

# Can the health system deliver? Determinants of rural Liberians' confidence in health care

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<b>Background</b>	Following a protracted civil war, Liberia is rebuilding its health system. One of the aims of reconstruction is to expand access to health care to a previously underserved rural population.
<b>Objective</b>	This study analysed the determinants of Liberians' confidence in their ability to obtain needed care for themselves or their children in case of serious illness.
<b>Methods</b>	A cross-sectional survey of 1435 adults in Nimba County, Liberia was conducted. Logistic regression models were estimated with reported ability to obtain needed health services for serious illness as the dependent variable, and demographics, health need, health system characteristics and informal health care as independent variables.
<b>Results</b>	Overall, 50.56% of respondents reported that they could obtain needed services for themselves or their children. Confidence in the ability to obtain care increased with education [odds ratio (OR) 1.62, 95% confidence interval (CI): 1.19–2.21] and poor physical health in the past 30 days (OR 1.38, 95% CI: 1.01–1.88), and decreased with poverty (OR 0.66, 95% CI: 0.47–0.93), exposure to previous trauma (OR 0.50, 95% CI: 0.36–0.71), dissatisfaction with respondent's last formal health visit (OR = 0.70, 95% CI: 0.54–0.91) and high utilization of the informal health sector (OR = 0.84, 95% CI: 0.73–0.96). No correlation was found between health system confidence and being female, being 35 years old or younger, formal health sector use, being within an hour of a clinic and the closest clinic having basic capabilities.
<b>Conclusions</b>	Respondents' experiences with the health care system had a greater correlation with their confidence in obtaining needed health care than proximity or quality of medical equipment in health clinics. Despite pro-poor policies guiding health system reconstruction, poor and less educated individuals have less confidence that the health system can meet their health needs.
<b>Keywords</b>	Confidence, health systems, Liberia, patient satisfaction, post-conflict

## KEY MESSAGES

- Health system confidence is an important proxy for care-seeking behaviour and a health system's capacity to meet the needs of its population.
- In post-conflict Liberia, patient experience and demographics have a much stronger association with health system confidence than traditional definitions of access.

## Introduction

The World Health Organization has defined the primary objectives of health systems as improved health, financial protection and responsiveness. As outlined in the World Health Report 2000, 'responsiveness' refers to 'non-medical needs', including respect for dignity, confidentiality and patient autonomy (World Health Organization 2000). Responsiveness research has used patient satisfaction, and perceived non-technical quality of care as metrics of responsiveness (Gilson *et al.* 1994; Newman *et al.* 1998; Bernhart *et al.* 1999; Andaleeb 2001; Atkinson and Haran 2005; Gilson *et al.* 2005; Andaleeb *et al.* 2007; Wouters *et al.* 2008; Bleich 2009; Nketiah-Amponsah and Hiemenz 2009). Interest in responsiveness research is growing as patient perceptions of the adequacy of care are increasingly recognized to influence demand for and appropriate utilization of services (Gilson *et al.* 1994; Kruk *et al.* 2010).

A related- and underexplored concept is that of public confidence in the health system, or the perception that the health system can meet people's emergent health needs. Health systems are a key component of social safety nets and stewardship of health care is an expected function of governments. Along with measures of responsiveness (Kotzian 2009), health system confidence is likely to influence demand for health services and therefore health outcomes. This is an important metric for policymakers to consider, one that often does not correlate with expert determined rankings (Blendon *et al.* 2001). In addition, confidence in the health system may provide useful insight into the effectiveness of the health system as a whole, as it measures overall perceived functioning both in terms of perceived quality and reliability of care (World Health Organization 2000). As an example of this relationship, multiple studies in a developed country context have shown that factors such as waiting time, organization and staff attitude were much more predictive of patient satisfaction than demographic characteristics (Boscarino 1992; John 1992; Thompson and Suñol 1995; Boudreaux *et al.* 2000; Sun *et al.* 2000; Andaleeb 2001).

Finally, confidence in health systems may be linked to confidence in governments, as shown by the importance of health among issues important to the electorate (The Kaiser Family Foundation, The Pew Global Attitudes Project 2007). This makes the study of health system confidence in post-conflict settings of particular interest, as improved confidence in the state and its institutions may contribute to restoring the social compact (Ghani *et al.* 2005; Bornemisza *et al.* 2010; Kruk *et al.* 2010). Unfortunately, much of the existing literature on patient satisfaction in the health sector focuses on developed countries, where political systems are much more stable than in many developing countries (Boscarino 1992; John 1992; Hall and Press 1996; Mossialos 1997).

Liberia is a West African country recently emerging from 14 years of civil war. During the war, the Liberian health system was nearly destroyed with the majority of clinics rendered non-functional by the end of the war. The loss of a functioning formal health sector triggered an increased reliance on the informal health sector, consisting of medicine sellers (or 'black-baggers'), traditional healers and midwives. In addition to the massive loss of human life, war-related behavioural health problems are widespread. Immediately after the war, 40% of the

Liberian population had self-reported signs of major depression, and 44% suffered from post-traumatic stress disorder (Johnson *et al.* 2008).

In 2005, with donor support the government of Liberia embarked on a massive effort to rebuild the health system, prioritizing access to primary care, particularly in rural areas of the country. The emphasis on rural care was a departure from the previously urban-centric focus of Liberia's health sector. Primary care consisted of a basic package of health services that would be provided at no charge at clinics and hospitals (Liberia Ministry of Health and Social Welfare 2007). This strategy has previously been undertaken in other post-conflict countries, including Sierra Leone and Afghanistan, and has been credited with rapidly expanding access and reducing morbidity and mortality (Hansen *et al.* 2008).

There is little evidence about the determinants of public confidence in health care and none in post-conflict settings. This article explores the determinants of confidence in obtaining needed health care in Liberia. We are particularly interested in assessing the role of health system factors vs individual factors such as health need and self-efficacy.

## Methods

### Study area and sampling

The study area was Nimba County, the largest of Liberia's 15 counties and the second most populous. This largely rural county, though particularly impacted by the civil war, is comparable to Liberia's other rural counties in terms of health system and demographics, with very few clinics functioning and a rural, primarily young population. Though census data were not available when this study was conducted, the demographic characteristics (such as age, gender and household composition) of our study population mirror those of subsequent census.

The study involved a three-stage representative rural cluster sample of households from Nimba County. Population enumeration data from the 2008 Liberia National Census were used for sampling. In the first stage, we randomly selected 50 census enumeration areas using probability proportional to population size. The second stage involved randomly selecting 30 households from each enumeration area. Finally, the third stage consisted of randomly selecting one respondent from all eligible individuals in each sampled household using a method outlined by Kish (1949). We defined eligible individuals as respondents over the age of 18 who had resided in the household from more than 6 months of the past year. Households were defined as all individuals living under the same roof and who eat from the same pot, as is customary in household surveys in Africa.

### Instrument design/validation/fielding

Data were collected at the household level (using a household survey instrument), the village level (using a village data form) and the health facility level (using a health facility data form). The household survey instrument focused on demographics, household assets, health status, traumatic experiences and health care utilization. The instrument drew largely from standard validated instruments currently used in African

countries (Measure DHS 2007; World Health Organization 2007), and was refined through four focus group discussions with rural Liberians. The makeup of the four groups was as follows: male participants age 18–34; female participants age 18–34; male participants age 35 and older; female participants age 35 and older. Each of these groups was composed of 6–8 participants that were not included in the survey-sampling frame. Each session, lasting 2 hours, sought to determine the relevance and validity of the study instruments with respect to the Liberian context. After recording and transcription of these sessions, the results were analysed using content analysis.

The household survey instrument was written in English and translated into Liberian English by Liberian study personnel, and pretested with 75 volunteers. Each interview took ~1 hour to complete, and was conducted face-to-face in each respondent's home. Surveys were administered electronically on personal digital assistants. No incentives were offered for participation.

The village data form was completed through interviews with village chiefs. This form focused on determining the number of traditional healers and travel time to clinics for each village. The health facility data form was administered in the 43 facilities of Nimba County closest to study villages (out of 49 total health facilities in Nimba County). Data were collected by interview with the officer-in-charge of each facility, which was typically the head nurse. This survey included information on health care fees, human resources, infrastructure and equipment, service volumes and range of services provided. Study staff verified the presence of health personnel and the functioning of equipment. Data were collected between October and December 2008. The Liberia Ministry of Health and Social Welfare and the Institutional Review Board at the University of Michigan provided ethical approval for the study.

### Dependent variable

We were interested in how confident rural Liberians were in their health system's ability to deliver needed care. Confidence in health care was defined as a positive response to the question 'If you or your child is very sick tomorrow, can you get the health care you need?' This variable captures multiple components of access, including physical availability, affordability and appropriateness of care, all in a context where an individual could plausibly believe that they simply could not obtain needed care (McIntyre *et al.* 2009).

### Independent variables

Independent variables were grouped into categories of demographic and economic characteristics, health needs and characteristics of the formal and informal health system. These groupings were guided by existing literature on patient satisfaction, which suggested that both characteristics of individuals, the content of health care interactions and general characteristics of health services influence satisfaction (Atkinson and Haran 2005).

Demographic and economic characteristics included gender, age, education and wealth. Variables were categorized based on their distributions and theoretical reasons. Education was measured by categorizing respondents into having no education, some primary education and some secondary education.

Age was specified using continuous linear and quadratic terms. The wealth variable was an asset index composed of 18 different household assets, including electricity, materials used to construct homes and owning livestock. This index was necessary to assess permanent wealth; a significant portion of the population receives its income from the informal economy, which is not captured in traditional income data (Filmer and Pritchett 2001). The asset index was then divided into quintiles.

Measures of health need included poor physical health and trauma. A binary variable was created to measure poor physical health in the past 30 days, a metric aligned with standard practice in measuring health-related quality of life (Centers for Disease Control and Prevention 2011). Respondents were asked the question, 'How many days in the last 30 days has your health not been good?' These responses were divided into quartiles, with the top quartile coded as 'poor' health. The final variable in this category was the presence of severe trauma in the respondents. The Harvard Trauma Questionnaire was used to identify past traumatic experiences, which were then compiled and divided into quartiles (Mollica *et al.* 2004).

The health system variables included individual level, village level, and clinic level data. Respondents were asked their number of health facility visits in the past year ('In the past year, how many times did you go to a clinic or hospital?'). The log of this variable was taken to normalize its distribution. At the individual level, a variable for dissatisfaction with the formal sector was coded as responding with anything except 'very satisfied' to the question, 'For the last visit to a clinic or hospital, overall, how did you feel about the treatment you received at the clinic or hospital?' We use this response as a proxy for perceived quality of received care. At the village level, a binary variable was created for the village being less than an hour's walk from the nearest clinic, a question answered by each village's chief. This distance was considered to represent relatively easy access to health care by local collaborators. At the facility level, a binary variable was created for the closest facility having basic inputs, defined as having all of the following: the presence of at least one skilled health worker (nurse, physician assistant or doctor), electricity, a water pump, at least two stethoscopes (one for the patient intake and one for consultations) and a refrigerator.

The informal health care variables included an analogous variable for dissatisfaction with the informal sector (identical to the corresponding health system question). The log of number of informal health visits was included as well to mirror the formal health system ('In the past year, how many times did you go to a country doctor, spiritual healer, black bagger, pharmacy or traditional midwife?'). Finally, a village-level variable was included for the presence of a traditional healer in the village. Informal care variables were included in this analysis as informal care was the main source of health care during the war and is still widely utilized in rural Liberia. As such, we were interested in whether this type of care was perceived as adequate for serious illness (Kruk *et al.* 2011).

### Analysis

Univariate statistics were calculated for each of the variables described above. These statistics were used to interpret the subsequent regression, and inform variable choice. Some

variables (e.g. what institution the nearest clinic was managed by) were omitted from the analysis, since they impacted only a small proportion of respondents. Bivariate associations between variables of interest and the outcome were estimated. The variables of interest were determined by the literature as described above. Variables that were significant at the 5% level in the bivariate models or were considered to be potential confounders were then included in the multivariate model.

The main specification of the analysis was a multiple logistic regression model with confidence in the health system (can get care if needed) as the dependent variable. Standard errors were adjusted for clustering at the village level, as village and clinic-level variables were not independent across observations (Korn and Graubard 1991). Respondents with missing data were omitted from this analysis. All analyses were performed with Stata v.11 (College Station, TX).

## Results

Around 98% of eligible respondents completed the questionnaire ( $n=1434$ ). Of this group, 1135 respondents had full data for the variables used in the regression. Table 1 presents summary statistics of this sample. Approximately half of these respondents (49.4%) believed that they could acquire needed care in the event that they or their child fell seriously ill.

Approximately, 46.0% of respondents were female and 44.0% were under the age of 35 (Table 1). A majority of respondents (58.0%) had received any education. Respondents had an average of 6.3 days of poor-physical health in the past 30 days. On average, respondents had made 5 health facility visits in the past year, and over 26 informal visits. Despite these very different usage statistics for the health system and informal sector, respondents were equally dissatisfied with both (52.7% in the health system, and 53.8% in the informal sector). Only 36.0% of respondents had access to a clinic within an hour's walk, and only 43.0% lived near a facility with basic inputs. In contrast, the vast majority of respondents (86.0%) had a traditional healer in their village.

The results of the logistic regression are presented in Table 2. Respondents were more likely to be confident in their ability to obtain needed care if they were educated [odds ratio (OR)=1.435,  $P=0.047$  for any primary education and OR=1.486,  $P=0.034$  for any secondary education], and if they were in poor health for the past 30 days (OR=1.39,  $P=0.039$ ).

Respondents were less likely to report confidence in the health system if they were in the lowest wealth quintile (OR=0.61,  $P=0.045$ ), traumatized (OR=0.50,  $P<0.001$ ), or dissatisfied with their last formal health visit (OR=0.70,  $P=0.008$ ). Additionally, a greater reliance on the informal health sector (defined as the log of an additional informal visit in the past year) was associated with decreased confidence (OR=0.85,  $P=0.018$ ).

Several variables included in our regression were not found to be significant. Demographically, gender and age were insignificant in our model. Though reliance on the informal sector was significantly associated with decreased confidence, reliance on the formal sector was not. Conversely, while

**Table 1** Characteristics of a population-based sample in Nimba County, Liberia, 2008 ( $n=1434$ )

Characteristic	<i>n</i> (%)
<b>Demographics</b>	
Gender	
Male	775 (54.0)
Female	659 (46.0)
Age	
35 years old and under	631 (44.0)
Over 35 years old	802 (56.0)
Education	
Has any education	827 (58.0)
Never received education	607 (42.0)
Wealth Quintiles <sup>a</sup>	
Quintile 1 (low)	288 (20.1)
Quintile 2	285 (19.9)
Quintile 3	286 (20.0)
Quintile 4	287 (20.1)
Quintile 5 (high)	285 (19.9)
<b>Health need</b>	
Average no. of days of poor physical health in past 30 days (SD)	6.3 (7.3)
Top quartile for exposure to Potentially Traumatic Experiences (PTE) <sup>b</sup>	307 (21.4)
<b>Health system</b>	
Average no. of facility visits in past year (SD)	5.0 (6.4)
Dissatisfied with last facility visit overall <sup>c</sup>	687 (52.7)
Clinic within an hour's walk	517 (36.0)
Closest facility has basic inputs <sup>d</sup>	604 (43.0)
<b>Informal health care</b>	
Average no. of informal health visits in past year <sup>e</sup> (SD)	26.5 (49.7)
Dissatisfied with last informal visit overall <sup>c</sup>	691 (53.8)
Traditional healer in village	1234 (86.0)
<b>Dependent variable</b>	
Respondent believes that they can get health care for themselves or their child if very sick <sup>f</sup>	704 (49.4)

<sup>a</sup>Information on the possession of 18 household assets (e.g. electricity, animals, radio) was used to construct an asset index for each household as a measure of permanent wealth.

<sup>b</sup>Quartile of respondents with most number of reported traumatic experiences. <sup>c</sup>Responded 'somewhat satisfied', 'somewhat dissatisfied' or 'very dissatisfied'.

<sup>d</sup>Defined as having at least one skilled worker, generator, pump, refrigerator and at least two stethoscopes.

<sup>e</sup>Informal health care visits include visits to: traditional healers, spiritual healers, black-baggers (traveling medicine sellers) and traditional midwives.

<sup>f</sup>Responded 'yes' to 'If you or your child is very sick tomorrow, can you get the health care you need?'

dissatisfaction with one's last formal visit was significantly associated with decreased confidence, dissatisfaction with one's last informal visit was not significant. Finally, our village and clinic-level variables—having a clinic within a 60-minute walk, having basic inputs at one's closest facility and having a traditional healer in one's village—were not found to be significant.

**Table 2** Adjusted statistical associations for confidence in health system of a population-based sample from Nimba County, Liberia, 2008 ( $n = 1135$ )

Answered 'YES' to: If you or your child is very sick tomorrow, can you get the health care you need?	OR (SE)	P-value
<b>Demographics</b>		
Female (ref: male)	0.938 (0.116)	0.608
Age	1.025 (0.0195)	0.205
Age <sup>2</sup>	1.000 (0.000199)	0.19
Education (ref: no education)		
Some primary education	1.435** (0.254)	0.047
Some secondary education	1.486** (0.270)	0.034
Wealth (ref: highest wealth quintile)		
Wealth quintile 1	0.609** (0.146)	0.045
Wealth quintile 2	0.727 (0.187)	0.221
Wealth quintile 3	0.952 (0.203)	0.818
Wealth quintile 4	1.043 (0.214)	0.838
<b>Health need</b>		
Top quartile of days of poor physical health in past 30 days (ref: bottom three quartiles)	1.393** (0.217)	0.039
Top PTE quartile <sup>a</sup> (ref: bottom three quartiles)	0.497*** (0.0897)	<0.001
<b>Health system</b>		
Number of facility visits in past year (ln)	0.967 (0.0299)	0.286
Dissatisfied with last facility visit overall <sup>b</sup> (ref: very satisfied)	0.695*** (0.0919)	0.008
Clinic within an hour's walk (ref: <1-hour walk)	0.819 (0.242)	0.503
Closest facility has basic inputs <sup>c</sup>	1.453 (0.435)	0.218
<b>Health system (informal)</b>		
Log (no. of informal health visits in past year) <sup>d</sup>	0.845** (0.0580)	0.018
Dissatisfied with last informal visit overall <sup>c</sup> (ref: very satisfied)	0.970 (0.127)	0.819
Traditional healer in village (ref: no healer in village)	1.617 (0.701)	0.273

<sup>a</sup>Quartile of respondents with most number of reported traumatic experiences.

<sup>b</sup>Responded 'somewhat satisfied', 'somewhat dissatisfied' or 'very dissatisfied'.

<sup>c</sup>Defined as having at least one skilled worker, generator, pump, refrigerator and at least two stethoscopes.

<sup>d</sup>Informal health care visits include visits to: traditional healers, spiritual healers, black-baggers (traveling medicine sellers) and traditional midwives.

\*\*\* $P < 0.01$ , \*\* $P < 0.05$ , \* $P < 0.1$ .

## Discussion

We found that half of rural Liberians were not confident that they could obtain health care if needed. This suggests that the health system faces an important challenge in providing a safety net for rural Liberians.

Poorer respondents were less likely to report feeling confident and more educated respondents expressed greater confidence, a finding that is consistent with the literature on the subject (Cleland and Van Ginneken 1988; Baker *et al.* 1997). Education may lead to better awareness of where to seek care and what conditions require health care, but education may also be linked to self-efficacy within the care setting itself, such as discussing care options with facility staff and insisting on receiving adequate care. There is existing evidence of this link between self-efficacy, education, and care-seeking behaviour and our findings are consistent with it (Ahmed *et al.* 2010).

The strong association between poverty (lowest income quintile) and lower confidence is concerning, considering that the government of Liberia has put a major emphasis on health equity and restructuring the health system to benefit the rural

poor (Kruk *et al.* 2010, 2011). Potential explanations may include lack of knowledge (clinical services are not adequately advertised), logistical issues (the poor still spend disproportionate amounts of their income on reaching the health facility) or dissatisfaction with patient experience in facilities.

Recent poor health is also associated with increased confidence in obtaining needed care. Ill respondents are likely paying greater attention to health concerns and planning ahead to obtain care. As such, they are more aware of health care options. Severity of previous trauma exposure greatly decreased the odds of reporting confidence in health care. There is an established link between traumatic experiences and reduced self-efficacy; it is likely that respondents with reduced self-efficacy would be less confident in their ability to seek and acquire care (Benight and Bandura 2004). However, other studies found that traumatized people use more health care than those without a history of trauma (Kruk *et al.* 2011). It may be that this group has lower expectations of being able to benefit from the care or that they make a greater effort to seek care even if they are not confident they will be able to obtain.

With regards to health system factors, there was no association between frequency of clinic visits and confidence. However, patient dissatisfaction with care received in clinics was associated with reduced confidence. This suggests that perceptions of quality and not just the experience of receiving care play an important role in shaping confidence. Conversely, frequent use of traditional care was associated with lower confidence in getting needed care—this may represent reverse causation as patients who have lost confidence in formal health care turn to the informal sector for their needs. This is further supported by the lack of association between dissatisfaction with informal care and confidence, which reflects generally lower expectations of informal care to meet important health needs.

Distance to closest facility and the presence of basic inputs were not significant predictors of confidence suggesting that geographic access to and resources available in clinics are not in themselves sufficient to instill confidence.

This study has several limitations. This cross-sectional dataset precludes assessment of the direction of associations between variables, as noted earlier. Further research on health system confidence should prioritize longitudinal data collection to better understand the dynamics at play. The survey involved asking about traumatic experiences that took place in the past, and responses are therefore subject to recall bias. We made several assumptions about health care use. For example, we assumed that respondents utilized the health facility closest to their village, which may not be true in practice. We also assumed that respondents had good information about what is available in nearest facilities, which may not be the case for all. Our outcome of interest focused on individual perceptions of the health sector, rather than the actual capacity of the health sector in question. All findings should be interpreted in light of this distinction, as perceived health system confidence may not correspond to actual health system capacity (Kotzian 2009). Our survey did not attempt to probe respondents on 'why' they had their reported level of confidence in their ability to obtain care, which subsequent research could explore. Finally, the data are now 6 years old. However, Liberians still suffer from the consequences of the long war and the health system remains under-resourced and fragile, making these findings applicable today (Gray *et al.* 2013; Sipsma *et al.* 2013).

The findings have several implications for our understanding of the Liberian people's relationship to a health system undergoing reconstruction. The fact that patient experience was substantially more important than proximity to facilities implies that policymakers should prioritize what happens in the facility, i.e. the technical and non-technical quality of care rather than the existence of facilities. This is consistent with findings from a recent multi-country analysis that found health system processes and outcomes to better predict confidence in government than inputs (Rockers *et al.* 2012). To assess the patient experience, the Ministry could implement exit surveys for patients in a subset of facilities. These surveys should collect information on trauma, as this has been shown to reduce confidence independent of health system characteristics.

The strong association of poverty and lower levels of education with reduced confidence is also a cause for concern. Despite the Liberian government's efforts to expand access to

the poor, poor Liberians still feel less confident in their ability to obtain needed care than wealthier Liberians. Qualitative research would be helpful in shedding light on this finding.

## Conclusion

This article offers an initial assessment of the drivers of confidence in health care in post-conflict Liberia. Although frequently discussed as a critical component of social safety nets, public confidence in health care is rarely measured directly. Our results suggest that a combination of individual and health system factors shape public perception of the adequacy of health care. To the extent that this perception enhances individuals' sense of security and their satisfaction with health care and government services more generally, more research is required to characterize this aspect of health system functioning.

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