# Assessing User Satisfaction with the Quality of Healthcare Services in Cameroon

Aloysius Mom Njong
and
Rosy Pascale Meyet Tchouapi

Research Paper 431

Bringing Rigour and Evidence to Economic Policy Making in Africa

# Assessing User Satisfaction with the Quality of Healthcare Services in Cameroon

By

Aloysius Mom Njong
University of Bamenda

and

Rosy Pascale Meyet Tchouapi
University of Dschang

# Contents

# List of tables and figures

# Abstract

This study aims to evaluate user satisfaction with, and perceptions about the quality of, the healthcare services provided in health facilities in Cameroon. The analyses make use of the 2010 Quantitative Service Delivery Survey (QSDS), jointly carried out by the World Bank and the National Institute of Statistics in Cameroon. Confirmatory factor analysis is used to test the reliability and validity of the research instruments and hence facilitate the ranking of satisfaction indicators. We use ordered probit modelling to identify the covariates of user satisfaction. Results indicate that over 85% of users are satisfied with the overall quality of healthcare services in the country. There are some concerns about such dubiously high individual-level response rates, which are inconsistent with the poor reputation of the quality of healthcare services in Cameroon. It also emerges from the study that age, educational status and waiting time are prominent covariates of satisfaction. The major policy recommendation is that an exit user satisfaction survey should be conducted to reduce the approval response biases observed in the 2010 QSDS data.

# 1.0 Introduction

## 1.1 Background and Context

Cameroon is subscribed to the Primary Health Care convention, which is aimed at making quality health services more accessible to people. In line with this approach, the country's health system is organized in the form of a pyramid that is composed of three structures. At the top is the Ministry of Public Health (MoPH), which is responsible for formulating national health policies. Further down the pyramid, at the intermediate level, are 10 regional health delegations, which coordinate and implement health strategies at the regional level. At the bottom of the pyramid there are 154 health districts, which are the operational units carefully mapped out to improve accessibility to healthcare services (Ministère de la Santé Publique, 2011).

Despite the efforts by government to enhance good governance and improve the performance of the health system, bad governance and corruption seem to be issues in the Cameroon economy, including in the health sector. For example, the mid-term evaluation of the 2001–2015 Health Strategy that was aimed at promoting good governance in the health sector was deliberately aborted (Ministère de la Santé Publique, 2009). There are several forms of unethical practices in public health facilities. For example, it is common for healthcare workers to ask for payments from users for services that are officially free of charge (e.g., mosquito nets and HIV screening) or subsidized. Most doctors in public health facilities run private clinics. This practice promotes absenteeism in public health facilities and contributes to diverting public health centre users towards private health clinics where the medical personnel are more readily available. It is perhaps because of these malpractices that Transparency International (2006) classified the health sector among the top sectors most affected by corruption in Cameroon.

Cameroonians are afflicted by common tropical illnesses and diseases such as malaria. About 50% of patients visit health facilities for the treatment of malaria, which represents the main cause of mortality in Cameroon (Antonio-Nkondjio et al., 2012). The main way of contracting malaria is from mosquito bites, who breed in swamps and stagnant water that are found in most areas of cities. Individuals in Cameroon do not readily take part in health insurance schemes, and therefore have to make out-of-pocket payments to meet the cost of treatment in case of ill health. This often leaves households with high financial burdens.

The ratio of population/physician is quite high in Cameroon. Available statistics show that the ratio increased from 10,084 to 14,418 people per doctor, and 2,249 to 2,545 people per nurse for the period 2004–2011 (Ministère de la Santé Publique, 2011). Perhaps this could be due to the lack of an appropriate human resource development plan in the health sector, as well as the massive outflow of medical personnel looking for greener pastures abroad.

The state of health facility hygiene and sanitation in Cameroon is worrisome. An Institute Nationale de Statistique (2010) report revealed that health facilities in Cameroon often experience power outages that may last from 10–16 hours. The same report indicated that only about 47% of health units have access to running water. One can therefore understand why wards in health facilities in the country are infested with ants, flies, cockroaches, and rats, who roam freely. The failure to maintain cleanliness and observe basic hygiene definitely propagates cases of hospital-acquired infections, which in medical parlance is called nosocomial infections (Allegranzi and Pittet, 2007). These infections are diseases that health users may pick up during a visit to health facilities. Samuel et al. (2010) reported a hospital-acquired infection prevalence rate of 20% in 2010, and such infections are becoming a major consideration in public health policy. Lack of cleanliness may favour the outbreak of cholera and diarrhoea. Evidence from the World Health Organization (2013) reveal that during the period 2000–2011 Cameroon registered the highest cholera and diarrhoea prevalence rates in sub-Saharan Africa.

## 1.2 Research Problem

Many Cameroonian healthcare users who are able to afford it seek medical care abroad (Ministère de la Santé Publique, 2011). This results in an enormous loss of domestic income for the Cameroonian economy. A better understanding of the factors that influence user satisfaction with the quality of health service delivery should help decision-makers implement strategies that would improve healthcare services in the country and thereby contribute more to the country's national income. Policy-makers in Cameroon need to understand the key factors of service quality that affect user satisfaction, which will enable them to take appropriate measures to improve the delivery of such services. This might partially explain the adoption of the 2011–2015 National Strategic Health Development Plan aimed at improving the healthcare delivery system (Ministère de la Santé Publique, 2011). With this study we hope to provide input to the Health Development Plan of the country.

There is a vast amount of literature on the factors affecting user satisfaction in a variety of different settings. However, in the Cameroonian context we could only trace some descriptive statistics reported by the Institute Nationale de Statistique (2004, 2010 and Ministère de la Santé Publique, 2011) and the study by Kamgnia et al. (2008). Literature on user satisfaction is lacking in the country, and this neglected area provides an excellent motivation for further study. After an extensive review of the literature on user satisfaction, we argue that the findings are still inconclusive

as regards the relative importance of one satisfaction indicator over another, given that different indicators seem to be ranked differently in different contexts (see the empirical literature review in Section 2). It would be helpful to identify those specific service delivery indicators that are of greatest concern to Cameroonian health service users, and the factors that influence these indicators of satisfaction.

## 1.3 Research Questions

The research questions guiding the study are the following:

(a.) Which satisfaction/quality perception indicators are of greatest concern to healthcare users in Cameroon?
(b.) To what extent are the users satisfied with the quality of healthcare services?
(c.) How do satisfaction/perception of appreciation levels differ by sector or population sub-group?
(d.) What are the factors that correlate with the satisfaction/perception indicators of greatest concern to healthcare users in Cameroon?

## 1.4 Objective of the Study

The main objective of this study is to assess users' satisfaction with, and perceptions of, the quality of health services in Cameroon. Specifically the study aims to:

(a.) identify the satisfaction/perception indicators that are of most concern to healthcare beneficiaries;
(b.) determine and compare the levels of user satisfaction/perception by sector (type of health facility consulted; population sub-groups, etc.); and
(c.) identify the socioeconomic, community and health facility factors that are associated with user satisfaction with the quality of health services in Cameroon.

## 1.5 Significance of the Study

Evaluating users' satisfaction is important in a variety of ways. User satisfaction surveys provide information about patient behaviour. Measuring user satisfaction is an important indicator of quality of care, which is useful in healthcare service planning and delivery. Studies (such as Tarantino, 2004, and Kimenyi and Shughart II, 2006) show that satisfied users are more likely to comply with medical advice and keep appointments than dissatisfied users. Therefore, quality of service is a good yardstick of the reputation of providers and as such would attract more users if the reputation among users is high. It is therefore important to monitor and evaluate users' satisfaction with service quality because it would underpin patient health-seeking behaviour and healthcare utilization.

# 2.0 Literature Review

In this section we discuss the theoretical/conceptual framework for healthcare quality assessment and present the methodological literature review. An empirical literature review is also presented in this section.

## 2.1 Theoretical/Conceptual Literature Review

### 2.1.1 Defining User Satisfaction

Satisfaction, like many other psychological concepts, has not been easy to define in the literature. User satisfaction is an attitude – a judgement that people make as they reflect on their experiences with service delivery. Satisfaction comprises both cognitive and emotional aspects and relates to previous experiences, expectations and social networks (Rust and Oliver, 1994). According to Tam (2005) satisfaction is achieved when a user's perception of the service quality matches their expectations. However, in the present study, satisfaction can be understood as the users' reaction to the healthcare they receive, relative to some standard that users already had before or during the encounter.

### 2.1.2 Theoretical Review

For this study, the theoretical framework for investigating the correlates of user satisfaction is derived from a blend of Andersen's (1968) behavioural model and Donabedian's (1980) structure-process-outcome model of user satisfaction of health service delivery. The Andersen (1968) behavioural model categorizes the correlates of health service utilization and healthcare seeking behaviour into pre-disposing, enabling and need predictors of user health services.

According to Andersen (1968), pre-disposing factors such as age, gender, and level of education are related to satisfaction degrees that users derive from a given healthcare encounter. Enabling characteristics include resources found within the households and the community, which are likely to influence satisfaction. Household resources comprise the socioeconomic status of individuals and their area of residence. Community resources comprise ease of access to health facilities, and the availability of medical personnel for quick assistance. Needs-based characteristics include the perception of need for health services and beliefs about health services benefits, as well as the relationship between users and providers (Wolinsky, 1988).

## 2.2 Methodological Literature Review

Assessing the quality of healthcare delivery has been viewed from two different perspectives, which are discussed below.

### 2.2.1 Quality as a Comparison between Expectations and Performance

According to Lewis and Booms (1983) the quality of healthcare services is evaluated by comparing expectations with performance. This line of reasoning is supported by Grönroos (2000) and Tarantino (2004), who contend that users judge the quality of a service by comparing the service they expect with perceptions of the actual service they receive. Parasuraman and Berry (1988) view service quality as the degree and direction of the discrepancy between users' perceptions and expectations. They further suggest a service quality model, abbreviated as SERVQUAL, for evaluating service quality. In the SERVQUAL model, they identify five dimensions, namely: responsiveness, reliability, assurance, tangibles and empathy on the basis of which users' expectations and perceptions are measured. According to Tam (2005) satisfaction of service quality is measured when users compare perceptions of service with expectations. The initial expectations that users have about the quality of healthcare services act as a major indicator of satisfaction. If perceived care falls short of expectations, the likely outcome is that users are displeased with the service quality. Conversely, when perceptions meet or exceed expectations, the result is likely to be an increase in the level of satisfaction.

### 2.2.2 Quality as a Multi-dimensional Construct

According to Donabedian (1980), the measurement of the quality of healthcare delivery systems is described in terms of "structure, processes, and outcomes." Structure refers to the characteristics of the health facility setting in which medical care takes place. It includes tangible characteristics such as the cleanliness and sanitation of the physical facility, equipment, medical personnel, and communication material. Process indicators capture what is actually done during the delivery and receiving of healthcare. This includes users' health-seeking behaviour as well as the physician's activities in making a diagnosis and eventually implementing suggested treatment. Outcome indicators reflect the end result of healthcare. They measure the actual impact of healthcare services on health.

According to Zeithaml et al. (1990) there are ten dimensions or evaluation criteria that patients use in assessing service quality. These include courtesy, access, communication, understanding, empathy, reliability, tangibles, responsiveness, competence and assurance. Shi and Singh (2005) consider quality as an indicator of satisfaction that depends on two different aspects. First, it depends on a user's experiences with some attributes of health service delivery such as comfort, dignity, privacy, security, degree of independence, decision-making autonomy and attention to personal preferences. Second, it depends on the overall satisfaction of users with

life, as well as self-perceptions of health after some medical intervention. In this study we adopt the approach conceptualized by Donabedian (1980, 2003) that describes quality dimensions as being either structural, procedural or outcome-based.

## 2.3 Empirical Literature Review

Much work has been undertaken to evaluate users' satisfaction and perception of service quality. In this subsection we present a review of studies that have been undertaken in different settings.

### 2.3.1   Review of Studies in Developed Countries

Andaleeb (1998) adopted a 5-factor model to measure users' satisfaction with the delivery of health services in Pennsylvania. The results showed that all factors significantly affected users' satisfaction. Dean (1999) carried out a patient satisfaction study in Australia, and the study results revealed that assurance and empathy were the most important dimensions. Frimpong et al. (2010) explored patients' satisfaction with access to public and private health centres in London. The results showed that public patients, as opposed to private counterparts, were displeased with the service quality factors. In general, the study concluded that both public and private healthcare users faced major problems in accessing healthcare. Karassavidoui et al. (2009) investigated patients' perception about the quality of health service delivery in Greece by computing the gaps between expectations and perceptions. The human factor dimension registered the highest gap score among all the dimensions.

### 2.3.2 Review of Studies in Developing Countries

In a patient satisfaction study conducted in Bangalore by Robini and Mahadevappa (2006) it was revealed that expectations exceeded perceptions in more than 80% of the items of service quality. Conversely, Sohail (2003) found that users' perceptions exceeded their expectations for all the items of services quality provided by private health facilities in Malaysia. Andaleeb et al. (2007) investigated user satisfaction at public, private and foreign health facilities in Bangladesh. Their findings showed that doctors' services, followed by nursing care, and healthcare infrastructure were the most important correlates of user satisfaction. Amponsah-Nketiah and Hiemenz (2009) investigated the overall level of satisfaction associated with the choice of a healthcare provider in Ghana. Using the ordered logit model, the study revealed that private healthcare is associated with higher levels of user satisfaction. Boshoff and Gray (2004) conducted research on patients of private health organizations in South Africa and found that the service quality dimensions of nursing staff, namely empathy, assurance and tangibles have a positive impact on the loyalty of patients. Dasgupta et al. (2009) employed an expectation model to measure the quality of health and education services in Indonesia. Based on perception data, the authors showed that

once expectations are properly captured, the reported levels of satisfaction do vary significantly with objective indicators of quality.

In the case of Cameroon we took into account the study by Kamgnia (2008), which assessed Cameroonian household participation in public health care services, in order to investigate the distributional effects of those services. The study concluded that users appreciated the quality of services provided by private healthcare providers. In another study, Kamgnia et al. (2008) analyzed the benefits derived from the use of public healthcare facilities and education in Cameroon. Although the study does not determine the extent of satisfaction, it concluded that there is no significant difference in the benefits that the richest and poorest income groups derived from the health services. A study such as Njong and Ngantcha (2013), which examined the role of institutions in the delivery of health services in Cameroon, could also be taken into account. Other studies that present some descriptive statistics and the profiles of health service users in Cameroon include those by the Institut Nationale de Statistique (2004, 2010) and the Ministère de la Santé Publique, (2011).

We note that healthcare literature on user satisfaction in Cameroon is very scarce. The descriptive statistics by Institut Nationale de Statistique (2004, 2010) report high satisfaction rates, but do not explain why such high rates are observed. Our study attempts to discuss why the satisfaction data may not accurately reflect the actual quality of the delivery of healthcare services in Cameroon. Our study is different from Kamgnia et al. (2008), which builds a global satisfaction index and employs benefit incidence techniques to identify the socioeconomic groups that benefit most from healthcare services in Cameroon. Rather, we employ a confirmatory factor analysis to identify the satisfaction indicators that are of greatest concern to health service users, thereby informing policy from this perspective.

# 3.0 Data nd Methodology

In this section we present the data source and methods of data analysis.

## 3.1 Data Source and Variables

The analysis in this paper is based on secondary data, commonly referred to as the 2010 Quantitative Service Delivery Survey (QSDS). The survey was jointly carried out in Cameroon by the World Bank and the National Institute of Statistics. We obtained the data from the National Institute of Statistics. The survey collected information on users' judgement on satisfaction with settings and service delivery in health centres. The data were collected through the use of questionnaires, which were administered to patients at the health facilities where they sought medical attention. The Institut Nationale de Statistique (2010) clearly describes the unit of observation in the QSDS to be the "household or the patient taken live in a health unit".

Concerning the survey design, the country was stratified into 12 study survey regions, namely the 10 administrative regions of the country, while the towns of Douala and Yaoundé were considered separately as study areas. The survey involved both public and private health facilities so as to distinguish user appreciation of the quality of health services supplied by both these categories of service providers. A total of 515 users were interviewed using questionnaires.

### 3.1.1 Variables
The variables we extract from the QSDS data and use as dependent and independent variables are informed by the relevant literature and the conceptual framework presented earlier in Section 2 of this paper. A close examination of the data set reveals that only structure and process measures of the quality of healthcare were captured.

Dependent Variables. The 2010 QSDS are cross-sectional data that contain questionnaires capturing different attributes of health facilities and users' characteristics. On the basis of these questionnaires, key primary indicator variables of responsiveness of the health system were identified. For each of the indicators, respondents were given a series of ordinal categories from which to choose. Therefore the outcome variable is the degree of user satisfaction, that is, ordered satisfaction responses with a given number of modalities. In the questionnaire,

respondents were expected to rate their satisfaction with the quality of service delivery on a likert scale of three or five.

**Independent Variables.** Since perceptions of quality may be influenced by personal characteristics as informed by the literature, we considered individual characteristics such as age of the respondent, level of education, gender and economic status. Among the control variables, we included dummies for the illness or injury that motivated the consultation. Price is represented by the consultation fee reported by the users. Other characteristics, such as type of medical personnel consulted, number of previous visits, and waiting time in the health facility were also considered.

## 3.2 Methods of Data Analysis

### 3.2.1 Ranking of Satisfaction Indicators

Research question 1 consists of classifying/ranking satisfaction/quality perception indicators. In other words, we test the factorial or construct validity of the measurement instruments. The objective here is to identify the satisfaction indicator variables that are of utmost importance to users of healthcare services in Cameroon. To achieve this objective, we use confirmatory factor analysis. This objective could also be achieved by employing Cronbach's alpha. However, confirmatory factor analysis has some advantages over Cronbach's α. First, Cronbach's α is inflated by correlations among measurement errors, and can therefore give the impression that a set of items used to capture a single latent variable are better than they actually are (Cortina, 1993 and Miller, 1995). This means that correlations among the measurement error terms do not contribute to the factors themselves. Second, Cronbach's α was designed for use with continuous variables only, yet most instruments used in our study are categorical (ordinal). Thus applying Cronbach's α to ordinal variables can produce distorted results. Confirmatory factor analysis can sufficiently handle ordinal variables and facilitate their ranking (Flora and Curran, 2004).

### 3.2.2 Extent of Satisfaction

To address research question 2, we apply descriptive statistics to compute the average levels of satisfaction perceptions and present the profiles of health service users in the country. The level of satisfaction in this study is understood as 'the proportion of users' who were satisfied with the particular indicator of satisfaction in question. We compare satisfaction levels across sectors, population sub-groups, and especially across the type of health facility visited in order to examine the extent to which the choice of a given provider influences satisfaction.

### 3.2.3 Determining Covariates of User Satisfaction – the Ordered Probit Model

Satisfaction (utility) is measured by a categorical question about the quality of services included in the questionnaire for the users of healthcare services. In the questionnaire, users rated their personal satisfaction on an ordinal scale. The question provided m ordered levels of satisfaction and it is this ordered utility variable that we use as the dependent variable in the estimation of the factors that correlate with user satisfaction/perception with health services. Let's specify the satisfaction function taking into account the fact that the dependent variable is an ordered response with m modalities. An appropriate tool for analyzing such ordered categorical data is the ordered probit model. The idea is that there is a latent continuous variable underlying the ordinal responses. To elaborate the ordered probit model, we borrow heavily from Cameron and Trivedi (1986), Greene (1993) and Wooldridge (2002). Let $S_i^*$ be the continuous, latent variable representing the cardinal utility function of the user. We assume that the latent continuous variable $S_i^*$ is a linear combination of some predictors, Xi, plus a disturbance term that has a standard normal distribution:

$$S_i^* = \beta X_i + \varepsilon_i \tag{1}$$

where $S_i^*$ is a (non-observed) latent variable, $\beta$ a vector of parameters to be estimated, $X_i$ a vector of explanatory variables and $\varepsilon_i$ a random component that is independent and identically distributed N(0,1). It is not the $S_i^*$ variable that is observed in the sample, but an $S_i$ indicator that represents the satisfaction level category to which the user belongs. The model is estimated through the maximum likelihood method. Greene (1993) points out that the interpretation of the estimates is not straightforward. The coefficients have a qualitative interpretation only: a positive coefficient indicates that a user will display higher latent satisfaction and therefore is more likely to report higher levels of satisfaction, whereas a negative coefficient will imply the opposite compared to the base modality.

# 4.0 Presentation Of Results

Table A1 displays the primary satisfaction indicator variables that were captured in the 2010 QSDS data set and selected for use in this study.

## 4.1 Results of Confirmatory Factor Analysis

In our model one latent variable (satisfaction) is defined by eleven observed variables, as illustrated in Figure 1. The oval and the rectangles represent a latent variable and manifest variables, respectively. The numbers on the arrows from the latent variable to the observed variables are standardized factor loadings (regression weights).

Figure 1: One factor path diagram



Chi - square = 233.12,   df = 46,   p-value = 0.00000,   RMSEA = 0.081
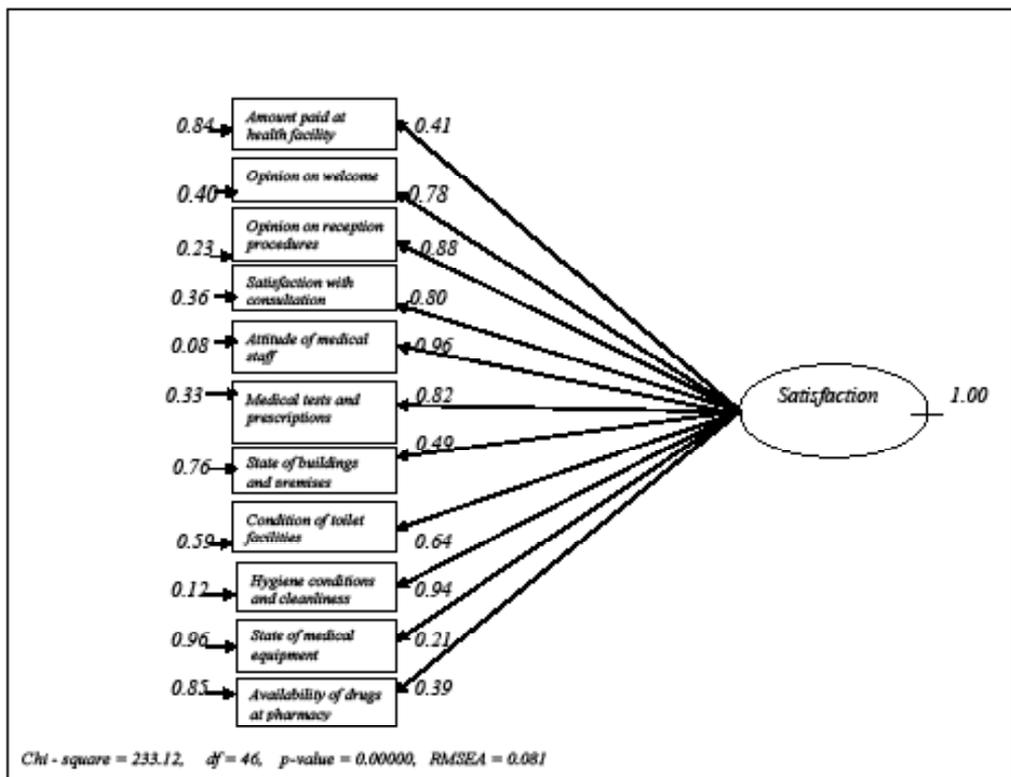
Satisfaction with the attitude of medical staff and opinions of hygiene conditions and cleanliness have large factor loadings of 0.96 and 0.94, respectively; they appear to be the best indicators of satisfaction. $R^2$ is a standardized factor loading squared, which means the extent to which satisfaction explains the variance in a manifest variable. For example, the latent variable "satisfaction" explains about 92.16% (=$0.96^2$) of the variance in attitude of the medical staff. The estimates of the model arranged in decreasing order of magnitude of standardized path coefficients are presented in Table 1.

Table 1: Estimates of the model (weighted least squares)

| Satisfaction indicators | Standardized coefficient (factor loadings) | Multiple correlation coefficients (R2) % | Measurement error (residuals) |
|---|---|---|---|
| Attitude of medical staff | 0.96** (0.02) | 92.16 | 0.08 |
| Hygiene conditions and cleanliness | 0.94** (0.03) | 88.36 | 0.12 |
| Reception procedures | 0.88** (0.04) | 77.44 | 0.23 |
| Medical tests and prescriptions | 0.82** (0.05) | 67.24 | 0.33 |
| Satisfaction with consultation | 0.80** (0.05) | 64.00 | 0.36 |
| Satisfaction with welcome | 0.78** (0.04) | 60.84 | 0.4 |
| Condition of toilet facilities | 0.64** (0.05) | 40.96 | 0.59 |
| State of buildings and premises | 0.49** (0.05) | 24.01 | 0.76 |
| Amount paid at health facility | 0.41** (0.04) | 16.81 | 0.84 |
| Availability of drugs at pharmacy | 0.39** (0.04) | 15.21 | 0.85 |
| Condition of medical equipment | 0.21** (0.05) | 04.41 | 0.96 |

Notes: Figures in parentheses represent standard errors. ** indicates $p \leq .05$; n = 515.
Source: Authors, using LISREL 8.71

Both Table 1 and Figure 1 show that the following indicators, condition of toilet facilities, state of buildings and premises, amount paid in the health facility, availability of drugs at pharmacy, and condition of medical equipment have poor factor loadings and large residual values or measurement errors. This suggests that these observed variables appear to indicate factors other than our latent variable of interest – satisfaction. Satisfaction accounts for less than 50% of the variance in each of these indicator variables and it is therefore evident that most of the total variance is due to measurement error. Indicators with such low score reliabilities were excluded from the analysis.

We observe that all path coefficients are significant at the 5% level. Having estimated the model, we test the goodness of fit of the model to the data. That is, whether the ranking is reliable. Table 2 displays the goodness of fit statistics that were used to assess the validity of the model.

Table 2: Summary of model fit statistics

| Statistic | Estimate | df | p | 90% CI (Cut –off point) | Remark |
|-----------|----------|-----|-------|--------------------------|--------|
| χ2 | 233.12 | 46 | 0.000 | | Poor fit |
| RMSEA | 0.081 | | | 0.076 – 0.099 | Good fit |
| GFI | 0.93 | | | ≥ 0.90 | Good fit |
| AGFI | 0.92 | | | ≥ 0.90 | Good fit |
| CFI | 0.95 | | | ≥ 0.90 | Good fit |

Note: $\chi^2$ = Chi-square (minimum fit function test); GFI=goodness of fit index; AGFI=adjusted goodness of fit index; CFI=comparative fit index; RMSEA=root mean square error of approximation; n = 515

Source: Authors, using LISREL 8.71

$\chi^2$ is 233.12 is so large that the null hypothesis of a good fit is rejected at the 5% level (p<.000). Given the weaknesses of $\chi^2$ as a fit function test we examine other test statistics to properly ascertain the model fit. The RMSEA is 0.081, which falls in the 90% confidence interval range for a good fit. Both GFI and AGFI are well above the 0.90 cut-off point for a good fit. Additionally, the CFI is 0.91(≥ 0.90). These tests suggest that the overall model fit appears to be quite good.

We conclude that the satisfaction/perception indicators that are of great importance from the users' point of view in Cameroon are attitude of the medical staff, hygiene conditions and cleanliness, reception procedures, medical tests and prescriptions, satisfaction with the consultation and satisfaction with the welcome, with the first two indicator variables being most important.

## 4.2 Extent of Satisfaction

Having retained the relevant satisfaction/perception indicators, Table 3 shows the frequency distribution of responses to each of the satisfaction indicator variables.

**Table 3: Frequency distribution of responses to satisfaction and perception/opinion questions**

Satisfaction with:

| Attitude of medical staff | Frequency | Per cent | Consultation | Frequency | Per cent | Reception procedures | Frequency | Per cent |
|---|---|---|---|---|---|---|---|---|
| Unsatisfactory | 14 | 2.72 | Unsatisfactory | 12 | 2.33 | No | 34 | 6.60 |
| Indifferent | 36 | 6.99 | Indifferent | 43 | 8.35 | Yes | 481 | 93.40 |
| Satisfactory | 465 | 90.29 | Satisfactory | 460 | 89.32 | Total | 515 | 100 |
| Total | 515 | 100 | Total | 515 | 100 | | | |

Satisfaction with:

Opinion on:

| Welcome | Frequency | Per cent | Medical tests and prescriptions | Frequency | Per cent | Hygiene conditions and cleanliness | Frequency | Per cent |
|---|---|---|---|---|---|---|---|---|
| Unsatisfactory | 14 | 2.72 | Poorly adapted | 38 | 7.38 | Very bad | 15 | 2.91 |
| Indifferent | 24 | 4.66 | Adapted to the illness | 340 | 66.02 | Bad | 66 | 12.82 |
| Satisfactory | 329 | 63.88 | Excessive and maladapted to illness | 14 | 2.72 | Mediocre | 64 | 12.43 |
| Very satisfactory | 148 | 28.74 | Excessive but adapted to illness | 123 | 23.88 | Good | 300 | 58.25 |
| | | | | | | Very good | 70 | 13.59 |
| Total | 515 | 100 | Total | 510 | 100 | Total | 515 | 100 |

Source: Authors, from Cameroonian 2010 Quantitative Service Delivery Survey data

The levels of satisfaction/perception as observed in Table 3 are generally very high, scoring above 85%. For example, 90.3% and 89.32% of respondents reported they are satisfied with medical staff attitude and the consultation, respectively. Conversely, 13.59% and 58.25% of the respondents reported that the hygiene conditions in the health centres are very good and good, respectively. This gives a cumulated satisfaction rate of 71.84% for cleanliness and hygiene conditions in health facilities.

How do the satisfaction/perception scores vary across different sectors (type of health facility consulted, area of residence, and employment status of respondent) of the country? We present profiles for the two most important satisfaction indicators identified in this study, i.e. attitude of the medical staff, and hygiene conditions and cleanliness. The levels of satisfaction by sector or sub-population group are captured in Table 4. In Table 4 it is evident that satisfaction and quality perception indicators are higher for private providers. For example, 89.87% of respondents are satisfied with medical staff behaviour in public health facilities, while 90.57% are satisfied with lay private, and 91.95% with confessional private health centres. While this may reflect in part the self-selection of individuals into private and public sectors based on preferences or perceptions of quality, the structural indicators (such as appearance and availability of medicines) are also generally superior for the private facilities. We also observe that respondents in semi-urban and rural areas have higher satisfaction/quality perception levels of 92.73% and 92.23%, respectively, compared with 88.39% in urban areas. In a nutshell, there are high average levels of satisfaction across all indicators. This result is consistent with other findings in the literature of user satisfaction with healthcare services. For example, the Ministère de la Santé Publique (2011) reported a user satisfaction index of 81.3% in 2003 in Cameroon, and there are projections that this will increase to 95% in 2020. In another study of user satisfaction conducted by Hall and Dornan (1990), the authors found average satisfaction levels to be 79% in about 200 case studies. Fitzpatrick (1991) identified that at least 80% of respondents expressed satisfaction in response to any given question.

Such high reported satisfaction ratings cannot be taken to indicate that users have had or are having excellent experiences in relation to the quality of healthcare services in the country. While such positive results may please health care managers, there are concerns about the reliability of such individual high-level response rates, and we are therefore cautious in interpreting the findings. This caution stems from the context of Cameroon's health system, as most hospital surroundings are not clean, old and dirty buildings with dust and debris that may cause fungi and other infections are clearly visible in most public health facilities, and disgruntled nurses sell drugs under the table and doctors direct patients to their private clinics where they are more frequently available. It is puzzling that users are satisfied with these service delivery satisfaction indicators in the Cameroonian context.

Table 4: Distribution of responses to satisfaction/perception questions by sub-group (frequency, per cent)

| STAFF | Type of health facility | | | Area of residence | | | Employment status | | |
|---|---|---|---|---|---|---|---|---|---|
| | Public | Lay private | Confessional private | Urban | Semi-urban | Rural | Civil servant | Self-employed | Unemployed |
| Unsatisfactory | 14 (3.73) | 0 (0.0) | 0 (0.0) | 9 (3.37) | 1 (1.82) | 4 (2.07) | 1 (0.81) | 6 (3.03) | 7 (3.65) |
| Indifferent | 24 (6.40) | 5 (9.43) | 7 (8.05) | 22 (8.24) | 3 (5.45) | 11 (5.70) | 10 (8.06) | 12 (6.06) | 14 (7.29) |
| Satisfactory | 337 (89.87) | 48 (90.57) | 80 (91.95) | 236 (88.39) | 51 (92.73) | 178 (92.23) | 113 (91.13) | 180 (90.91) | 171 (89.06) |
| Total | 375 (100) | 53 (100) | 87 (100) | 267 (100) | 55 (100) | 193 (100) | 124 (100) | 198 (100) | 192 (100) |

| HYGIENE | Type of health facility | | | Area of residence | | | Employment status | | |
|---|---|---|---|---|---|---|---|---|---|
| | Public | Lay private | Confessional private | Urban | Semi-urban | Rural | Civil servant | Self-employed | Unemployed |
| Very bad | 12 (3.20) | 2 (3.77) | 1 (1.15) | 8 (3.00) | 1 (1.82) | 6 (3.11) | 2 (1.61) | 5 (2.53) | 8 (4.17) |
| Bad | 60 (16.00) | 1 (1.89) | 5 (5.75) | 31 (11.61) | 7 (12.73) | 28 (14.51) | 15 (12.10) | 24 (12.12) | 27 (14.06) |
| Mediocre | 50 (13.33) | 4 (7.55) | 10 (11.49) | 33 (12.36) | 3 (5.45) | 28 (14.51) | 14 (11.29) | 25 (12.63) | 24 (12.50) |
| Good | 224 (59.73) | 32 (60.38) | 44 (50.57) | 153 (57.30) | 41 (74.55) | 106 (54.92) | 78 (62.90) | 120 (60.61) | 102 (53.13) |
| Very good | 29 (7.73) | 14 (26.42) | 27 (31.03) | 42 (15.73) | 3 (5.45) | 25 (12.95) | 15 (12.10) | 24 (12.12) | 31 (16.15) |
| Total | 375 (100) | 53 (100) | 87 (100) | 267 (100) | 55 (100) | 193 (100) | 124 (100) | 198(100) | 192 (100) |

Note: STAFF is attitude of the medical staff; HYGIEN represents hygiene conditions and cleanliness
Source: Authors, from Cameroonian 2010 Quantitative Service Delivery Survey data

This trend may have a twofold explanation: it may partly be explained by the methodological issue of how questions were asked (method, moment and place), and the type of scale used to elicit responses from the users (Richardson, 1994). Satisfaction responses are linked to a wide range of socio-psychological biases that seem to induce positive answers (Bertrand and Mullainathan, 2000). First, there is "courtesy bias". This arises when respondents are reluctant to express negative opinions to a stranger/interviewer, leading to high reported levels of satisfaction. The tendency for courtesy bias is expected to be high if the respondents are interviewed at the facility right after they received care. This would also be the case among a poorly educated population, where such respondents are likely to associate the interviewer with the facility in some way and thus be particularly eager not to provide "disappointing" unfavourable responses. Second, unexpectedly high levels of satisfaction in patient satisfaction surveys may also reflect a "Hawthorne effect", whereby health personnel perform better when they know they are being observed or their patients are being interviewed (Brody et al., 1989). There is also a "managerial bias" in that the design used and issues to be assessed in a user satisfaction survey are defined by health professionals and managers rather than by the potential users of the service. When users are not involved in the design of the questionnaire, some respondents might perceive an interviewer to know more about the issue being addressed in a question than they do, and perceive the question to reflect the opinion of the interviewer, so these respondents agree as a way of deferring to a person whom they believe is more expert than they are. Again, a common criticism with user satisfaction surveys is that very few patients are critical of their care (Hopton et al., 1993).

## 4.3 Identifying the Covariates of User Satisfaction/ Perceptions

The descriptive statistics for the variables used in the regression model are given in Table A2. In Table 5 we report the ordered probit regression results for the two satisfaction indicators identified in this study to be of the greatest concern to users in the Cameroonian health system: attitude of the medical staff, and hygiene conditions and cleanliness.

Table 5: Ordered probit regression results

| Independent variables | Ref. category | Attitude of medical staff | Hygiene conditions and cleanliness |
|---|---|---|---|
| Age Dummies | | | |
| 31 - 60 | | .281585  (1.57) | .0043256  (0.04) |
| ≥ 61 | ≤ 30 | .2665581  (0.83) | .2963952*(1.65) |
| Gender | | | |
| Male | Female | -.185543  (-0.95) | .0127289  (0.11) |
| Educational status | | | |
| Primary education | | -.5272306** (-2.03) | .2570065  (1.51) |
| Secondary education | No education | -.464233*(-1.92) | .2763214  (1.64) |
| University education | | -.011713  (-0.04) | .2159388  (0.98) |
| Type of health facility | | | |
| Lay private | | -.2609117  (-0.89) | .4922815** (2.57) |
| Confessional private | Public | -.3328816  (-1.34) | .6303792*** (4.11) |
| Reasons for visit | | | |
| Headache/diarrhoea | | -.0097585  (-0.04) | -.3438802* (-2.17) |
| Antenatal/postnatal clinic | Malaria | .0256916 (0.11) | -.0310287  (-0.21) |
| Injuries | | .1774436  (0.83) | -.1564219  (-1.13) |
| Health personnel consulted | | | |
| Nurse | | -.1969856  (-0.98) | -.0695875  (-0.54) |
| Other medical personnel | Doctor | .0510744  (0.24) | .026145  (0.18) |
| Employment status | | | |
| Self-employed | Civil servant | .0736715  (0.33) | .1963821  (1.38) |
| Unemployed/student | | .1700526  (0.78) | .0672089  (0.48) |
| Area of residence | | | |
| Semi-urban | Urban | -.282694  (-0.94) | .1864614  (1.02) |
| Rural | | -.2926441  (-1.47) | -.0456727  (-0.36) |
| Frequency of previous visits | | | |
| Once | | -.0579349  (-0.25) | -.0744661  (-0.50) |
| Twice | None | .3582927  (1.33) | -.2789676  (-1.50) |
| More than twice | | .0405496  (0.14) | -.0214778  (-0.12) |
| Cost of consultation | | | |
| Cost of consultation | | .0000203  (0.81) | .0000255  (1.42) |
| Waiting time | | | |
| Moderate | Short | -1.031947** (-6.31) | .1202496 (0.51) |
| Long | | -1.977175** (-11.16) | -.2408339 (-0.97) |
| μ1 | | .9036274  [.0130693 - 1.794185] | -2.77251   [-3.422919 -2.122101] |
| μ2 | | 1.569825 [.6601821 - 2.479468] | -.6044135 [-1.223551 -.0147237] |
| μ3 | | - | -.0544418  [-.6733801 -.5644965] |
| μ4 | | - | 1.178455 [.5432692 - 1.813641] |
| Number of obs. | | 497 | 497 |
| Log likelihood | | -176.136 | -496.29428 |
| Prob> Chi2 | | 0.2822 | 0.0000 |
| Pseudo R-square | | 0.0697 | 0.1797 |

Notes: *** represents significance at 1%; ** represents significance at 5%; * represents significance at 10%.

Numbers in brackets attached to cut-off values (μ$_k$) represent confidence intervals.

z-values are presented in parentheses.

Source: Authors, based on Cameroonian 2010 Quantitative Service Delivery Survey data

An examination of Table 5 indicates that respondents in age groups over 30 years are more likely to be satisfied with the attitude of the medical staff, and hygiene conditions and cleanliness than those of the reference category, though only the age group over 61 years is significant at the 10% level. Thus, the findings of the relationship between reported satisfaction and age shows that older respondents are more likely to be satisfied than younger respondents. This may be the case because older people are more tolerant and accepting than the young, or that they engender more respect and care from their providers. Alternatively, it may be that the elderly have lower expectations based on prior experiences. This finding is consistent with a study by Amponsah-Nketiah and Hiemenz (2009), which reported that patients aged 20 years and below were the least satisfied with the courtesy of nurses in Ghana.

The estimated parameters on the gender dummy indicate that there are no statistically significant relationships between gender and reported satisfaction/ perception with any of the outcome variables. For example, concerning the attitude of the medical staff, males are less likely to be satisfied than females, while the reverse is the case with hygiene conditions and cleanliness. Any consideration of the effect of gender on satisfaction would need to account for the different patterns of healthcare utilization by men and women, which is not permitted by our data. Respondents with primary and secondary educational attainment are found to be less likely to be satisfied, at the 5% and 10% significance levels, respectively, with the reported level of satisfaction with staff attitude when compared to the base category of those with no education. Users with higher education show the same relationship, but it is insignificant. Respondents with higher levels of education are more likely to have lower rates of satisfaction with healthcare workers' courtesy as less educated users are more likely to report medical events less accurately than their more educated counterparts. As concerns relationship with hygiene and cleanliness of the hospital compound, all educational attainment levels are insignificant.

Respondents attending private health centres are significantly more satisfied with the compound cleanliness than those attending public health centres. We understand this may be due to the more committed efforts of private health managers to maintain hygiene and cleanliness than in the public sector.

Our results indicate that respondents who wait for a longer time are less likely to be satisfied than those who wait for a short time period. This means that longer waiting times for appointments or in health centres give rise to dissatisfaction. Most of the literature suggests that users would like to have increased access to health workers. In particular, users express a sense of frustration and helplessness when medical personnel do not arrive to assist or arrive too late, as is often the case. Thus users are particularly concerned with the availability and punctuality of health personnel and shorter waiting periods at the facility. The lack of providers at a health facility has a negative impact on users' perception of quality. This may explain why confessional health centres in Cameroon often have their health workers living close to the health facility to provide healthcare services when needed.

The other exogenous variables are insignificant and relate haphazardly to the

satisfaction indicators. This leads us to investigate if the model is a good fit for the data. The estimated threshold values ($\mu_k$) fall within the 95% confidence interval range, indicating that the ordered probit model is appropriate. The pseudo R-square value, a nonlinear transformation of the constrained and unconstrained maximum likelihood values, is a measure of goodness of fit. However, its interpretation is not straightforward, as is the case in classical regression analysis. Pseudo R-square values of 0.0697 and 0.1797 may be considered satisfactory for a cross-section data set of 515 health service users. However, the probability value of 0.2822 for the log pseudo likelihood value indicates that the model as a whole is insignificant. Observe that very few satisfaction covariates are significant in the regression model. These spurious results are to be expected given the biases described above must have negatively affected data quality. Although statistical analysis (such as factoring in user expectation, see Dasgupta et al., 2009) may help improve population estimates, our data do not allow this.

# 5.0 Conclusion and Policy Implications

## 5.1 Conclusion

The objective of this study was to assess user satisfaction with, and perceptions of the quality of healthcare services in Cameroon. Using confirmatory factor analysis we established that the attitude of medical staff, and hygiene conditions and cleanliness are the best indicators of satisfaction because they have the largest factor loadings of 0.95 and 0.92, respectively. Thus the user-practitioner relationship is the most important health service factor affecting satisfaction. Our results also show that levels of satisfaction/perception are generally very high, scoring above 85%. This happy picture is quite inconsistent with the poor reputation of the quality of healthcare services in Cameroon. This trend may be explained by the methodological issue of how satisfaction-related questions were asked (where and when) and the type of scale used to elicit responses. This study has also provided some evidence about the covariates of satisfaction. The regression results showed that age, educational status, and waiting time are covariates of satisfaction.

## 5.2 Policy Implications

Given the poor quality of the available data we are reluctant to make any policy recommendations other than those targeting data quality improvements. As reported earlier, collecting information from users at health facilities, when hospital administrators and medical personnel are present and are aware they are being observed, will introduce acquiescence response biases on perception-based measures of quality. We strongly suggest that the World Bank and the National Institute of Statistics carry out another user-satisfaction survey (an exit survey) and target respondents for interview /questionnaire filling in social groups such as njangi/ tontines, focus groups or at their individual homes. As it stands, the Cameroonian 2010 QSDS is of poor quality and does not reflect the true picture of user views about the quality of healthcare services in Cameroon.

# References

Andaleeb, S.S. 1998. "Determinants of customer satisfaction with hospitals: A managerial model". International Journal of Health Care Quality Assurance, 11(6): 181–7.

Andaleeb, S.S., S. Nazlee and S. Khandakar. 2007. "Patient satisfaction with health services in Bangladesh". Health Policy and Planning: 22(4): 263–73.

Allegranzi, B. and D. Pittet. 2007. "Healthcare-associated infection in developing countries: Simple solutions to meet complex challenges". Infection Control Hospital Epidemiology, 28(12): 1323–7.

Amponsah-Nketiah, E. and U. Hiemenz. 2009. "Determinants of consumer satisfaction of health care in Ghana: Does choice of health care provider matter?" Global Journal of Health Sciences, 1(2): 50–61.

Andersen, R.M. 1968. "A behavioral model of families' use of health services". Research Series No. 25, Chicago, IL: Center for Health Administration Studies, University of Chicago.

Antonio-Nkondjio, C., B. Defo-Talom, R. Tagne-Fotso, B. Tene-Fossog, C. Ndo, L.G. Lehman, T. Tchuinkam, P. Kengne and P. Awono-Ambene. 2012. "High mosquito burden and malaria transmission in a district of the city of Douala, Cameroon". BMC Infectious Diseases, 12: 275. Available at http://www.biomedcentral.com/1471-2334/12/275, accessed 14/1/2015.

Bertrand, M. and S. Mullainathan. 2000. "Do people mean what they say? Implications for subjective survey data". Mimeo. University of Chicago, Chicago.

Boshoff, C. and B. Gray. 2004. "The relationship between service quality, customer satisfaction and buying intentions in the private hospital industry". South African Journal of Business Management. 35(4): 27–37.

Brody, D.S., S.M. Miller, C.E. Lerman, D.G. Smith, C.G. Lazaro and M.J. Blum. 1989. "The relationship between patients' satisfaction with their physicians and perceptions about interventions they desired and received". Medical Care, 27(11): 1027–35.

Cameron, C. and P. Trivedi. 1986. "Econometric models based on count data: Comparisons and applications of some estimators and tests". Journal of Econometrics, 1(1): 29–53.

Cortina, J.M. 1993. "What is coefficient alpha? An examination of theory and applications." Journal of Applied Psychology, 78(1): 98–104.

Dasgupta, B., A. Narayan and A. Soufias. 2009. "Measuring the quality of education and health services: The use of perception data from Indonesia". Policy Research Working Paper No. 5033. Poverty Reduction and Economic Management Network, The World Bank, Washington, D.C., August.

Dean, M.A. 1999. "The applicability of SERVQUAL in different health care environment". Health Marketing Quarterly, 16(3): 1–21.

Donabedian, A. 1980. Explorations in Quality Assessment and Monitoring: The Definition of Quality and Approaches to Assessment. Ann Arbour, MI: Health Administration Press.

Donabedian, A. 2003. An Introduction to Quality Assurance in Health Care. Oxford: Oxford University Press.

Fitzpatrick, R. 1991. "Surveys of patient satisfaction I-important general considerations". British Medical Journal, 302: 887–9.

Flora, D.B. and P.J. Curran. 2004. "An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data." Psychological Methods, 9(4): 466–91.

Frimpong, O.N, S. Nwankwo and D. Baba. 2010. "Measuring service quality and patient satisfaction with access to public and private healthcare delivery". International Journal of Public Sector Management, 23(3): 203–20.

Greene, W. 1993. Econometric Analysis 2nd edition. New York: Macmillan Publishing Company.

Grönroos, C. 2000. Service Management and Marketing – A Customer Relationship Management Approach. Hoboken, NJ: John Wiley & Sons.

Hall, T.A. and M.C. Dornan. 1990. "Patient sociodemographic characteristics as predictors of satisfaction with medical care: A meta-analysis". Social Science & Medicine, 30: 811–8.

Hopton, J.L., J.G.R Howie and M.D. Porter. 1993. "The need for another look at the patient in general practice satisfaction surveys". Journal of Family Practice, 10(1): 82–7.

Institut Nationale de Statistique. 2004. Rapport Principal-Volet Santé: Première enquête sur le suivi des dépenses publiques et la satisfaction des bénéficiaires dans les secteurs de la Santé. Yaoundé: Cameroun.

Institut Nationale de Statistique. 2010. Rapport Principal-Volet Santé: Deuxième enquête sur le suivi des dépenses publiques et la satisfaction des bénéficiaires dans les secteurs de la Santé. Yaoundé: Cameroun.

Kamgnia, D.B. 2008. Distribution Impact of Public Spending in Cameroon: The Case of Health Care. AERC Research Paper No. 179. African Economic Research Consortium, Nairobi.

Kamgnia, D.B., S.L. Wangun, C. Tatsinkou and J. Afor. 2008. "Acquired benefits and poverty targeting in public spending on health and education in Cameroon". Working Paper 2008 – 08; Poverty and Economic Policy Research Network- PMMA, Quebec-Canada.

Karassavidoui, E., N. Glaveli and T.C. Papadopoulos. 2009. "Quality in NHS hospitals: No one knows better than patients". Measuring Business Excellence, 13(1): 34–46.

Kimenyi, M.S. and W.F. Shughart II. 2006. Provider Competition, Marketization and the Quality of Public Service Provision. AERC Collaborative Project on Service Delivery in Africa Framework Paper. African Economic Research Consortium, Nairobi.

Lewis, R.C. and B.H. Booms. 1983. "The marketing aspects of service quality". In L. Berry, G. Shostack and G. Upah, eds, Emerging Perspectives on Services Marketing. Chicago, Il: American Marketing Association: 99–107.

Miller, M.B. 1995. "Coefficient alpha: A basic introduction from the perspectives of classical test theory and structural equation modelling." Structural Equation Modelling. 2: 255–73.

Ministère de la Santé Publique. 2011. Plan National de Développement Sanitaire (PNDS) 2011 – 2015. Yaoundé.

Ministère de la Santé Publique. 2009. Document de stratégie sectorielle de la santé 2001–2015. Ministère de la Santé Publique. Yaoundé.

Njong, M.A. and J. Ngantcha. 2013. Institutions and Leakage of Public Funds in the Cameroonian Healthcare Delivery Chain. AERC Collaborative Research Project. Nairobi, Kenya.

Parasuraman A. and L. Berry. 1988. "SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality". Journal of Retail, 64(1): 12–40.

Richardson, J. 1994. Responding to Patients. Lewisham Hospital NHS Trust, London.

Robini, R. and B. Mahadevappa. 2006. "Service Quality in Bangalore Hospitals – An Empirical Study". Journal of Services Research, 6(1): 59–84.

Rust, R.T. and R.C. Oliver. 1994. "Service quality: Insights and managerial implications from the frontier". In Rust, R. T., and R. C. Oliver, eds, Service Quality: New Directions in Theory and Practice. London: Sage Publications.

Samuel, S.O., O.O. Kayode, O. Musa, G.C. Nwigwe, A.O. Aboderin, T.A.T. Salami and S.S. Taiwo. 2010. "Nosocomial infections and the challenges of control in developing countries". African Journal of Clinical and Experimental Microbiology, 11(2): 102–10.

Shi, L. and D. Singh. 2005. Essentials of the U.S. Health Care System. Sudbury, M.A.: Jones and Barlett Publishers.

Sohail, M.S. 2003. "Service quality in hospitals: More favourable than you think". Managing Service Quality, 13(3): 197–206.

Tam, J.L. 2005. "Examining the dynamics of consumer expectations in a Chinese Technologies. Journal of Business Research, 66(3): 98–111.

Tarantino, D. 2004. "How should we measure patient satisfaction?" Physician Executive, 30(4): 60–1.

Transparency International. 2006. Report on Corruption in Cameroon. Transparency International, Berlin Germany

Wolinsky, F. 1988. "Seeking and using health services". The Sociology of Health, 2nd edition pp 117-144. Belmont, CA: Wadsworth.

Wooldridge, J.M. 2002. Econometric Analysis of Cross Section and Panel Data. Cambridge, MA: MIT Press.

World Health Organization. 2013. Weekly Epidemiological Record. 31(88): 321–36. Available at http://www.who.int/wer

Zeithaml, A.V., A. Parasuraman and L.L. Berry. 1990. Delivery Quality Service: Balancing Customer Perception and Expectations. New York: Free Press.

# Appendix

Table A1: Description of satisfaction indicator variables

| No | Abbreviation | Description of variable |
|----|-------------|-------------------------|
| 1 | AMT_PAID | Opinion of amount paid in the health facility |
| 2 | WELCOME | Satisfaction with welcome |
| 3 | RECEPT | Opinion of reception procedures |
| 4 | CONSULT | Satisfaction with the consultation |
| 5 | STAFF | Satisfaction with attitude of the medical staff/personnel |
| 6 | PRESCT | Opinion of the medical tests and prescriptions |
| 7 | ENVIRON | State of buildings and premises |
| 8 | TOILET | Opinion of the conditions of the toilet facilities |
| 9 | HYGIEN | Opinion of hygiene conditions and cleanliness |
| 10 | PHARMA | Satisfaction with availability of drugs at pharmacy |
| 11 | EQUIP | Opinion of the condition of medical equipment |

Source: Authors, from 2010 Quantitative Service Delivery Survey data

Table A2: Descriptive statistics

| Variables | Modalities | Mean | Std Dev. | Min | Max |
|---|---|---|---|---|---|
| **Dependent variables** | | | | | |
| Attitude of medical staff | Unsatisfactory | .027420 | .1995877 | 0 | 1 |
| | Indifferent | .069213 | .2987982 | 0 | 1 |
| | Satisfactory | .902011 | .4998751 | 0 | 1 |
| Opinion on hygienic conditions and cleanliness | Very bad | .029321 | .2458730 | 0 | 1 |
| | Bad | .128012 | .3616124 | 0 | 1 |
| | Mediocre | .124312 | .3801286 | 0 | 1 |
| | Good | .582212 | .4074965 | 0 | 1 |
| | Very good | .135025 | .3124219 | 0 | 1 |
| **Explanatory variables** | | | | | |
| Age group | ≤ 30 | .5553398 | .4974112 | 0 | 1 |
| | 31 - 60 | .3242718 | .4685573 | 0 | 1 |
| | ≥ 61 | .1203884 | .3257315 | 0 | 1 |
| Gender | Male | .3184466 | .4663267 | 0 | 1 |
| | Female | .6815534 | .4663267 | 0 | 1 |
| Education status | No education | .1475728 | .3550209 | 0 | 1 |
| | Primary education | .2912621 | .4547858 | 0 | 1 |
| | Secondary education | .4543689 | .4983976 | 0 | 1 |
| | University education | .1067962 | .3091542 | 0 | 1 |
| Employment status | Civil servant | .2407767 | .4279707 | 0 | 1 |
| | Self-employed | .384466 | .4869418 | 0 | 1 |
| | Unemployed | .3728157 | .4840238 | 0 | 1 |
| Reason for visit | Malaria | .3067961 | .4616124 | 0 | 1 |
| | Headache/diarrhoea | .1747573 | .3801286 | 0 | 1 |
| | Antenatal/postnatal clinic | .2097087 | .4074965 | 0 | 1 |
| | Injuries/others | .3087379 | .4624219 | 0 | 1 |
| Health personnel consulted | Doctor | .3650485 | .4819119 | 0 | 1 |
| | Nurse | .3980583 | .4899735 | 0 | 1 |
| | Other medical practitioner | .2368932 | .4255896 | 0 | 1 |
| Marital status | Single | .3145631 | .4647931 | 0 | 1 |
| | Married | .5126214 | .5003267 | 0 | 1 |
| | Divorced/widowed | .1728155 | .3784553 | 0 | 1 |
| Type of health facility | Public | .7281554 | .4453428 | 0 | 1 |
| | Lay private | .1029126 | .3041401 | 0 | 1 |
| | Confessional private | .168932 | .3750562 | 0 | 1 |
| Area of residence | Urban | .5184466 | .5001454 | 0 | 1 |
| | Semi-urban | .1067961 | .3091542 | 0 | 1 |
| | Rural | .3747573 | .4845308 | 0 | 1 |
| Frequency of previous visits | None | .1825243 | .3866516 | 0 | 1 |
| | Once | .4932039 | .5004399 | 0 | 1 |
| | Twice | .1553398 | .3625805 | 0 | 1 |
| | More than twice | .168932 | .3750562 | 0 | 1 |
| Cost of consultation | Cost of consultation | 1381.187 | 2969.681 | 0 | 1 |
| Waiting time | Short | .1592233 | .3662399 | 0 | 1 |
| | Moderate | .376699 | .4850296 | 0 | 1 |
| | Long | .4640777 | .4991928 | 0 | 1 |

Source: Authors, from Cameroonian 2010 Quantitative Service Delivery Survey data

# Mission

To strengthen local capacity for conducting independent,
rigorous inquiry into the problems facing the management of economies in sub-
Saharan Africa.

The mission rests on two basic premises:  that development is more likely to
occur where there is sustained sound management of the economy, and that such
management is more likely to happen where there is an active, well-informed group of
locally based professional economists to conduct policy-relevant research.

www.aercafrica.org

## Learn More

www.facebook.com/aercafrica

www.instagram.com/aercafrica_official/

twitter.com/aercafrica

www.linkedin.com/school/aercafrica/

Contact Us
African Economic Research Consortium
Consortium pour la Recherche Economique en Afrique
Middle East Bank Towers,
3rd Floor, Jakaya Kikwete Road
Nairobi 00200, Kenya
Tel: +254 (0) 20 273 4150
communications@aercafrica.org