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Strengthening quality of acute care through feedback from patients in Ghana

Le renforcement de la qualité des soins aigus grâce au feedback fourni par les patients au Ghana

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Introduction: Quality of acute care has attracted attention in recent years with policy initiatives in Ghana. Such initiatives need to be complemented with patient feedback systems for strengthening quality. Therefore the goal of this study is to examine factors associated with quality of acute care and to propose a range of options for improving the existing model of healthcare delivery.
Methods: Cross-sectional data were collected from 379 patients presenting to emergency centres in five public health facilities. A structured questionnaire developed based on the literature and expert advice by physicians and nurses was used to collect data. Principal component analysis (PCA) was used to extract the factors salient to patients' perspective of quality of care. Logistic regression was then used to examine association between these factors and overall quality of acute care.
Results: The majority of the patients (17.2%) presented with obstetrical related conditions, 15% with Road Traffic Accidents (RTAs), 11.3% with diarrhoea related problems and the least number (8.4%) with bronchial asthma. The average days of admission was high for patients with bronchial asthma (mean = 9), RTA (mean = 8) and burns (means = 7). The PCA produced four factors of quality (interpersonal care; prompt care; physical environment and privacy; drugs and equipment) all of which had a positive statistically significant association with overall quality of acute care after controlling for patient's socio-demographic characteristics.
Conclusion: Study findings provide important feedback not only for optimising clinical operations but also for improving in-hospital quality of acute care with short-term and long-term approaches.

Introduction: La qualité des soins aigus a fait l'objet d'une certaine attention au cours des dernières années, avec la mise en place d'initiatives politiques au Ghana. Ces initiatives doivent être complétées par des systèmes de feedback de la part des patients afin de pouvoir en renforcer la qualité. Par conséquent, l'objectif de cette étude est de se pencher sur les facteurs associés à la qualité des soins aigus et de proposer un éventail d'options afin d'améliorer le modèle de fourniture de soins de santé existant.
Méthodes: Des données transversales ont été recueillies auprès de 379 patients qui s'étaient présentés dans les services des urgences de cinq centres de santé publique. Un questionnaire structuré, élaboré à partir de la littérature disponible et des conseils experts des médecins et infirmières, a été utilisé pour recueillir les données. Une analyse en composantes principales (ACP) a été utilisée afin d'en tirer les facteurs saillants quant à la manière dont les patients percevaient la qualité des soins. Une régression logistique a été ensuite utilisée afin d'étudier l'association entre ces facteurs et la qualité globale des soins aigus.
Résultats: La majorité des patients (17,2 %) arrivait aux urgences en souffrant de problèmes d'ordre obstétrique, 15 % étaient victimes d'accidents de la route (AR), 11,3 % de problèmes d'ordre diarrhéique, la dernière tranche (8,4 %) souffrant d'une dilatation des bronches avec asthme. Le nombre moyen de jours d'hospitalisation était élevé pour les patients souffrant de dilatation des bronches avec asthme (moyenne = 9), victimes d'AR (moyenne = 8) et de brûlures (moyenne = 7). L'ACP a permis de produire quatre facteurs de qualité (aspect interpersonnel des soins, rapidité des soins, environnement physique et intimité, ainsi que médicaments et équipement), tous ayant une association positive statistiquement significative avec la qualité globale des soins aigus après contrôle des caractéristiques sociodémographiques des patients.
Conclusion: Les conclusions de l'étude fournissent un feedback important, non seulement pour optimiser les activités cliniques, mais aussi pour améliorer la qualité des soins aigus en milieu hospitalier grâce à des approches à court terme et long terme.

African relevance

- Demonstrates the need for clinicians to engage with acute patients more interactively during healthcare delivery.
- Highlights the need to establish health systems that are resilient and progressively more flexible and responsive to emergencies.

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- Highlights the need for service providers to integrate inter-personal care, prompt care and privacy in the delivery of acute care.

Introduction

Quality of care has been shown to be an important determinant of health outcomes for the acutely ill,[1] and is considered to be the key driver of health system strengthening for improved health service delivery.[2] Yet measures to improve quality continue to receive less attention in many Low and Middle Income Countries (LMICs), especially Sub-Saharan Africa (SSA). Poor attention to quality in SSA is even more pronounced for acute care which is rarely given priority in public health policies.[3,4] Limited focus on promoting standards of acute care has often resulted in several problems such as overcrowding in emergency centres (ECs)[5]; inadequate emergency transport systems[6–8]; poor access to essential emergency medical services[9,10]; long waits[11] and the absence of standardised protocols.[12,13]

In emergency medicine, the importance of maintaining quality during definitive care in the hospital setting has been extensively stressed. Related benefits include increased patient satisfaction,[14–16] intention to seek future care with emergency[17,18] and reduced incidence of home management of critical conditions. Poor quality of care and ill preparedness on the part of providers to effectively deliver timely sensitive care lead to fatalities among critical patients.[19,20] Strengthening the quality of hospital acute care could contribute greatly to optimal resource use[21] and minimisation of mortalities. Access to appropriate quality of care in urgent or life-threatening situations is often the expectation of every patient, suggesting the need for optimising measures to provide care that meet the legitimate concerns of patients.[22]

Meeting the expectation of every patient can be difficult for LMICs often constrained by resources. Especially because market forces keep shifting, staff turnover is rampant and specific determinants of quality may change over time.[23] However, the ideal situation is that care provided should be timely, safe, effective and patient centred.[24,25] Moreover continuity of care should be linked to availability of supplies, inter-personal care, comfort, privacy and confidentiality.[11]

Quality of acute care in Ghana has generally been described as sub-optimal.[19] Substantial mortalities of acute patients have been attributed to delays in reaching the health facility and deficient quality of care in the hospital.[26] Continuity of supplies and critical human resources for acute care remain a problem.[19,27] Hospitals lack emergency preparedness plans to guide the provision of optimal quality care to patients.[19] Beyond these challenges is whether identification of patients' wishes and needs can be used as positive tools for improving functional aspects of care. As patients engage more with healthcare providers, they form opinions about how care should be delivered to meet their expectations, thus providing important feedback for quality improvement. Such feedback systems have been used to strengthen weak areas of quality care in other countries.[11,23,28]

The point of emphasis is that changes in respect of quality may occur when patients' experiences and judgment of quality are incorporated in planning and process evaluations.[29] Evidence suggests that when patients' views are used as feedback for quality improvement, the resultant effect is satisfaction leading to compliance with treatment procedures and better cooperation with healthcare providers.[30] Therefore the aim of this study is to contribute to quality improvement of emergency medicine by providing empirical evidence on how acute patients construct quality in their healthcare seeking process. More specifically the study seeks to identify the factors salient to the delivery of quality of acute care from the perspective of acute patients presenting to emergency centres in Ghana.

Methods

The study was conducted in the EC of 5 public hospitals in the Greater Accra and Central regions. Although each hospital had an EC setup, only two of the hospitals were staffed with emergency physicians who were supported by senior clinicians and nurses to provide care. In the rest of the hospitals, a physician attended to emergency cases by providing initial resuscitation and clinical review before determining whether treatment should continue in the EC or referred to other more resourced hospitals. The EC of each hospital was opened 24/7 for patients presenting with medical and surgical emergencies except for some obstetric cases, which were seen separately in other departments. Average patient volume in the ECs was 25,000 visits per year. The proportion of emergency admissions in the hospitals averaged about 15 per cent.

The design was cross-sectional and data were collected for a period of three months (July–September 2013). A structured questionnaire was used to collect data. The questionnaire was developed based on a review of the literature and expert advice by two physicians and a nurse providing acute care in separate hospitals.[31] Modifications and rewording of some of the questions were done based on these expert reviews to enhance clarity and understanding. The questionnaire was divided into four parts. The first part captured demographic characteristics of the respondents (age, sex, marital status, employment status, number of days on admission and mode of arrival to the hospital).

The second part of the questionnaire originally asked questions on commonly reported emergency cases presenting to the health facilities such as Road Traffic Accidents (RTAs), burns,[8,19] hypertension, diabetes, bronchial asthma, and diarrhoea/vomiting.[27] Participants were given the option to include other emergencies that were not captured on the questionnaire. Part three of the questionnaire sought answers on quality of acute care and consisted of 35 items. A five point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree" was used to examine patients' responses to variables relating to prompt care; diagnosis and treatment before admission; maximum support and care from providers on arrival and on admission; available medication and equipment; physical features of the ward and privacy of consultation. The last set of questions on overall quality of care received related to patients' experience of the sequence of care received on arrival and on admission and patient assessment of healthcare providers' attitude throughout the period of receiving care. Response to these questions were dichotomised into 1 = "good" and 0 = "poor".

The study was approved by the health directorates of each region and subsequently given further approval by the health

managers of each hospital. Inclusion criteria were patients presenting to the hospitals with acute debilitating illnesses and subsequently admitted at the EC. Patients who were confused (could not give account of events that took place prior to admission) and incapacitated by mental illness were excluded. After a written or thumb-printed informed consent was sought, patients were assisted to complete the questionnaire. Questions were translated into a local language where necessary to facilitate understanding. Questionnaires were completed in the absence of health professionals in order not to influence patient's judgment. The first author together with two trained research assistants visited the hospitals each day between 8:00 a.m. and 12 noon to administer the questionnaire. A total of 379 patients participated in the study.

Data were analysed using the SPSS version 21. Descriptive statistics were used to present demographic characteristics of respondents and the proportion of emergency cases presented in the hospitals. Principal component analysis (PCA) with orthogonal (varimax) rotation was employed to reduce the large number of variables into discrete fewer underlying dimensions or components.[32,33] The strength of the PCA in explaining the factors or dimensions of quality produced was supported by the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy (0.919) and Bartlett's Sphericity Test ($p < 0.001$). Variables with smaller loadings (< 0.50) and Eigenvalues values ($\leqslant 1$) were excluded from the analysis. The Cronbach alpha coefficient for the item-measures of each factor produced in the PCA was found to be above 0.75 which is considered to be acceptable.[32]

Two logistic regression models were performed to determine associations. The first model sought to determine association of the factors extracted from the PCA (i.e., the dimensions of quality of acute care) taken as independent variables with the dependent variable, overall quality of care received. In the second model the patient's socio-demographic characteristics and the number of days spent on admission were introduced to determine possible confounding on the relationship between the dependent and independent variables. For example a patient presenting with severe burn may view quality of care differently from another with severe RTA.

Results

The majority of the respondents were males (53.8%), married (56.2%), public sector workers (36.1%) (Table 1), and arrived at the hospital by non-ambulance services (76.5%) (Fig. 1). The mean age of the respondents was 37 and the average duration of admission days was 7. A large proportion of the respondents (17.2%) presented with obstetrical related conditions, 15% with RTAs, 11.3% with diarrhoea related problems and the least number (8.4%) with bronchial asthma emergencies. The average days on admission was high for patients with bronchial asthma (mean = 9), RTA (mean = 8) and burns (means = 7) (Table 1).

Results of the PCA are presented in Table 2. The final model produced a total of 22 items clustered into four discrete dimensions. The first significant factor, interpersonal care accounted for 45% of the variance and indicates the importance that patients attached to the provider aspect of healthcare delivery in terms of: support and care; providing detailed explanation on patient's condition; concern for patient health outcome; empathy from doctors and nurses and dignity and respect. The second factor, prompt care accounted for 9% of the variance and includes items like prompt treatment upon arrival; providing treatment at reasonable time; carrying out appropriate diagnosis and giving assurance that patient condition will

Table 1 Emergency conditions by patients' characteristics.

|	n (%)	RTA	Hypertension	Diabetic	Bronchial asthma	Obstetric related	Burn	Diarrhoea/ vomiting	Other cases
Age									
18–24	55 (14.5)	19 (5.0)	4 (1.1)	3 (0.8)	2 (0.5)	12 (3.2)	2 (0.5)	7 (1.8)	6 (1.6)
25–34	141 (37.2)	13 (3.4)	7 (1.8)	12 (3.2)	16 (4.2)	33 (8.7)	15 (4.0)	19 (5.0)	26 (6.9)
35–44	84 (22.2)	12 (3.2)	23 (6.1)	9 (2.4)	8 (2.1)	13 (3.4)	6 (1.6)	8 (2.1)	5 (1.3)
>44	99 (26.1)	13 (3.4)	20 (5.3)	11 (2.9)	6 (1.6)	7 (1.8)	13 (3.4)	9 (2.4)	20 (5.3)
Mean (SD)	37 (12.597)	33 (11.81)	43 (12.00)	40 (14.37)	36 (11.96)	32 (9.46)	40 (12.54)	34 (11.57)	40 (13.80)
Sex									
Male	204 (53.8)	44 (11.6)	37 (9.8)	20 (5.3)	18 (4.7)	0 (0.0)	25 (6.6)	22 (5.8)	38 (10.0)
Female	175 (46.2)	13 (3.4)	17 (4.5)	15 (4.0)	14 (3.7)	65 (17.2)	11 (2.9)	21 (5.5)	19 (5.0)
Marital status									
Married	213 (56.2)	29 (7.7)	27 (7.1)	21 (5.5)	20 (5.3)	48 (12.7)	13 (3.4)	24 (6.3)	31 (8.2)
Not married	166 (43.8)	28 (7.4)	27 (7.1)	14 (3.7)	12 (3.2)	17 (4.5)	23 (6.1)	19 (5.0)	26 (6.9)
Employment									
Unemployed	91 (24.0)	19 (5.0)	6 (1.6)	5 (1.3)	8 (2.1)	19 (5.0)	10 (2.6)	10 (2.6)	14 (3.7)
Private sector	82 (21.6)	15 (4.0)	13 (3.4)	8 (2.1)	8 (2.1)	9 (2.4)	12 (3.2)	3 (0.8)	14 (3.7)
Public sector	137 (36.1)	17 (4.5)	26 (6.9)	12 (3.2)	9 (2.4)	20 (5.3)	10 (2.6)	22 (5.8)	21 (5.5)
Self-employed	69 (18.2)	6 (1.6)	9 (2.4)	10(2.6)	7 (1.8)	17 (4.5)	4 (1.1)	8 (2.1)	8 (2.1)
Days in admission									
1–5	215 (56.7)	29 (7.7)	32 (8.4)	21 (5.5)	20 (5.3)	35 (9.2)	16 (4.2)	29 (7.7)	33 (8.7)
6–10	109 (28.8)	15 (4.0)	16 (4.2)	11 (2.9)	3 (0.8)	23 (6.1)	3 (3.4)	13 (3.4)	15 (4.0)
11–15	32 (8.4)	9 (2.4)	5 (1.3)	2 (0.5)	2 (0.5)	4 (1.1)	5 (1.3)	1 (0.3)	4 (1.1)
>15	23 (6.1)	4 (1.1)	1 (0.3)	1 (0.3)	7 (1.8)	3 (0.8)	2 (0.5)	0 (0.0)	5 (1.3)
Mean (SD)	7 (6.417)	8 (6.37)	6 (4.48)	6 (5.79)	9 (10.79)	6 (5.41)	7 (6.17)	4 (3.108)	7 (7.60)
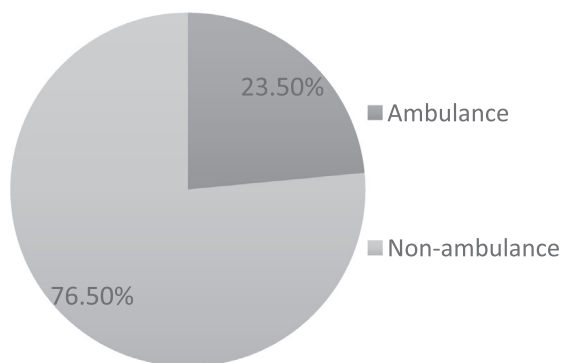
Figure 1 Mode of arrival to the health facility.

get better. The third factor with a variance of 7% was the physical environment and privacy with 5 items such as an appealing environment; a clean and well laid out environment and privacy during consultation. The fourth factor termed drugs and equipment produced a variance of 4% with 4 items including availability of necessary drugs; adequate prescription and availability of essential equipment.

Table 3 presents results of the logistic regression models on the predictors of quality of acute care. In model 1, we present results of the association between the dimensions of quality

derived from the PCA and the dependent variable. In model 2, we introduced the demographic characteristics into the regression function as controls to determine possible confounding effects. Model 1 shows a significant positive association between overall quality of acute care and all the four factors produced. In model 2, the introduction of the socio-demographics characteristics did not alter the statistically significant relationships. Interpersonal care remained significantly associated with overall quality of acute care ($\beta = 0.031$; $p < 0.05$). The same is true for prompt care ($\beta = 0.093$; $p < 0.01$), physical environment and privacy ($\beta = 0.163$; $p < 0.01$), drugs and equipment ($\beta = 0.061$; $p < 0.05$).

Discussion

The highest proportion of cases presenting in the ECs was obstetric related problems, RTAs, and diarrhoea. These cases together with others such as burns, diabetes and hypertension contribute to the burden of emergency mortalities in Ghana.[8] Yet major public policy tools do not give critical attention to them in comparison with malaria, TB and HIV. Consistent with earlier studies,[34,35] an overwhelming proportion of the patients arrived in the hospital by non-ambulance means. This could be attributed to unaffordability and unavailability of

Table 2 Principal component analysis: measures of quality of acute care.

	Rotated component matrix			
	1 Interpersonal care	2 Prompt care	3 Physical environment and privacy	4 Drugs and equipment
Health providers are supportive and caring	**0.624**	0.477	0.150	0.153
Providers consistently give detailed explanation about my condition	**0.564**	0.360	0.132	0.183
Health providers show concern for my health outcome	**0.600**	0.320	0.068	0.251
Anytime I feel bad nurses empathise with me	**0.773**	0.141	0.297	0.141
Anytime I feel bad doctors empathise with me	**0.752**	0.166	0.288	0.089
Health providers treat me with dignity and respect	**0.715**	0.204	0.263	0.297
I am free to ask health providers anything worrying me	**0.714**	0.123	0.143	0.341
I received immediate treatment upon arrival	0.149	**0.791**	0.262	0.043
Medical treatment was given at reasonable time	0.193	**0.838**	0.168	0.006
I received best care and treatment upon arrival	0.209	**0.689**	0.118	0.320
All diagnoses were appropriate as far as I can tell	0.369	**0.630**	0.164	0.303
All diagnoses were carried out in good time	0.255	**0.564**	0.286	0.421
There was reassurance that I will get better	0.400	**0.534**	0.084	0.339
The environment of the ward is tidy and appealing	0.199	0.122	**0.661**	0.396
The hospital generally has a clean and well laid out environment	0.205	0.114	**0.660**	0.343
There is privacy of consultation	0.112	0.184	**0.792**	0.227
Health providers attend to me in private	0.206	0.203	**0.852**	0.079
Doctors and nurses attend to me in absolute privacy	0.270	0.199	**0.813**	0.037
All drugs necessary to treat me are available	0.266	0.177	0.348	**0.613**
Drugs are given on time	0.329	0.105	0.205	**0.634**
Drugs are of good quality for my condition	0.457	0.174	0.177	**0.571**
All equipment necessary to treat me are available	0.189	0.149	0.433	**0.547**
Eigenvalues	10.306	1.977	1.511	1.014
% of variance	44.810	8.597	6.569	4.410
Cronbach alpha	0.924	0.877	0.912	0.841

Notes:
Extraction method: Principal Component Analysis.
Rotation method: Varimax with Kaiser Normalisation.
Kaiser–Meyer–Olkin measure of sampling adequacy = 0.919; $p < 0.001$.
Values in bold indicate correlation coefficient of $\geqslant 0.5$.

Table 3 Regression results of predictors of quality of acute care.

	Model 1	Model 2
Covariate	Coef. (95% CI)	Coef. (95% CI)
Interpersonal care	0.061 (1.001, 1.128)[*]	0.031 (0.967, 1.100)[*]
Prompt care	0.033 (0.910, 1.028)[*]	0.093 (0.851, 0.976)[**]
Physical environment and privacy	0.155 (0.802, 0.915)[**]	0.163 (0.792, 0.911)[**]
Drugs and equipment	0.101 (0.999, 1.226)[*]	0.061 (0.952, 1.185)[*]
Age		0.111 (0.894, 1.397)
Sex		0.492 (1.028, 2.601)[*]
Marital status		0.515 (1.069, 2.619)[*]
Employment status		0.075 (.859, 1.352)
Days in admission		0.403 (1.133, 1.975)[**]
Emergency condition		0.068 (0.845, 1.033)
Insurance status		0.379 (0.879, 2.431)
Observation	379	379
Pearson χ^2(df)	39.529 (4)	45.102 (7)
-2likelihood ratio test	456.764	411.662
PseudoR^2 (Cox and Snell)	0.105	0.211
PseudoR^2 (Nagelkerke)	0.139	0.281

[**],[*] significant at 1% and 5% respectively.

emergency transport services.[7] For instance the study by Nee-Kofi et al.[35] in the Ashanti region of Ghana showed that in 2011, the region's population of four million was entitled to only 18 ambulances.

Our results from the PCA and the regression model were that the domains of interpersonal care, prompt care, physical environment and privacy as well as drugs and equipment were very much valued by the patients. More especially, the interpersonal aspect of care appeared as a significant measure of quality. Similar findings have been reported elsewhere.[11,36,37] Patients in this study were concerned about support and care, empathy and sharing of clinical decisions with healthcare providers.[23,38] Empathy as produced in the factor structure signals how important it is for physicians and nurses to have fellow-feeling. Equally important is the need for healthcare providers to improve personal relations with patients. Another dimension of interpersonal care that explains quality of acute care was healthcare providers' interaction with patients.[39] Rather than focusing solely on the patient's illness, healthcare providers should engage in reciprocal communication with patients in order to understand what they value and the kind of care that they might need.[40] An intimidating clinical environment could limit patient's compliance with treatment regimen. Hence, healthcare providers need to rethink new attitudes and adopt a system of decision making that accommodates patients' opinions.

Prompt care emerged as an important measure of quality of acute care. The factor structure revealed that on arrival, patients prioritise prompt treatment; receiving best care and assurance from healthcare providers in judging quality of care. We found this not surprising because, acute care in Ghana is somewhat less responsive to meet public expectations.[41–43] Variability often exists between patient expectation prior to arrival and what is provided in practice. An improvement in the domains of prompt care at arrival points could play a crucial role in resuscitation and stabilisation, especially for patients under life-threatening conditions.[8] Promptness of care is also linked to high survival rate of acute patients.[11,36] This finding suggests the need for health providers to respond to emergencies promptly. Where multiple cases arrive

simultaneously, waiting time should be balanced with the application of efficient triage regimes.

We found that drugs and equipment had high factor loadings and were significantly associated with quality of acute care. In our view, patients perhaps have the feeling that clinical outcomes including the risk of death during admission could be averted when there is adequate medications and medical equipment.[44] Both theoretical and empirical literature have consistently linked in-hospital deaths to poor resources.[6] In Ghana for instance, many hospitals lack essential drugs, medical equipment and other emergency facilities to provide standard care. Consequently, mortalities sometimes occur during admission or even after discharge.[45] This suggests that an improvement in the domains of equipment and supplies is important, in that it demonstrates responsiveness and preparedness of the hospitals for emergencies. Further, investing in these domains has the potential to improve patient satisfaction, reduce referral rates and attract positive impression about the hospital. This does not necessarily mean investing in costly state-of-the-art equipment. Indeed simple but necessary supplies such as stretchers, pressure dressings, splints and others can contribute greatly to patient's positive experience of quality acute care.

Privacy and well organised physical environment emerged as important determinants of quality care.[11,36,46] The factor structure indicated that patients were so much concerned about environmental tidiness, cleanliness and privacy during consultation with doctors and nurses. We found the issue of privacy more compelling for three reasons. First, too often healthcare providers tend to compromise privacy over urgency in administering care, thus undermining the patient's right to confidentiality. Second, when privacy cannot be guaranteed, patients may become reticent about information sharing with healthcare providers and this can affect the accuracy of diagnosis and satisfaction with quality of care.[40] Third, poor attention to privacy undermines the patient's dignity. We suggest that maintaining some private space for patients during examination should be constantly emphasised by managers. Privacy accords the patient with dignity and provides the required environment to fully divulge sensitive information. An appealing physical environment was essential for acute patients in this context, perhaps

because it is associated with improved mood, outcome and well-being.[47] At the time of conducting the study, overcrowding in most of the ECs impaired efforts at maintaining an attractive physical environment. However, it is important that managers prioritise the physical attributes of the hospital by creating aesthetic, comfortable and home-like environment.

In conclusion findings of the study reveal the priority areas of quality of acute care that can be considered in outlining optimal measures to improve functional aspects of care. Although the study's scope and sample are small, its detail may inform hospital managers to improve on care delivery at ECs. Further research on quality of acute care from an inquiry lens, and addressing gaps of the present study adds momentum to this field of medicine. More especially qualitative studies focusing on patients' experiences and satisfaction with quality of acute care are encouraged.

Author contribution

R.A. and R.B.K. conceived the study and contributed to the design, data collection and preparation of the manuscript. L.A. and E.S. presented results and discussion. Final manuscript was read and approved by all authors.

Conflict of interest

The authors declare no conflict of interest.

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