results of an evaluation of the quality of a scale constructed from a subset of the 47 items in these questionnaires (see Appendix).

Methods

Data collection

Respondents were recruited in one city and two villages in a prefecture of Upper Guinea. This sampling design was developed to enable comparisons between the results of exit and household interviews (Table 2) and to evaluate users' satisfaction with regard to different health care facilities—hospital out-patient clinics, an urban health center in a prefecture (county) seat, and a rural health center in each of the two other villages. Exit interviews were conducted as patients left the facilities evaluated. Those questioned at home were chosen using a sampling technique derived from the World Health Organization Expanded Programme on Immunization (WHO/EPI) method [39]. The questionnaire was administered to the head of the household or one of his wives. In addition to the 47 items dealing with quality, the questionnaire included questions on the following elements:

(i) intention to use the evaluated facility again; (ii) respondents' general opinion of the quality of services, technical competency and interpersonal skills of staff, effectiveness of the care, adequacy of the existing resources and accessibility of services; and (iii) socio-demographic characteristics.

There was not a single report of refusal to participate in the survey. The majority of the respondents ($n=285$) were women (55%), uneducated (64%) and Malinkés (88%), the dominant ethnic group in the region. The average age was 38 years. An overwhelming majority of respondents stated that they would use the evaluated facility again (94%) and would recommend it to relatives (94%). The opinions expressed in the exit interviews were more positive, however there was no significant difference from those conducted in the homes. The subjects of the two subsurveys were thus pooled to improve statistical power.

Construction of scales and subscales for measuring quality

An item analysis was conducted in order to construct scales that were as concise as possible [30]. A grid was created to help make decisions to retain or discard items (more detailed analyses are available upon request). Priority was given to the following items (listed in order of importance): (i) those judged essential following the ranking process of quality attributes; (ii) those with large variance; and (iii) those sharing a common variance with other items.

Of the 47 original items, 20 were retained and categorized into three groups (see Appendix). The first group included five items related to health care delivery: one item dealt with diagnosis, one with the care outcomes, and three with drugs (prescription, quality and availability). The latter are known to be of prime importance to users of services in developing countries and are among the main reasons for resorting to care [11,40–45]. The second group of items included eight items referring to the attitudes and practices of the health care workers: patient follow-up, clinical examination (which is not systematic, and is considered as a mark of attention from the health care staff), the reception of the patient, compassion, respect, time spent, explanation given on the health problem, and lastly, the honesty of the staff. The seven items in the third group focused more specifically on the health care facilities. Three items referred to accessibility and

Table 3 Description and reliability analysis of subscales and total score

Statistics	Subscales			
	Health care delivery	Personnel	Health facility	Total score
Number of items	5	8	7	20
Mean	3.17	5.45	1.37	9.99
Median	4	7	2	12
Variance	5.95	10.28	12.26	56.11
Cronbach's Alpha	0.83	0.84	0.71	0.88
Average inter-item correlation	0.49	0.39	0.26	0.48
Lowest inter-item correlation	0.33	0.22	0.08	-0.04
Highest inter-item correlation	0.61	0.62	0.48	0.62
Average item-total correlation	0.62	0.56	0.42	0.59
Lowest item-total correlation	0.47	0.48	0.21	0.14
Highest item-total correlation	0.68	0.70	0.54	0.64

dealt with the adequacy of the fees, the possibility of making special payment arrangements (credit), and distance. Four other items dealt with resources: the adequacy of the number of doctors (as in other countries, this term is used in Guinea to designate the majority of health care providers), doctors for women's treatment, equipment and rooms.

Several aggregation procedures were then tested to construct a global score and three subscales: weighted and unweighted sums depending on the importance ascribed to each item and/or the number of items in each dimension. Regardless of whether or not they were weighted, the scores appeared very similar (correlations greater than 0.90). Therefore, unweighted summations were done. Taking into account the codification of the responses, the four scores constructed may range respectively from -5 to +5, -8 to +8, -7 to +7 for the subscales, and from -20 to +20 for the global score.

Analyses of the reliability and validity of scores

The SPSS software package was used to perform the statistical analyses [46]. Reliability of measurement scales was estimated by analyses of internal consistency and Cronbach's alpha coefficient. Since the content validity was maximized in the previous phases, validity analyses dealt essentially with the construct validity of the scales. Ideally, we considered that four conditions should have to be met. First, the structure and dimensionality of the scores emerging from factorial analyses should be coherent with the *a priori* grouping into three subscales. Second, the scores obtained should be consistent with the knowledge gleaned from observations made in different contexts. For example, there should be an overall high level of satisfaction [47-49] and the composite scores should be associated with intention to use the services again

and with the fact that users would recommend these services to their friends and relatives [50-52]. Third, any given subscale should be correlated to a variable reflecting the general opinion on this dimension of reference and more correlated to this variable than to those reflecting opinions on other dimensions. Fourth, the scores should discriminate among the different health care facilities.

Results

Reliability

As is generally the case in opinion surveys, the majority of the opinions on quality are favorable (Table 3). Considering the Cronbach's alpha coefficients, the reliability of the scores is highly acceptable. It is 0.88 for the total score and ranges from 0.71 to 0.84 for the subscales. The inter-item correlations vary across scales. They are lower for the third, which measures very specific aspects of adequacy of the resources and accessibility of the health care facilities (financial and geographic).

Factorial validity

Since the development of the subscales was based in part on the results of the factorial analyses, they cannot, in this case, be considered confirmatory. Table 4 presents the results of the principal components analysis with extraction of three factors and oblique rotation. The Eigen values of each factor are greater than 1. The total variance explained is 50%. The first factor consists mainly of items in the personnel dimension; the second, by those in the facility dimension; and the third, by those in the health care delivery dimension.

Table 4 Principal component analysis: three factors extraction ($n=278$) and factor coefficients (pattern matrix) after oblimin rotation and communalities (h^2)

Subscale/item	Factor			h^2
	I	II	III	
Health care delivery				
Good diagnosis	0.41	0.12	-0.48	0.58
Prescription of drugs by 'doctors'	0.23	0.15	-0.66	0.66
Availability of drugs	0.18	0.27	-0.42	0.41
Quality of drugs	0.91	0.12	-0.74	0.65
Recovery, cure	0.01	0.29	-0.68	0.66
Personnel				
Good clinical exam	0.44	0.08	-0.28	0.38
Follow-up, monitoring of patients	0.56	-0.04	-0.27	0.45
Overall reception of patients	0.83	-0.15	0.21	0.60
Compassion, support to patients	0.79	-0.01	0.10	0.58
Respect for patients	0.86	-0.04	0.09	0.68
Allowing sufficient time for patients	0.54	0.01	-0.17	0.37
Amount of information given (about the health problem)	0.68	-0.00	-0.08	0.49
Honesty	0.47	0.20	-0.16	0.42
Facility				
Adequacy of costs	0.41	0.14	-0.02	0.23
Payment arrangements	-0.09	0.70	0.00	0.46
Physical accessibility (distance)	0.19	0.50	0.53	0.44
Number of 'doctors'	0.05	0.63	-0.01	0.43
Adequacy of 'doctors' for women	0.00	0.70	-0.09	0.53
Adequacy of medical equipment	-0.02	0.64	-0.04	0.42
Adequacy of rooms	-0.04	0.71	-0.13	0.54
Eigen value of the factor	6.36	2.13	1.49	
Percent of variance explained by the factor before rotation	32%	11%	7%	
Percent of variance explained by the factor after rotation	24%	14%	12%	

With the exception of the items 'costs', 'time devoted' and 'clinical examination', they all present communalities higher than 0.40. As for the three subscales, the three factors appear to be correlated. The inter-factor correlations vary in absolute values from 0.26 to 0.34. The correlations between subscales are 0.59 for subscales I and II, 0.50 for I and III, and 0.41 for II and III. Thus, overall, the factorial structure is congruent with the breakdown of items into three groups.

Convergent validity and discriminant validity

The associations between the scores and the responses to the general questions on quality are reported in Table 5. They are estimated by the Eta coefficient, which is better suited to the nature of the data (interval and dichotomous type) than Pearson correlations. The correlations between the scores and the questions that address the dimensions covered

Table 5 Associations between respondents' general opinions and scales (Eta coefficients)

General opinion on:	Subscale			
	Health care delivery	Personnel	Health facility	Total score
Overall services	0.54	0.47	0.44	0.57
Personnel's technical competence	0.59	0.58	0.46	0.69
Effectiveness of care	0.70	0.46	0.48	0.65
Personnel's attitudes and conduct	0.52	0.58	0.44	0.63
Availability and adequacy of resources	0.38	0.24	0.45	0.44
Accessibility of services	0.50	0.32	0.44	0.51

All coefficients are significantly different from zero ($P < 0.001$).

by that score are both substantial and differ significantly from zero. The correlation between the total score and general opinion on the quality of the services is higher than the correlations between the general opinion and any of the subscales. The two questions dealing with the technical aspects and that on accessibility of care are more highly correlated with their corresponding subscales than with the others. This is not the case for the questions on the attitudes and resources available which, nevertheless, are still highly correlated with their respective subscales.

Inter-group comparisons

The respondents' opinions are not significantly associated with intention to use the facility again, their recommendation to a relative, or their age and level of education. The perceptions concerning overall quality and the technical aspects are judged more poorly by respondents from households whose heads are farmers. Men and respondents who live far from the evaluated facility have a lower opinion of the resources available and its accessibility (Table 6).

Discrimination between distinct levels of quality

The opinions expressed by the respondents regarding the four facilities are shown in the bottom panel of Table 6. The four groups were compared using the Sheffé procedure with a threshold of significance of 5%. The brackets linking two subgroups indicate that their mean scores differ significantly. Thus, quality of care at the hospital is systematically judged to be better than that at the second rural health center. The quality of health care delivery and facilities is judged more favorably in the urban facilities than in the rural facilities. The rural health facilities differ only in terms of the conduct and attitudes of the health care teams.

Discussion

The reliability of the scores appears to be satisfactory and the content validity of the scale was maximized by the

previous studies. Therefore, the discussion deals primarily with the construct validity of the three subscales and of the global score. The discussion of the construct validity focuses on three questions.

Was it appropriate to distinguish three subscales related to health care delivery, health care personnel and health facilities? The answer is clearly yes, and is supported by the analysis of the inter-item correlations, the Cronbach's alpha coefficient of the three subscales and by the analysis of the associations between the subscales and the general questions. The factorial analysis also supports this approach even if some inter-factor correlations seem unexpected *a priori*. This is the case for the item related to costs, which, instead of being correlated with the third factor, is correlated with the first. Cost would thus appear to be perceived more as an attribute of the health care personnel than of the health care facility. In the particular context of Guinea, this is a plausible hypothesis. In principle, in Guinea, the fees for primary health care services are fixed. They would not vary across facilities. However, in fact, extra billing is common, and even quasi-systematic [53]. Set arbitrarily by the local personnel, the fees applied vary greatly. Patients are aware of the practice, though they are hardly in a position to oppose or criticize it.

Even if they are more correlated with the health care delivery factor, items related to diagnosis, clinical examination and patient follow-up are correlated with both factors I and II. This can be explained by the nature of these attributes which have to do both with health care providers and the delivery of care. Lastly, the somewhat lower internal consistency of scale III may be explained by the highly specific character of the questions asked, resulting in a weak common variance between the items. Thus, it is entirely understandable that a person who lives close to a health care facility could be satisfied with its accessibility, but at the same time dissatisfied with the resources that he or she finds there. Therefore, the results of the factorial analyses which might question *a priori* the dimensionality of the three subscales do not invalidate it.

Is there a general theoretical construct of reference? The results all point to the belief that the perceptions measured

Table 6 Quality perceptions in subgroups of respondents (mean scores)

Grouping variable ¹	Mean scores			
	Subscale			
	Health care delivery	Personnel	Health facility	Total score
Sex				
Female (<i>n</i> = 155)	3.18	5.63	1.92	10.75
Male (<i>n</i> = 128)	3.15	5.29	0.68	9.11
<i>t</i> -ratio	<i>t</i> = 0.09	<i>t</i> = 0.87	<i>t</i> = 2.98**	<i>t</i> = 1.82
Head of the household employed as				
Farmer (<i>n</i> = 109)	2.55	4.96	0.87	8.40
Other (<i>n</i> = 156)	3.47	5.71	1.58	10.80
<i>t</i> -ratio	<i>t</i> = 2.88***	<i>t</i> = 1.76	<i>t</i> = 1.62	<i>t</i> = 2.39*
Place of residence				
Live in another village (<i>n</i> = 36)	2.56	3.94	-0.77	5.80
Live where the center is located (<i>n</i> = 246)	3.24	5.70	1.73	10.67
<i>t</i> -ratio	<i>t</i> = 1.38	<i>t</i> = 2.29*	<i>t</i> = 3.63**	<i>t</i> = 2.80**
Location and type of facility				
Urban hospital (<i>n</i> = 123)	4.22	6.46	2.13	12.82
Urban health center (<i>n</i> = 42)	3.76	4.76	3.10	11.61
Rural health center 1 (<i>n</i> = 60)	2.30	5.85	-0.05	8.10
Rural health center 2 (<i>n</i> = 60)	1.42	3.42	0.03	4.88
<i>F</i> -ratio	<i>F</i> = 27***	<i>F</i> = 15***	<i>F</i> = 13***	<i>F</i> = 20***

¹ Due to missing values, the sum of subgroup sizes may be lower than 285.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

by the scale's items are interrelated. The mean of the inter-item correlations is relatively high (0.48). The correlations among factors and among subscales are substantial and differ significantly from zero. The general questions on the different aspects of quality of care are all highly correlated with the scale's score as is each subscale's score with the overall perception of quality of care. Lastly, a sizable proportion of the total variance can be explained by a single factor factorial extraction (32%). It thus appears reasonable to assume the existence of an underlying theoretical construct uniting all 20 items and the three subscales.

Is perceived quality the construct of reference? In other words, was the respondents' opinion of the quality of services assessed appropriately? Many results suggest that this is the case. The three-dimensional structure appears coherent. Overall, the results are congruent with the existing body of knowledge. The distribution of scores is skewed as is usually

the case with the appraisal of people's perceptions. The hypotheses of convergent and discriminant validity are globally satisfied even though some of the expected associations were not confirmed. The statistical distributions of the variables reflecting the intention to return and potential recommendations to a third party are so skewed that it may indeed be that the failure to confirm some associations is the result of a lack of statistical power.

Conclusion

As recently underscored [13], it is important to develop appropriate instruments for measuring quality of care in developing countries. With this research, we hope to contribute towards this objective. This paper proposes a scale for measuring perceived quality of primary health care that

attempted to present psychometric properties that conform to accepted scientific standards.

The process used to identify the scale content is inductive, and is designed to focus on the concerns and visions of the lay people, which will obviously differ from the concept of quality held by researchers, health care authorities and providers [9,54]. We are convinced that this approach is indispensable in countries where so-called 'modern' health services, while present for many years now, are still culturally foreign and do not represent the only option open to people seeking health care.

As in other contexts, the construct of quality revealed by this study is complex. While it is possible to identify many distinct dimensions of quality – care and outcomes, interaction with the professionals, and resource-infrastructure – these dimensions are clearly interrelated, particularly the first two. This indicates that even if users' representations of quality are based on specific dimensions, the overall judgement of quality does not operate only among these distinctions. Therefore, the results of the three subscales should be interpreted in relation to each other.

The results of this study support the use of the scale. The validation process already underway should, however, be pursued. It would be advisable to assess the reproducibility of the results in other contexts, while bearing in mind that the representations of quality are based, in part, on constructs that belong to specific contexts. It is only by replicating studies of this type that we will be able to further our understanding of quality of care in complex situations. It should also be expected that the availability of valid instruments for evaluation would result in the creation of a culture of accountability, or at least of attitudes of greater accountability on the part of health service providers *vis à vis* users than those which are frequently observed.

We believe that the formalization of scales for measuring the quality of health care services in developing countries should be pursued in order to impose greater precision in evaluations of health services. If the users' perspective is taken into account, the development of these services should move in a direction that corresponds more fully to their expectations, which is now one of the major challenges to be met.

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Appendix

We would like to know your opinion on the "hospital" in "....."

We would like to know what you think about the "hospital" and the "doctors" who work there.

Health Care

	Very capable	Somewhat capable	Hardly or not at all capable	No response or do not know
1 In your opinion, are the "doctors" in the "hospital" capable of finding out what is wrong with the patients?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 In your opinion, are the drugs that the "doctors" in the "hospital" prescribe to patients...	The drugs needed <input type="checkbox"/>	Generally the drugs that are needed <input type="checkbox"/>	Not the drugs that are needed <input type="checkbox"/>	<input type="checkbox"/>
3 In your opinion, patients can obtain drugs from this "hospital" ...	Easily <input type="checkbox"/>	With relative ease <input type="checkbox"/>	With difficulty <input type="checkbox"/>	<input type="checkbox"/>
4 The drugs supplied by this "hospital" are...	Good <input type="checkbox"/>	Somewhat good <input type="checkbox"/>	Not good <input type="checkbox"/>	<input type="checkbox"/>
5 The patients cared for in this "hospital"...	Recover well <input type="checkbox"/>	Recover relatively well <input type="checkbox"/>	Do not recover well <input type="checkbox"/>	<input type="checkbox"/>

Health Personnel

6 In your opinion, the "doctors" in the "hospital" examine their patients...	Well <input type="checkbox"/>	Relatively well <input type="checkbox"/>	Not well <input type="checkbox"/>	<input type="checkbox"/>
7 In your opinion, the "doctors" in the "hospital" monitor their patients' recovery...	Well <input type="checkbox"/>	Relatively well <input type="checkbox"/>	Not well <input type="checkbox"/>	<input type="checkbox"/>
8 In your opinion, the "doctors" in the "hospital" are with the patients.	Very open <input type="checkbox"/>	Relatively open <input type="checkbox"/>	Not at all open <input type="checkbox"/>	<input type="checkbox"/>
9 In your opinion, the "doctors" in the "hospital" are towards the patients.	Very compassionate <input type="checkbox"/>	Somewhat compassionate <input type="checkbox"/>	Not at all compassionate <input type="checkbox"/>	<input type="checkbox"/>
10 In your opinion, the "doctors" are towards the patients.	Respectful <input type="checkbox"/>	Somewhat respectful <input type="checkbox"/>	Not at all respectful <input type="checkbox"/>	<input type="checkbox"/>
11 In your opinion, the time that the "doctors" devote to their patients is...	Adequate <input type="checkbox"/>	More or less adequate <input type="checkbox"/>	Inadequate <input type="checkbox"/>	<input type="checkbox"/>
12 In your opinion, the time that the "doctors" take to explain to their patients about their illness is...	Adequate <input type="checkbox"/>	More or less adequate <input type="checkbox"/>	Inadequate <input type="checkbox"/>	<input type="checkbox"/>
13 In your opinion, the people who work in this "hospital" are...	Very honest <input type="checkbox"/>	Generally honest <input type="checkbox"/>	Not very honest <input type="checkbox"/>	<input type="checkbox"/>

Health facilities

14 In your opinion, the fees that are charged in this "hospital" are...	Reasonable <input type="checkbox"/>	More or less reasonable <input type="checkbox"/>	Not reasonable <input type="checkbox"/>	<input type="checkbox"/>
15 In your opinion, in this "hospital" patients have access to credit ...	Easily <input type="checkbox"/>	With relative ease <input type="checkbox"/>	With difficulty <input type="checkbox"/>	<input type="checkbox"/>
16 The distance from your home to the "hospital"... is	Reasonable <input type="checkbox"/>	More or less reasonable <input type="checkbox"/>	Not reasonable <input type="checkbox"/>	<input type="checkbox"/>
17 In your opinion, the number of "doctors" in this "hospital" is...	Adequate <input type="checkbox"/>	More or less adequate <input type="checkbox"/>	Inadequate <input type="checkbox"/>	<input type="checkbox"/>
18 In your opinion, the "doctors" in the "hospital" are ... to treat women's diseases	Well suited <input type="checkbox"/>	Generally well suited <input type="checkbox"/>	Not well suited <input type="checkbox"/>	<input type="checkbox"/>
19 In your opinion, the equipment in the "hospital" is ... for detecting diseases	Adequate <input type="checkbox"/>	Generally well suited <input type="checkbox"/>	Not well suited <input type="checkbox"/>	<input type="checkbox"/>
20 In your opinion, the waiting rooms, examination rooms, and "hospital" rooms ... are	Adequate <input type="checkbox"/>	More or less adequate <input type="checkbox"/>	Inadequate <input type="checkbox"/>	<input type="checkbox"/>

NB: This questionnaire is a translation from Malinké, hence the wordings may appear somewhat approximate