International Journal for Quality in Health Care 2011; **Volume 23, Number 2:** pp. 108–116
Advance Access Publication: 17 January 2011
10.1093/intqhc/mzq081

Quality of outpatient hospital care for children under 5 years in Afghanistan

ALLISON LIND[1], ANBRASI EDWARD[2], PHILIPPE BONHOURE[3], LAIS MUSTAFA[4], PETER HANSEN[5], GILBERT BURNHAM[2] AND DAVID H. PETERS[2]

[1]University of Washington School of Nursing, Seattle, WA, USA, [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA, [3]European Commission Directorate-General for Humanitarian Aid and Civil Protection, India, [4]Ministry of Public Health, Kabul, Afghanistan, and [5]GAVI Alliance, Geneva, Switzerland

Address reprint requests to: Anbrasi Edward, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA. Tel: +1-410-502-7663; Fax: +1-410-614-1419; E-mail: aedward@jhsph.edu

Accepted for publication 28 November 2010

Abstract

Objective. To determine the quality of outpatient hospital care for children under 5 years in Afghanistan.

Design. Case management observations were conducted on 10–12 children under five selected by systematic random sampling in 31 outpatient hospital clinics across the country, followed by interviews with caretakers and providers.

Main Outcome Measures. Quality of care defined as adherence to the clinical standards described in the Integrated Management of Childhood Illness.

Results. Overall quality of outpatient care for children was suboptimal based on patient examination and caretaker counseling (median score: 27.5 on a 100 point scale). Children receiving care from female providers had better care than those seen by male providers (OR: 6.6, 95% CI: 2.0–21.9, $P = 0.002$), and doctors provided better quality of care than other providers (OR: 2.7, 95% CI: 1.1–6.4, $P = 0.02$). The poor were more likely to receive better care in hospitals managed by non-governmental organizations than those managed by other mechanisms (OR: 15.2, 95% CI: 1.2–200.1, $P = 0.04$).

Conclusions. Efforts to strengthen optimal care provision at peripheral health clinics must be complemented with investments at the referral and tertiary care facilities to ensure care continuity. The findings of improved care by female providers, doctors and NGO's for poor patients, warrant further empirical evidence on care determinants. Optimizing care quality at referral hospitals is one of the prerequisites to ensure service utilization and outcomes for the achievement of the Child health Millennium Development Goals for Afghanistan.

Keywords: quality of care, hospitals, child health, IMCI, Afghanistan

Introduction

The equitable delivery of quality health services is a stated priority of the Ministry of Public Health (MOPH) in Afghanistan, along with the need to address the disproportionate disease burden particularly among women and children [1–3]. The Basic Package of Health Services (BPHS) and Essential Package of Hospital Services (EPHS) provide standard clinical and administrative guidelines for the provision of basic primary health care services that address the major disease burden for maternal and child health in peripheral clinics and disease management and surgical standards for referral and tertiary hospital care. Service delivery is primarily through contractual agreements with non-governmental organizations (NGOs) and evaluated through annual assessments using the Balanced Scorecard (BSC) framework of multiple performance domains, which include the infrastructure and capacity for care provision and care quality [4–6].

National performance assessments of primary facilities adopting the BPHS indicated significant improvements in median scores of most domains of service delivery and quality between 2004 and 2006 [7]. In 2007, a national assessment of provincial and regional hospitals executing the EPHS was introduced with 8 performance domains and 64 indicators that measured clinical performance and management capacity. National median scores, ranging from 0 to 100, were computed for each domain and included both inpatient and outpatient care; management and administrative systems (65.8), financial systems (56.6), human resources (50.8), capacity and infrastructure (51.8), quality and safety (54.7), patient and community satisfaction (70.2) and ethics and values (57.2) [8, 9]. Results indicate the suboptimal capacity and service quality for staffing capacity, management

Box 1 Description of IMCI indicators[a]

Indicator (Provider asked caregiver or examined the child)	Description	Points assigned
1. Three danger signs	Ability to drink or breastfeed, vomits everything, convulsions	1 (all three danger signs)
2. Presence of cough, diarrhea and fever	Asked or checked for symptoms of cough, diarrhea and fever	1 (all three checked)
3. Weight checked against a growth chart	Child was weighed the same day and had it weight checked against a recommended growth chart	1
4. Vaccination status	Checked child's vaccination card	1
5. Index of integrated assessment	Assessed or checked for 10 items: Ability to drink or breastfeed Vomits everything Convulsions Cough/difficulty breathing Diarrhea Fever Weight Weight checked with a growth chart Palmar pallor Vaccination status	Each task assigned 0.1 point for a total of 1 point if all items were checked. Missing values were weighted
6. Counseling on extra fluids and continue feeding	Caregiver counseled to give extra fluids and continue feeding the child	1 point
7. Child receives all required vaccines	Child receives all required vaccinations prior to exiting the clinic (according to national immunization schedule)	1 point
8. Caregiver knows correct administration of prescribed drugs	Caregiver can correctly describe how to administer the treatment; dose, frequency and number of days	1 point

[a]Eight priority indicators from the IMCI Health Facility Survey, an evaluation tool to assess the quality of care delivered to children in the outpatient setting, were used as best practice guidelines for this study. The IMCI evaluatin tool includes 10 other priority indicators, 6 of which are included in this study as predictor variables of hospital characteristics, and 4 others were not included in the survey measurements (appropriate feeding practices, correct drug prescription, avoid of overprescription of antibiotics and proper referral).

standards, lack of clinical guidelines, poor adherence to clinical standards of care and lack of community engagement.

Endorsed by WHO and UNICEF, the integrated management of childhood illness (IMCI) algorithm has been promoted nationally in over 100 countries as it has been evidenced to be a cost effective clinical management strategy that can be integrated in low resource healthcare environments to address the major disease burden of 9.6 million annual deaths in under five children primarily from diarrhea, pneumonia, malaria, measles and malnutrition [10–12]. Afghanistan introduced the IMCI strategy in 2003, as an evidence-based approach to effectively manage childhood illnesses at peripheral facilities. Health providers are trained on the algorithm and followed up after 2 weeks to support integration into health service delivery. The algorithm facilitates providers to accurately diagnose and treat common conditions and provide appropriate counseling for administration of drugs and home care to the caretakers of the children. Initially the training was conducted in Kabul for peripheral healthcare providers but has now decentralized to the regions and includes providers from regional and provincial hospitals. According to recent estimates from the Ministry's IMCI department, ~2100 providers have been trained nationally in IMCI (S. Rahmani, Afghanistan MOPH, personal communication, January 2009).

A trend analysis of the quality of care provided to children under five based on the IMCI standards at peripheral facilities indicated significant improvements in service quality between 2004 and 2006 [13]. Though outpatient clinics in tertiary and referral hospitals also provide IMCI care prior to 2007, there were no studies conducted to assess care quality for children attending these clinics. To ensure the care continuum and the postulation that the achievement of the Millennium Development Goals for child health is impeded by deficiencies in the quality of care in referral hospitals, where the mortality burden is disproportionately higher [14] it is critical to also ensure optimal performance in hospitals.

The BSC scores provide an overall measure of hospital performance, where the quality of care for outpatients is

aggregated for both adults and children. Since IMCI has now been prioritized for hospitals, this study specifically examines the quality of care in reference to IMCI standards. This study will provide a baseline measure for hospital quality of care to determine changes in performance in successive years and also identify factors associated with better quality for performance improvement strategies.

Methods

Study design and data collection

In each provincial capital, the main hospital providing EPHS was selected for performance assessments. The final sample included 31 hospitals. Four provinces were excluded from the national sample (Nooristan, Daikundi, Panjsheer and Jawzjan) as there were no functional hospitals or child outpatient clinics.

The BSC and survey instruments were designed by the Hospital Performance Working Group, which included key policy makers of the MOPH, NGOs and hospital directors. Seven data collection instruments were designed to obtain information on various dimensions of hospital performance; these included observation checklists for patient clinical examinations and counseling, interviews with providers and caretakers on satisfaction and hospital adherence to management, administration and financial standards. Availability of essential supplies, equipment and type and level of services were also measured.

A total of 34 surveyors were trained for 2 weeks on data collection procedures and instruments. A team of three to six surveyors with at least two physicians conducted the surveys for 2–3 days in each hospital. At each clinic, the team performed case management observations and interviews on a systematic sample based on patient volume of 10–12 children under five followed by interviews with the caretakers and providers and hospital capacity assessments. Standard quality control procedures were employed for field testing, translation and conducting the assessments. The study was reviewed by both the Institutional Review Board at Johns Hopkins University and the Ministry of Public Health Ethical Review Board in Afghanistan.

Outcome variables

Eight indicators were included in the quality of care index [15] which assessed provider adherence to IMCI assessment and counseling standards [Box 1]. Seven indicators were treated as dichotomous variables with one point assigned to each indicator if all standards were adhered to and zero points if full compliance was not achieved. The eighth indicator was a measure of an integrated assessment of 10 tasks each assigned 0.1 points, for a potential total of one point. Each indictor was weighted at one point, and multiplied by 10 to yield a 100-point scale. The resulting index was analyzed as a dichotomous variable with high vs. low quality of care designated about its median due to the lack of continuity in a developed index and indicators may carry unequal weight.

Table 1 Descriptive profile of study participants ($n = 307$)

	n (%)
Child characteristics	($n = 307$)
Child sex	
Male	151 (50.0)
Female	151 (50.0)
Child age	
<1 Year	89 (29.0)
1–2 Years	91 (29.6)
2+ Years	127 (41.4)
Primary complaint	
Diarrhea	101 (32.9)
Cough/difficulty breathing	76 (24.8)
Fever	63 (20.5)
Other (Injury, Other GI, Eye Problem, etc.)	67 (21.8)
Secondary complaint present	233 (75.9)
Caretaker characteristics	
Caretaker sex	
Female caretaker	264 (86.3)
Male caretaker	42 (13.7)
Caretakers' report of travel time to hospital (one way)	
<2 h	248 (80.8)
2+ h	59 (19.2)
Children Managed by Provider Type	
Provider cadre	
Doctor	286 (93.5)
Assistant doctor	13 (4.3)
Midwife	5 (1.6)
Auxiliary midwife	1 (0.33)
Nurse	1 (0.33)
Provider sex	
Male	277 (90.2)
Female	30 (9.8)
Time of consultation	
<10 min	287 (93.5)
≥10 min	20 (6.5)

Predictor variables

The association between hospital level, child/caretaker and health provider characteristics and the quality of care provided was examined. Hospital characteristics, which included the type of hospital, contracting mechanism, management and capacity, were categorized as categorical variables, and provider characteristics and consultation time as dichotomized variables.

To examine differentials of care provision, given the government's pro-poor and pro-female priorities, the association of child sex and the household asset level, which was determined based on cumulative ownership of selected household items reported by caretakers during exit interview on the quality of care, were also examined. The quintile of households that owned the least amount of assets was categorized as 'poor'. To determine quality of care differences for children with more than one presenting complaint the primary diagnosis was examined. Other household level variables included were caretaker

Table 2 Descriptive profile of hospitals included in study ($n = 31$)

Hospital characteristics	Type of hospital, *n* (%)				
	District ($n = 3$)	Provincial ($n = 22$)	Regional ($n = 4$)	Specialty ($n = 2$)	Total ($n = 31$)
Number of children observed	30 (9.8)	218 (71.0)	40 (13.0)	19 (6.2)	307 (100.0)
Managing agency					
MOPH only	1 (33.3)	7 (31.8)	2 (50)	2 (100)	12 (38.7)
NGO only	1 (33.3)	5 (22.7)	0 (0)	0 (0)	6 (19.4)
MOPH, with NGO support	1 (33.3)	10 (45.5)	2 (50)	0 (0)	13 (41.9)
Outpatient fee	3 (100)	21 (95.5)	3 (75)	2 (100)	29 (93.5)
Supervision in last 3 months	2 (66.7)	17 (77.3)	3 (75)	2 (100)	24 (77.4)
Hospital Staff Training Index, Median (IQR)[a,b]	33.3 (0–85.7)	57.1 (33.3–85.7)	33.3 (33.3–40)	71.4 (0–71.4)	40.0 (33.3–71.4)
Drug/Supply Availability Index, Median (IQR)[a,c]	70.8 (69.4–92.4)	76.4 (68.4–94)	54.1 (49.3–76.7)	42.7 (27.4–42.7)	72.2 (66.7–90.9)
Equipment Availability Index, Median (IQR)[a,d]	60.4 (44.6–65.6)	73.4 (63.3–82.2)	60.4 (55.9–68.1)	75 (62.5–75)	68.4 (62.5–80)

IQR, interquartile range.
[a]Computed from the 2007 BSC scores, on a 0–100 scale.
[b]Facility's overall training score, accounting for a training plan, sessions, budget, etc.
[c]Essential drugs and supplies based on EPHS standards.
[d]Pediatric equipment; BP cuffs, adult and infant scales, thermometer, stethoscope, timer/clock with a second hand, otoscope and height measure.

sex (Female vs. Male), child age (continuous in years) and travel time to the hospital (2 or more hours vs. <2 h).

Statistical analysis

Standard procedures of double data entry and quality control were followed. Data were analyzed using STATA 10 [16].

All analysis was performed with high quality of care (vs. low quality of care) as the outcome variable and hospital, health provider and household characteristics as predictor variables. All continuous predictor variables were examined for deviations from linearity by studying the relationship between the log odds of quality vs. the predictor [17].

Bivariate relationships between each predictor and high quality of care were examined. Controlling for patient sex and hospital type, a multivariable logistic regression model was developed through a model-building exercise. All four predictor variables illustrating statistical associations ($P < 0.05$) with the outcome in the bivariate analyses were included in the initial model. The model was built using Wald tests and AIC values as guides.

Interactions were then explored. Of particular interest was the interaction between the quality of care for poor patients in NGO vs. MOPH hospitals, based on findings from a recent study in Afghanistan [18]. Generalized estimating equations and robust variance estimates were used to account for within cluster correlations in the hospital capacity indicators. Model fit was deemed appropriate, and no collinearities were found [19].

Results

A total of 307 under five patient observations were included in the final sample. Profiles of the patients, caretakers, health providers and hospital characteristics are illustrated in Tables 1 and 2.

One-third of the included sample consisted of children below 1 year, with diarrhea being the primary presenting complaint followed by cough or difficulty in breathing and fever. Secondary complaints were reported in 75% of the cases and included gastrointestinal disorders, ear or eye problem and injuries. Most of the caretakers of the children were female (86%), and 81% of them reported a 2 h walk time from their home to the hospital. A majority of the children (93%) were examined by doctors and 10% were examined by female providers. The consultation lasted <10 min for 93.5% of children with a median of 5 min.

About three-fourths of the hospitals surveyed reported supervision visits in the past 3 months, and all but 2 hospitals charged user fees to patients. Availability of essential drugs was higher in the district and provincial hospitals than the regional or specialty hospitals.

Quality of care

Results of the quality of care assessments are summarized in Table 3. Assessing danger signs was variable, with 45% assessed for the ability to drink or breastfeed, 42% for vomiting and 20.1% for convulsions. Diarrhea was queried in 65% of children, fever in 77.5% and cough in 59.3% with 36.2% assessed for three symptoms. 56% of the children weighed, had their weight

Table 3 Provider adherence to IMCI assessment standards

Quality index[a] ($N = 307$)		median: 27.5, IQR: (17.2,47.2)
Assessment and counseling indicators	*N*	%
Provider asked/checked		
Ability to drink/breastfeed[b] ($N = 305$)	138	45.3
Vomits everything[b] ($N = 307$)	129	42.0
Convulsions[b] ($N = 304$)	61	20.1
Ability to drink/breastfeed, vomits everything, and convulsions[c] ($N = 298$)	42	14.1
Cough and fast/difficult breathing[b] ($N = 307$)	182	59.3
If cough present asked/checked ($N = 114$)		
Duration	88	77.2
Stridor/wheezing	24	21.1
Respiratory rate	37	32.5
Chest indrawing	59	51.8
Listened with stethoscope	65	57.0
Diarrhea[b] ($N = 307$)	201	65.5
If diarrhea present asked/checked ($N = 127$)		
Duration	113	89.0
Blood in stool	76	59.8
Skin turgor	33	26.0
Fever in the past 24 h[b] ($N = 307$)	238	77.5
If fever present asked/checked ($N = 186$)		
Checked temperature if not already done	73	39.2
Duration	145	78.0
Measles history	10	5.4
Respiratory distress history	29	15.6
Assessed fontanelle (<8 months) ($N = 31$)	1	3.2
Assessed for rash	9	4.8
Cough, diarrhea and fever[b,c] ($N = 307$)	111	36.2
Child weighed[b] ($N = 307$)	81	26.4
Weight checked against a growth chart[a,c] ($N = 81$)	46	56.7
Palmer pallor[b] ($N = 307$)	31	10.1
Vaccination status checked[b,c] ($N = 307$)	108	35.2
Index of integrated assessment[b,c] ($N = 307$)	NA	median: 0.3, IQR: (0.2,0.5)
Treatment and counseling		
Caretaker advised to give extra fluids and continue feeding[c] ($N = 307$)	56	18.2
Child requiring vaccination(s) sent for immunization[c] ($N = 15$)	13	86.7
Caretaker knows correct administration of prescribed drugs[c] ($N = 307$)	172	56.0

IQR, interquartile range.
[a]Quality Index computed and transformed to a 100 point scale.
[b]Index of integrated assessment: mean of the 10 assessment tasks (each task was assigned 0.1 point for a total of 1 point if all tasks were performed. Missing values were weighted).
[c]Indicator in Quality Index.

checked against a growth chart. The caretakers were counseled about feeding during illness in only 18% of consultations, but 87% of children requiring vaccination were sent for immunization. In the exit interview, 56% of the caretakers were able to provide correct responses on how to administer medication at home. The overall quality of care median score was low: 27.5, on a 100-point scale.

Bivariate analysis

Four predictors showed significant association with high quality of care in the bivariate analysis presented in Table 4: more than 2 h travel time to the hospital (20.7 vs. 34.3, OR: 2.1, 95% CI: 1.1–3.7, $P = 0.02$), female health provider (21.5 vs. 42.9, OR: 3.7, 95% CI: 1.5–8.8, $P = 0.004$), presence of a secondary complaint (19.1 vs. 31.5, OR: 1.8, 95% CI: 1.1–3.1, $P = 0.03$) and a high training index (18.6 vs. 32.9, OR: 2.6, 95% CI: 1.1–6.4, $P = 0.039$).

Multivariate analyses

As illustrated in Table 5, after controlling for hospital type and patient sex, the variables of walking time, the presence

Table 4 Bivariate logistic regressions of all determinants of high quality of care

Predictor variable	Unadjusted OR (95% CI)	*P*-value
Child sex (vs. male)	1.1 (0.67–1.7)	0.82
Child age (in years)	0.87 (0.72–1.1)	0.16
Primary diagnosis (vs. diarrhea)		
Cough/difficult breathing	0.65 (0.36–1.2)	0.47
Fever	0.88 (0.47–1.7)	
Other (Injury, Other GI, ENT, etc.)	0.69 (0.37–1.3)	
Presence of a secondary complaint	1.8 (1.1–3.1)	**0.03**
Caretaker sex (vs. male)	1.3 (0.66–2.4)	0.48
Poverty status (poorest quintile vs. upper four-fifths)	1.0 (0.61–1.7)	0.92
Walking distance to hospital (≥2 vs. <2 h)	2.1 (1.1–3.7)	**0.02**
Provider cadre (doctor vs. other)	2.0 (0.76–5.1)	0.16
Provider sex (vs. male)	3.7 (1.5–8.8)	**0.004**
Consultation time (vs. ≥10 min)	1.5 (0.67–3.6)	0.31
Outpatient Fee (vs. none)	1.1 (0.46–2.7)	0.81
Hospital Type (vs district)		
Provincial	4.9 (1.1–20.9)	0.18
Regional	3.0 (0.51–17.1)	
Specialty	5.5 (0.24–25.3)	
Management agency (vs. MOPH)		
MOPH, with NGO support	0.84 (0.32–2.2)	0.84
NGO	1.3 (0.29–5.8)	
Hospital training (high vs. low training index)	2.6 (1.1–6.4)	**0.039**
Supervision (≥1 visit vs. none in the last 3m)	1.8 (0.58–5.7)	0.3
Availability of drugs and supplies (vs. low availability)	1.3 (0.53–3.3)	0.55
Availability of pediatric equipment (vs. low availability)	2.1 (0.83–5.2)	0.12

Reference category in parentheses. *P*-values: significance of the predicted value of each independent variable on quality of care. Values eliminated if not included in the regression model. Hospital Characteristics: Hospitals: categorized based on number of beds, population served and type of services provided; district, provincial, regional and specialty hospitals. Contracting mechanisms: Services provided by NGOs, MOPH or MOPH with support from NGOs. Presence of user fees, health provider training, supervision and availability of drugs, supplies and pediatric equipment were computed from the hospital balanced score card and dichotomized as high and low level of availability for each category's median score [8]. Health Provider Characteristics: The cadre, sex and duration of consultation with the patient were included. Provider cadre was dichotomized as either doctors or other, which included assistant doctors, nurses and midwives. Duration of patient consultation was categorized as <10 min or 10 or more minutes based on previous studies in Afghanistan on quality of care. Poverty status was determined based on asset ownership; sewing machine, clock/watch, gold jewelry, pressure cooker, radio, TV, bicycle, motorbike, generator, car and tractor. The poor were defined as those in the lowest one-fifth of cumulative ownership of these assets. Bold values are significant at $P < 0.05$.

of a secondary complaint, and hospital training were no longer significantly associated with high quality (Model A) and were thus removed to form a parsimonious model. The inclusion of provider cadre (Model B) resulted in a statistically significant Wald test as well as a reduction in the AIC. Even after adjustment for hospital type and patient sex, the odds of quality care provided by a female provider compared with a male was 5.8 times higher (95% CI: 1.9–17.7, $P = 0.002$). Care provided by a physician had a 2.9 times greater odds of better quality as compared with other providers (95% CI: 1.2–6.7, $P = 0.01$). Other hospital capacity and management variables were not significant.

Of the interactions explored, the type of contracting (NGO, MOPH) modified the relationship between quality of care and poverty status (Model C). There was no difference in the odds of high quality care being received by the poor and non-poor in MOPH facilities. However, in the hospitals managed by NGOs, the poorest patients had a 10.4 times greater odds of receiving high quality care than the non-poor did (95% CI: 1.4–75.2, $P = 0.02$). The poor are more likely to receive better quality care at a NGO-managed hospital than hospitals managed by the MOPH (OR: 15.2, 95% CI: 1.2–200.1, $P = 0.039$).

Discussion

This study is the first national assessment of quality of care provided for children in hospitals in Afghanistan. Major investments have been made to ensure equitable service delivery in primary care facilities and establish standard clinical and management systems in hospitals. The recently introduced hospital reform project in selected hospitals to ensure additional resources and management support has shown

Table 5 Multivariate logistic regression of select variables: determinants of high quality of care

Predictor Variable	Model A		Model B		Model C	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
Patient sex (vs. male)	0.96 (0.60–1.5)	0.88	0.97 (0.59–1.6)	0.92	0.93 (0.58–1.5)	0.76
Presence of a secondary complaint	1.6 (0.79–3.1)	0.20	—	—	—	—
Poverty status (poorest quintile vs. upper 4/5ths)	—	—	—	—	—	—
Walk time to hospital (vs. <2 h)	1.3 (0.67–2.7)	0.42	—	—	—	—
Provider cadre (doctor vs. other)	—	—	2.9 (1.2–6.7)	0.013	2.7 (1.1–6.4)	0.02
Provider sex (vs. male)	3.1 (0.98–9.6)	0.054	5.8 (1.9–17.7)	0.002	6.6 (2.0–21.9)	0.002
Hospital type (vs. district)						
Provincial	3.7 (0.65–21.2)	0.41	4.5 (1.1–18.6)	0.15	5.5 (1.4–22.4)	0.09
Regional	2.0 (0.22–17.7)		1.9 (0.32–12.0)		2.5 (0.34–17.7)	
Specialty	4.7 (0.24–94.0)		5.4 (0.24–121.9)		5.2 (0.20–136.5)	
Management agency (vs. MOPH only)	—	—	—	—	—	—
MOPH, with NGO support	—	—	—	—	—	—
Only NGO management	—	—	—		—	
Hospital training (high vs. low training index)	1.9 (0.74–4.8)	0.18	—	—	—	—
NGOs servicing the poor[a] (vs. MOPH/poor)	—	—	—	—	15.2 (1.2–200.1)	0.039
NGOs servicing the poor[a] (vs. NGO/Non-poor)	—	—	—	—	10.4 (1.4–75.2)	0.02

Model A: Includes all significant bivariate findings while controlling for patient sex and hospital type.
Model B: Significant findings from Model A + cadre of health worker while controlling for patient sex and facility type.
Model C: Model B + interaction of patient poverty status and hospital management agency (MOPH or NGO)
Reference category in parentheses.
P-values; significance of the predicted value of each independent variable on quality of care. For the variable 'hospital type' refers to the significance of the overall variable in the model.
Values omitted when not included in the regression model.
[a]Poverty status determined utilizing information of ownership of sewing machine, clock/watch, gold jewelry, pressure cooker, radio, TV, bicycle, motorbike, generator, car and tractor. The poor are defined as those individuals with the lowest one-fifth of cumulative ownership of these listed items.

improvements in performance [9]. The management oversight of the hospitals varies considerably based on contracting mechanisms.

The evaluation of the BPHS illustrated significant improvements in both the overall performance of the primary health facilities and quality of care (43% relative increase in the assessment quality and 29% relative increase in counseling quality) for children under five between 2004 and 2006 [7, 13]. This study illustrates that the quality of care in the provincial hospitals falls below the IMCI standards of care being achieved by primary facilities in Afghanistan and presents a compelling evidence to include IMCI training for hospitals. However, the findings are consistent with other studies where levels of compliance were reported to be much lower at the initial stages of IMCI [20, 21]. Once the hospital referral systems are fully established, management of children referred from primary facilities using IMCI guidelines will be of critical importance [14].

The main presenting complaints of IMCI conditions and a large proportion (75.9%) with a secondary complaint also illustrate the case for supporting IMCI training for providers in hospitals, as major burden of mortality can be averted with effective case management of these conditions. The evidence of better quality of care for children from poorer households in NGO-managed facilities and hospitals is encouraging as it provides the evidence to support the government's focus on improving service provision to the poor and is consistent with other studies [18].

The effect of provider sex on quality of care requires further examination as female providers apparently provide better care similar to findings from the primary facility surveys [13]. Studies in Paraguay and Morocco reported better quality of care from female than male providers [22, 23]. Gender differentials in care provision warrant further research, particularly in Afghanistan's cultural context, as a major proportion of caretakers are female.

In the BPHS facilities sex of the caretaker, consultation time and child age were significant predictors of quality of care [13]. However, these factors were not found to be significant in the hospital context. Although one study illustrated better quality of care in teaching hospitals, the type of hospital was not a significant predictor of quality in this study [24]. The sample size in this study was insufficient to make such comparisons.

The government has accelerated IMCI implementation in primary facilities and IMCI training was found to be a significant predictor of quality in the primary care facilities assessments in Afghanistan, as in other countries [10–13, 25]. Although the EPHS assessments examined provider training for specific disease conditions and programs, they

did not assess provider training in IMCI, and therefore associations between IMCI training and quality of care could not be determined in this study. There is minimal evidence on proportion trained in IMCI in the hospitals (S. Rahmani with the Afghanistan MOPH, personal communication, January 2009).

Another limitation in this study is that it prevented the use of a principal component analysis to form a wealth index based on expenditures, as in the demographic health survey wealth index and previous studies, due to inadequate sample size [18, 26]. However, given the limitations, the quintiles of poverty based on cumulative ownership of several household items, appears to be an appropriate computation for the wealth index. For future studies it would be beneficial to include a larger sample in order to effectively develop a wealth index. It is also necessary to compare the wealth of the survey participants to the general population to ensure that the poorest are in fact accessing the health care system, as the gains made in quality at the facility will be limited unless the utilization is optimal [27].

In other settings, an estimated 10–20% of sick children are referred from primary facilities to first referral hospitals, but are not ensured optimal care and also exposed to the risk of receiving incorrect treatments [24, 28]. This may be a critical deterrent for care seeking as illustrated in other studies where increased incidents of mortality was a major barrier to care seeking from hospitals [24, 29]. The information on the referral patterns of patients in Afghanistan is limited. This is an important concern as the first referral hospital is a key component of the IMCI strategy, and requires further examination and improvement.

As illustrated in the Lancet Child survival series, achievement of the child health MDG's will require concerted efforts of all sectors to improve the care continuum from the household and community level to the health facility and hospital level [30]. This includes optimal investments in enhancing the health system capacity as the EPHS assessments illustrated deficiencies in many of the hospital support systems.

The findings provide some preliminary insights on the quality of care provided for children in hospital outpatient clinics, and serves as a baseline measure to determine future improvements in IMCI investments. The evidence of better care received by the poor in NGO-managed hospitals provides encouraging evidence that the health system is on the road to achieving its goals of equitable care for the poor.

Conclusions

The study provides some evidence of priority areas for improving quality of care for under five children in hospitals. As the health facility evaluations have illustrated significant improvements in adherence to IMCI standards of care with IMCI training, it is hypothesized that hospital IMCI training will further enhance hospital quality of care in Afghanistan's first referral hospitals. More empirical evidence is needed to ascertain the determinants of quality of care in hospitals that accounts for the various contributing and confounding factors affecting healthcare quality in Afghanistan's hospitals. Opportunities for performance improvement training and quality improvement initiatives must be supported to encourage and motivate the providers of the health organization to improve both inpatient and outpatient quality of care.

Acknowledgements

We would like to acknowledge the contributions of colleagues at the MOPH, JHU and IIHMR for their support to the hospital assessments. The survey teams, hospital staff, caretakers and children for their participation in the survey also deserve special mention. We would also like to thank Jennifer Bryce and Cesar Victora for their feedback and insights on the IMCI aspects and Drs Marie Diener-West and John McGready, JHU Department of Biostatisitcs for their guidance on the statistical analysis.

Funding

Grant Support: Third Party Evaluation Contract between Afghanistan Ministry of Public Health and Johns Hopkins Bloomberg School of Pubic Health in collaboration with the Indian Institute of Health Management Research.

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