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Emergency and trauma care in Pakistan: a cross-sectional study of healthcare levels

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Abstract

Background—The importance of emergency medical care for the successful functioning of health systems has been increasingly recognised. This study aimed to evaluate emergency and trauma care facilities in four districts of the province of Sindh, Pakistan.

Method—We conducted a cross-sectional health facility survey in four districts of the province of Sindh in Pakistan using a modified version of WHO's Guidelines for essential trauma care. 93 public health facilities (81 primary care facilities, nine secondary care hospitals, three tertiary hospitals) and 12 large private hospitals were surveyed. Interviews of healthcare providers and visual inspections of essential equipment and supplies as per guidelines were performed. A total of 141 physicians providing various levels of care were tested for their knowledge of basic emergency care using a validated instrument.

Results—Only 4 (44%) public secondary, 3 (25%) private secondary hospitals and all three tertiary care hospitals had designated emergency rooms. The majority of primary care health facilities had less than 60% of all essential equipments overall. Most of the secondary level public hospitals (78%) had less than 60% of essential equipments, and none had 80% or more. A fourth of private secondary care facilities and all tertiary care hospitals (n=3; 100%) had 80% or more

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Contributors JAR conceived and designed the study, obtained research funding, provided statistical advice and helped in paper writing. MB conceived and supervised the conduct of the study. URK was involved in supervising the conduct of the study, managing and analysis of the data, and paper writing. DH was involved in analysis and paper writing. AAH was involved in the design of the study and paper writing. All authors contributed substantially to its revision.

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essential equipments. The average percentage score on the physician knowledge test was 30%. None of the physicians scored above 60% correct responses.

Conclusions—The study findings demonstrated a gap in both essential equipment and provider knowledge necessary for effective emergency and trauma care.

INTRODUCTION

Sudden-onset, time-sensitive illnesses are a major public health concern.¹ The impact of these illnesses is especially dramatic in low- and middle-income countries where as much as 45% of deaths and 36% of the disease burden related to such illnesses require urgent care.² Improving access to quality emergency care in these countries has the potential to reduce the toll of 21 million deaths and 501 million disability-adjusted life years.² Timely initiating therapies such as aspirin for myocardial infarctions³ and stroke; rapid transport of women with postpartum haemorrhage;⁴ rehydration of severely dehydrated children;⁵ early antibiotics for sepsis;⁶ improving prehospital care of trauma patients;⁷ and training of community and hospital providers in haemorrhage control and other basic lifesaving skills for trauma⁸ have saved millions of lives in developed countries. Availability and access to these interventions is problematic in Low and Middle Income Countries (LMICs) because of significant knowledge gaps about related deficiencies.

The impact on saving lives can only be achieved through a health system that addresses care needs in time of emergencies and across all regions nationally and subnationally. Developed countries such as the USA had recognised the importance of monitoring emergency care quality early on and, therefore, the American College of Emergency Physicians developed the scorecard for emergency care to compare and monitor emergency care systems across different states.⁹ Such evaluations were non-existent in case of LMICs until mid-2000s when WHO developed two assessment protocols, the Guidelines for essential trauma care and the Prehospital care systems, to assist in the evaluations of emergency and trauma care in different LMIC settings.^{10,11} Available literature point out that these guidelines had been used sparingly for assessing emergency care and health facilities in LMICs.¹²

Pakistan is a low-income country with over 180 million inhabitants.^{13,14} Recent work identified serious problems in access to quality emergency and trauma care in Pakistan. For instance, pilot work from urban settings in two districts in Pakistan showed an overall dissatisfaction of providers and towards the emergency medical services, poor staff confidence in their ability to handle emergencies, and a general lack of essential equipment and supplies.¹⁵ This study proposed to use WHO assessment protocols in evaluating emergency and trauma care at different levels of health facilities in Pakistan; specifically, emergency and trauma care was assessed from two aspects: (1) infrastructure and essential equipment and supplies and (2) availability and knowledge of physicians providing emergency care.

METHODS

Study design and setting

Using cross-sectional design, healthcare facilities and physicians were assessed in the province of Sindh, the selected area of study. The province, the second most populous in Pakistan, has over 30 million inhabitants and is administratively divided into 23 districts.¹³ The initial study plan was to select randomly four districts but because of North–South geography and urbanisation, four districts were conveniently chosen (figure 1): an urban southern, an urban northern, a rural southern and a rural northern. The study area covered a total population of over 4 million and land area of 25 522 km².¹³

This study was approved by the Office of Director General of Health, Province of Sindh and the Ethics Review Committee of the Aga Khan University, Karachi, Sindh, Pakistan. Written informed consent was obtained from all study participants. The choices of districts were finalised by the Office of Director General Health, Province of Sindh, Pakistan.

Facility and participant samples

Healthcare services in Pakistan are provided by the public as well as the private sector. The public sector healthcare is organised into primary, secondary and tertiary care facilities (table 1). The sample size for facilities was calculated assuming availability of lifesaving drugs in 50% of facilities, with a bound of 0.05 on the error of estimation based on a previous study in Pakistan.¹⁵ We selected facilities from all three tiers of the public system. Based on the total number of public health facilities in the four districts (n=121; table 1), a sample of 93 public facilities was obtained. We used stratified random sampling and included a total of 67 basic health units (BHUs), 14 rural health centres (RHCs), nine district or Taluka hospitals, and all three teaching hospitals. We also included the three largest private hospitals (secondary level care) from each of the four districts as there was no available list of private health facilities. The sample included 105 facilities in all (table 1).

For the assessment of physician knowledge, sample size estimates were based on the assumption that 50% of physicians working in the BHUs or hospital emergency rooms would be able to pass an assessment test. This resulted in an estimated sample size of 100 so we had at least 25 physicians from each district.

Data collection

Healthcare facility data were collected by a team of two research staff (one physician and one paramedic/nurse) at each site visit. These data collectors were trained for this project and were not blinded regarding the purpose of the study. Data for the assessment of healthcare facilities were obtained from face-to-face interviews with key staff at each facility. The presence of supplies including medications and equipment was assessed through direct observations. Data collectors also checked the inventory of supplies in facilities which allowed them to do so (conducted in 71% of facilities).

Assessments of physician knowledge were performed in each district. Physicians were invited through the district health leadership on a voluntary basis. After the test, these physicians participated in training sessions on basic life support.

Study instruments

The instrument for the assessment of trauma and emergency equipment and staffing of health facilities was derived directly from WHO Guidelines for essential trauma care.¹¹ We selected 114 of these items relevant to the Pakistani health system in addition to 41 questions to determine the demographics of the patients seen, the availability of human resources, and the current referral system and its effectiveness. The findings were presented as broad categories including several items such as airway, breathing, circulation, neck injury, abdominal, extremity injury, spinal injury, burns and wounds, healthcare professional safety, diagnosis and monitoring, radiology, laboratory, and general equipments and supplies as well as essential medicines.

Physician knowledge was assessed through a set of 42 questions testing the knowledge of basic emergency care. These questions were to assess knowledge of trauma and emergency cardiac care and covered such essential skills as ECG interpretation of ventricular tachycardia, approaches to pulseless electrical activity, basic management of acute coronary syndrome, identification of hypovolaemic shock and identification of pneumothorax on a chest x-ray (table 2). The instrument was finalised after pilot-testing with 22 volunteer final-year medical students of the Aga Khan University Medical College (mean score 77%; range 63%–97%).

Analysis

Data collected were entered and analysed by SPSS Statistical Package for the Social Sciences V.19 (SPSS, Inc, Chicago, Illinois, USA). The level of analysis for the assessment is the facility, and for the physician knowledge assessment it is the individual physician. Frequencies were computed for categorical variables such as emergency equipment, medications and written protocol for the management whereas means and SDs were computed to present the distribution of continuous variables, for example, physicians per facility. We have calculated the percentages of all essential equipment and medicines by each facility type. Each health facility has its own essential equipment and medicines requirement according to Guidelines for essential trauma care.¹¹ We assessed the availability of these equipment and supplies on three different scales: 60% or less, 60% to less than 80%, and 80% or more. Mean correct percentage scores of the physicians who took the knowledge test were also calculated and compared between different groups using one-way Analysis of variance (ANOVA) tests.

RESULTS

Healthcare facility survey

Facility-based respondents were physicians in 80% of the 105 facilities surveyed. Table 3 shows the available essential equipment and medications by level of healthcare facility.

Primary care facilities included 67 BHUs and 14 RHCs. The BHUs have an average of two beds (SD=1) and RHCs an average of nine beds (SD=6) per facility. There were two RHCs with designated emergency rooms. Patient average volume was 22 000 patients annually for each primary care facility and each facility made approximately 200 referrals to other facilities annually. BHU records did not allow further disaggregation of patients seen by cause whereas 57% RHCs reported this information and showed an annual average of 100 trauma patients seen per RHC. The mean number of physicians per facility was 1 (SD=0.7) in BHUs and 4 (SD=3) in RHCs. Only one BHU and three RHCs reported having a nurse in the facility. No more than 36% of BHUs and 21% of RHCs had any written treatment protocols for the management of acute emergencies.

The majority of BHUs (63%) and most of RHCs (93%) had had less than 60% of all essential equipment overall. All RHCs had less than 60% essential airway and breathing equipment. In contrast, all BHUs had essential breathing equipment and supplies (eg, stethoscope). The majority of BHUs (67%) and almost a third of RHCs (36%) were equipped with essential circulation equipment and supplies. The majority of BHUs (88%) and RHCs (71%) had less than 60% of essential medicines supplies.

Secondary care facilities

District or Taluka Hospitals (Public hospitals) included nine facilities with an average of 27 beds (SD=6). There were 4 (44%) secondary care facilities with a designated emergency room. Average annual outpatient volume was 100 000 patients, and approximately 250 patients per year were referred due to complex emergency care needs. There were an average of 13 physicians (SD=9) and only 3 (SD=2) nurses in each facility. There were 2 (22%) facilities with an anaesthetist and 1 (11%) with a general surgeon. Only 44% of facilities had any written treatment protocol for the management of acute emergencies.

Most of these facilities (78%) had less than 60%, and none had 80% or more essential equipment overall. Only 1 (11%) had more than 80% of essential airway and breathing equipment and supplies, and 2 (22%) had essential circulation equipment and supplies. Nearly a half of the facilities (44%) had more than 80% of burns and wound essential equipment and supplies. Less than 60% of essential spinal injury equipment and supplies were present in these facilities. There was one facility with 80% or more essential radiology equipment and supplies. Most of these secondary level public hospitals (78%) had less than 60% of essential medicines.

Private healthcare facilities included 12 facilities, of which 3 (25%) had designated emergency rooms. The average number of beds per facility was 39 (SD=43). The average annual patient influx was 18 000 patients for each facility, with approximately 240 referrals and 250 trauma patients (reported by three facilities) per facility per year. The mean numbers of physicians and nurses per facility were 4 (SD=3) and 5 (SD=4), respectively. There were 10 (83%) facilities with general surgeons and anaesthetists and 6 (50%) with orthopaedic surgeons and 3 (25%) with neurosurgeons. Only 1 (8%) hospital had any written treatment protocol for the management of acute emergencies.

A fourth of private secondary care facilities had 80% or more essential equipment. For example, more than 80% of essential airway, breathing and burns/wound equipment and supplies were present in 58% of hospitals while more than 80% of essential circulation and spinal injury equipment and supplies were present in 42% of hospitals. There were only 2 (17%) private hospitals with 80% or more essential radiology equipment and supplies. Almost a fourth of private hospitals had 80% or more essential medicines.

Tertiary care facilities included three teaching hospitals with an average capacity of 367 beds (SD=130). All three facilities had designated emergency departments. The average annual patient volume in the emergency department was 88 000 patients. The average number of physicians per facility was 48 (SD=59); only one of these three hospitals reported the number of nurses to be 30. There were general surgeons, anaesthetists and orthopaedic surgeons in all three hospitals, and two hospitals had neurosurgeons. Only one tertiary care hospital had any written treatment protocols for the management of acute emergencies.

There was more than 80% availability of essential equipment and supplies in all tertiary care hospitals (n=3; 100%). Few deficiencies were seen; for example, all tertiary hospitals had 60% or less essential radiology equipment and supplies as well as essential medicines.

Physician knowledge survey

Table 4 summarises the results of the physician knowledge survey. The overall mean correct response rate was 30% (range 0%–60%). None of the 141 physicians surveyed achieved a score above 60%. Scores were especially low on questions about basic treatments for acute myocardial infarction (9%), the steps in basic life support (8%) and interpretation of ECGs (3%) while the highest scores were on questions related to the goal of an intervention in respiratory or cardiac arrest (81.6%), treatment protocol in early management of acute coronary syndrome (65.2%) and treatment of multi-trauma patients (54.6%).

There was a significant difference in physician knowledge scores across the level of physician training ($p=0.02$), and also physicians who had previously attended a life support or trauma training course performed significantly better than those who had never attended a course (40% vs 30%; $p=0.003$).

DISCUSSION

This study is the first multi-district comprehensive assessment of emergency and trauma care facilities using WHO Guidelines in Pakistan. We found significant gaps in the availability of essential equipment and supplies and necessary knowledge among the physicians to use them effectively in Sindh province. A critical gap was the scarcity in essential equipment and medications most crucial to emergency care such as bag valve mask, cervical collar, defibrillators and epinephrine. Many of the frequently absent pieces of equipment were inexpensive items, which could save lives in many emergency scenarios. For example, suction tubing, which was available in only a few BHUs and RHCs, is inexpensive, requires no auxiliary equipment to operate, and is indispensable in neonatal resuscitation and applicable to airway management in all patients. These findings on basic equipment and supplies were similar to those in other LMICs.¹⁶ Recently, the World Health

Assembly resolution 60.22 has called each member state, in particular LMICs, to strengthen their emergency and trauma care,¹⁷ and standardised evaluations like this one provide information about the areas requiring improvements.

Second, a major concern was that few facilities at any level of care had an established protocol or checklist for the management of patients in emergency situations, in particular major trauma. Such protocols are developed by national and international specialty societies and, if made available, would allow better use of existing equipment and medications in emergencies and ensure timely referral of patients who require higher levels of care.¹⁸

Third, the knowledge deficits could be crucial in scenarios, for instance, when health professionals might be unable to use available supplies effectively. For example, very few physicians correctly recognised blood loss up to 15% of blood volume as an expected finding in class I hypovolaemic shock on the knowledge test. This suggested, for example, that although normal saline or lactated Ringer's solution was available in most of the facilities, it is likely to be underused because providers fail to recognise the condition in which it could have a lifesaving benefit. Few questions on the physician knowledge test were answered more than 50% of the time correctly. Even in those better-understood topic areas, improved training could help physicians make better use of both current equipment and new low-cost additions to facility supplies. For example, 55% of physicians correctly identified cervical spine protection as one of the initial priorities in multi-trauma patients, suggesting that most could make effective use of a cervical collar if available.

Moreover, even basic training in emergency care is associated with a substantial increase in provider knowledge: the mean score among tested physicians who reported prior formal training (basic life support only) was 40% versus a mean score of 30% for those reporting no such prior training. Evidence from many other settings has also demonstrated significant improvements in patient outcomes with physician training in emergency care. A trial in Trinidad and Tobago, for example, demonstrated a 50% decrease in injury mortality at a local tertiary care hospital after physicians attended the Advanced Trauma Life Support course.¹⁹ Similarly, a project that trained paramedics in basic life support skills in Iraq and Cambodia dropped local trauma mortality rates from 22.6% to 13.7% in 2 years.²⁰ Efforts to improve patient outcomes through training health personnel have been reported in similar settings. For example, a training programme focused on emergency care for pregnant patients, neonates and children was perceived as helpful by those who received training.²¹ The literature on the impact of such training, however, is scarce and mixed from the developing world; some studies had shown significant improvements in outcomes while others had shown improvements in physiological measures but no reduction in mortality.^{22,23}

Last, the study revealed that facilities themselves were similar within their level such that most BHUs are like each other, as were most RHCs among each other. This appeared to be the result of the classification systems used by the public health sector in Pakistan which categorises these facilities in a pyramidal structure from basic primary units to tertiary teaching hospitals.²⁴ What seemed unfortunate, however, was that these facilities did not

have the requisite infrastructure to provide care according to recent international guidelines. They also appear not able to fulfil the acute healthcare needs of the catchment populations.

There are several limitations to the study. First, much of the information on health facilities and supplies was obtained through direct interviews with one senior health provider per facility; the study team could not interview multiple people at each site, thus introducing a potential information bias. The total numbers of patients seen by health professionals were likely to be more accurately reported than the distribution of patient types by presenting complaint or diagnosis. Most facilities did not have data systems to capture such information, and data were based on an individual's estimate in most cases. Second, no information was collected on the care of patients in the community or during transport to a health facility, both of which were considered important in the care of acutely ill patients. Last, although the study sampled nearly all health facilities at all levels of care in four districts of Sindh, it did not sample any from the other 19 districts of the province. Nonetheless, the four districts were chosen deliberately to cover both urban and rural sites.

CONCLUSIONS

Facility-level equipment and supplies as well as human resource gaps existed in the current emergency care system at different healthcare levels in Pakistan. Both of these gaps were likely to compromise provisions of quality emergency care. These findings point towards the implementation of a comprehensive programme of emergency care system reforms in the province of Sindh.

Recommendations

The findings were suggestive for three specific reforms. First, they pointed towards increasing investments in health provider training for acute care. This might take the form of 2–3-day basic life support courses or regular 1–2 h sessions addressing lifesaving skills at regular intervals. Second, the findings favoured selective stocking of public sector health facilities with a handful of low-cost, commonly used supplies; these would include oral and nasal airway, suction tubing, bag valve masks and critical drugs such as epinephrine. This effort would require implementing a system of inventory checks at each facility and systems of supply management across the district. Third, the findings suggested integration of an improved emergency medicine referral and coordination system, with standardised care protocols, in each district of the province. This intervention had been widely endorsed in trauma care literature, including WHO Guidelines,¹¹¹⁸ and had been validated in several settings.¹²

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Figure 1.
Map showing districts (shaded) of Sindh province (Pakistan) selected for this study.

Table 1

Description of available health services in the study area in Sindh province, Pakistan

Facility type	Scope of service	Present	N (%)
Basic health units	Primary care outpatient facility	87	67 (77)
Rural health centres	Primary care outpatient as well as inpatient facility with 10–20 beds, x-ray, laboratory, minor surgery facilities	18	14 (78)
Taluka (or district) hospitals	Secondary level referral hospitals with 30–90 beds, ambulatory and inpatient care laboratory and surgical facilities; staff may include specialists such as a general surgeon, gynaecologist, and paediatrician and be supported by an anaesthetist	13	9 (69)
Teaching hospitals	Tertiary care facilities, subspecialty care	3	3 (100)
Private hospitals	Secondary-level facilities, few with subspecialty care	Not known	12
Total		121	105

Table 2

Sample questions on the knowledge test of basic emergency care for physicians in Sindh, Pakistan

1	In basic life support ABCD stand for: _____
2	The goal of an intervention for a patient in respiratory or cardiac arrest is to: _____
3	A patient presents to the emergency medicine department following a head injury. She has no eye opening, an extensor motor response and no speech. Her Glasgow coma score is: _____
4	Following trauma to the abdomen of a 24-week pregnant woman, the fetus is noted to be bradycardiac. The appropriate initial treatment for this condition is to: _____
5	The appropriate rate of cardiac compression during CPR in neonate is: _____
6	The most appropriate size endotracheal tube (calculation from age) for intubating a 20-year adult is: _____

CPR, cardiopulmonary resuscitation.

Table 3
Available essential equipment and medications by level of healthcare facility in Sindh Pakistan

Essential equipment for trauma care (% category)	Primary care health facilities, n (%)		Secondary care health facilities, n (%)		Tertiary care health facilities, n (%)
	BHUs (n=67)	RHCs (n=14)	Secondary care health facilities, n (%)		
			THQs/DHQs (n=9)	Private hospitals (n=12)	
Airway equipment (%)					
80	NA	0 (0.0)	1 (11.1)	7 (58.3)	3 (100.0)
60–<80		0 (0.0)	3 (33.3)	2 (16.7)	0 (0.0)
<60		14 (100.0)	5 (55.6)	3 (25)	0 (0.0)
Number of total essential equipment		5	7	7	7
Breathing equipment (%)					
80	67 (100.0)	0 (0.0)	1 (11.1)	7 (58.3)	3 (100.0)
60–<80	0 (0.0)	0 (0.0)	4 (44.4)	1 (8.3)	0 (0.0)
<60	0 (0.0)	14 (100.0)	4 (44.4)	4 (33.3)	0 (0.0)
Number of total essential equipment	1	6	6	6	6
Circulation equipment (%)					
80	45 (67.2)	5 (35.7)	2 (22.2)	5 (41.7)	3 (100.0)
60–<80	0 (0.0)	6 (42.9)	5 (55.6)	5 (41.7)	0 (0.0)
<60	22 (32.8)	3 (21.4)	2 (22.2)	2 (16.7)	0 (0.0)
Number of total essential equipment	2	4	6	6	6
Neck injury equipment (%)					
80	22 (32.8)	5 (35.7)	0 (0.0)	2 (16.7)	2 (66.7)
60–<80	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<60	45 (67.2)	9 (64.3)	9 (100.0)	10 (83.3)	1 (33.3)
Number of total essential equipment	1	1	2	2	2
Abdominal injury equipment (%)					
80	NA	NA	0 (0.0)	4 (33.3)	3 (100.0)
60–<80			0 (0.0)	0 (0.0)	0 (0.0)
<60			9 (100.0)	8 (66.7)	0 (0.0)
Number of total essential equipment			2	2	2
Extremity injury equipment (%)					

Essential equipment for trauma care (% category)	Primary care health facilities, n (%)		Secondary care health facilities, n (%)		Tertiary care health facilities, n (%)
	BHUs (n=67)	RHCs (n=14)	THQs/DHQs (n=9)	Private hospitals (n=12)	
80	0 (0.0)	0 (0.0)	0 (0.0)	3 (25)	0 (0.0)
60–<80	0 (0.0)	0 (0.0)	0 (0.0)	1 (8.3)	3 (100.0)
<60	67 (100.0)	14 (100.0)	9 (100.0)	8 (66.7)	0 (0.0)
Number of total essential equipment	2	3	8	8	8
Spinal injury equipment (%)					
80	NA	1 (7.1)	0 (0.0)	5 (41.7)	2 (66.7)
60–<80		0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<60		13 (92.9)	9 (100.0)	7 (58.3)	1 (33.3)
Number of total essential equipment	1	1	1	1	1
Burns and wound equipment (%)					
80	NA	4 (28.6)	4 (44.4)	7 (58.3)	3 (100.0)
60–<80		6 (42.9)	4 (44.4)	5 (41.7)	0 (0.0)
<60		4 (28.6)	1 (11.1)	0 (0.0)	0 (0.0)
Number of total essential equipment	3	4	4	4	4
Safety equipment for healthcare personnel (%)					
80	0 (0.0)	1 (7.1)	1 (11.1)	9 (75.0)	1 (33.3)
60–<80	20 (29.9)	0 (0.0)	4 (44.4)	2 (16.7)	2 (66.7)
<60	47 (70.1)	13 (92.9)	4 (44.4)	1 (8.3)	0 (0.0)
Number of total essential equipment	3	4	4	4	4
Diagnosis and monitoring equipment (%)					
80	52 (77.6)	0 (0.0)	1 (11.1)	2 (16.7)	0 (0)
60–<80	0 (0.0)	11 (78.6)	8 (88.9)	10 (83.3)	3 (100.0)
<60	15 (22.4)	3 (21.4)	0 (0.0)	0 (0.0)	0 (0)
Number of total essential equipment	2	3	3	3	3
Radiological equipment (%)					
80	NA	NA	1 (11.1)	2 (16.7)	0 (0.0)
60–<80			0 (0.0)	0 (0.0)	0 (0)
<60			8 (88.9)	10 (83.3)	3 (100.0)
Number of total essential equipment			2	2	2

Essential equipment for trauma care (% category)	Primary care health facilities, n (%)		Secondary care health facilities, n (%)		Tertiary care health facilities, n (%)
	BHUs (n=67)	RHCs (n=14)	THQs/DHQs (n=9)	Private hospitals (n=12)	
Laboratory test (%)					
80	NA	5 (35.7)	2 (22.2)	4 (33.3)	3 (100.0)
60–<80		0 (0.0)	5 (55.6)	3 (25.0)	0 (0.0)
<60		9 (64.3)	2 (22.2)	5 (41.7)	0 (0.0)
Number of total essential equipment		2	3	3	3
General equipment (%)					
80	0 (0.0)	3 (21.4)	6 (66.7)	6 (50.0)	3 (100.0)
60–<80	0 (0.0)	7 (50.0)	3 (33.3)	6 (50.0)	0 (0.0)
<60	67 (100.0)	4 (28.6)	0 (0.0)	0 (0.0)	0 (0.0)
Number of total essential equipment	2	3	3	3	3
All equipments (%)					
80	0 (0.0)	0 (0.0)	0 (0.0)	3 (25.0)	3 (100.0)
60–<80	25 (37.3)	1 (7.1)	2 (22.2)	2 (16.7)	0 (0.0)
<60	42 (62.7)	13 (92.9)	7 (77.8)	7 (58.3)	0 (0.0)
Number of total essential equipment	13	35	51	51	51
All essential medicines (%)					
80	8 (11.9)	0 (0.0)	0 (0.0)	3 (25.0)	0 (0.0)
60–<80	0 (0.0)	4 (28.6)	2 (22.2)	4 (33.3)	0 (0.0)
<60	59 (88.1)	10 (71.4)	7 (77.8)	5 (41.7)	3 (100.0)
Number of total essential medicines	2	25	34	34	34

BHU, basic health unit; RHC, rural health centre.

THQ/DHQ, Taluka Headquarter Hospital/District Headquarter Hospital.

Table 4

Demographics and test scores of physicians (n=141) in Sindh, Pakistan

Location or physician characteristic	N (%)	Mean (SD)	p Value
Training level (n=137)			
No postinternship training	115 (83.9)	29.7 (13.7)	0.02
Resident	7 (5.1)	36.7 (6.9)	
Specialist	15 (10.9)	37.7 (11.9)	
Health facility type (n=134)			
Basic health unit	56 (41.8)	29.7 (13.5)	NS
Rural health centre	21 (15.7)	33.6 (11.5)	
District/taluka hospital	29 (21.6)	33.9 (15.1)	
Teaching hospital	22 (16.4)	29.0 (11.9)	
Private hospital	6 (4.5)	29.1 (15.7)	
Ever attended any life support training (n=128)			
Yes	19 (14.8)	39.8 (13.1)	0.003
No	109 (85.2)	30.2 (12.9)	
Facility type (n=134)			
Public	128 (95.5)	31.2 (13.3)	NS
Private	6 (4.5)	29.0 (15.7)	
Overall (Total score=35)	141	30.1 (14.1)	—