BMJ Public Health

Emergency, critical and operative care in Afghanistan: pathways to overcoming fragmentation and strengthening access in a post-conflict setting—a mixed-method study

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To cite: Rodi P, Bocchini F, Mencattini I, *et al*. Emergency, critical and operative care in Afghanistan: pathways to overcoming fragmentation and strengthening access in a post-conflict setting—a mixed-method study. *BMJ Public Health* 2026;**4**:e003918. doi:10.1136/bmjph-2025-003918

► Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/bmjph-2025-003918).

AL-C and MV are joint senior authors.

Received 28 August 2025
Accepted 27 February 2026

Check for updates

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ABSTRACT

Introduction Emergency, critical and operative (ECO) services are essential pillars of a resilient healthcare system and are integral to achieving universal health coverage, especially in post-conflict low- and middle-income countries like Afghanistan. The objective of this study is to evaluate the capacity, safety and availability of ECO services, and to understand their integration relation with barriers, facilitators and system level factors contributing to the delay to receive ECO care in nine Afghan provinces.

Methods This study used a concurrent mixed-methods approach with explanatory data analysis and interpretation. Quantitative data were obtained from adapted WHO Harmonized Health Facility Assessment and WHO Surgical Assessment Tool, complemented by qualitative interviews with hospital directors, surgeons and gynaecologists from 11 Ministry of Public Health-led facilities including maternal, district, provincial and regional hospitals across nine provinces. The dimensions of staff, supplies, infrastructure, safety protocols, training, and surgical and obstetric/gynaecological capacity were assessed. Interviews explored providers' perspectives on accessibility, referral systems, training and gendered barriers to care.

Results Data revealed significant gaps in workforce, safety, emergency protocols, anaesthesia staff, resuscitation equipment and diagnostic tools. No facility met the WHO benchmark for essential surgical services. The 11 interviews confirmed systemic fragmentation, lack of communication across facilities, informal referrals, frequent supply shortages and restricted access to care for women, exacerbated by social and cultural norms. Staff often worked without pay, and training was irregular.

Conclusions Afghan ECO care is fragmented and staffing and structural limitations and socio-political factors contribute to fatal delays. Leveraging existing processes such as the non-governmental organisation networks—especially amid critical underfunding for international agencies—may offer pragmatic low-cost strategies to strengthen ECO services in the Afghan post-conflict context, while future work should focus on people-centred needs assessment.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Emergency, critical and operative (ECO) care is essential for universal health coverage.
⇒ In Afghanistan, decades of conflict, chronic underfunding and recent change of government have left ECO services fragmented, leaving around 9 million people strongly underserved, especially women.
⇒ System-wide data on capacity, safety and availability of ECO care remain scarce.

WHAT THIS STUDY ADDS

⇒ This study provides a comprehensive, post-2021—that is, post end of war—description of capacity, safety, availability and barriers to ECO care in Afghanistan, revealing major gaps in trained workforce (especially anaesthesia), safety protocols, diagnostics, referral and counter-referral systems, and gendered barriers, with no surveyed facility meeting all WHO benchmarks for essential surgery.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Findings highlight the need for context-specific, low-cost and community-based strengthening strategies, such as co-created guidelines and training, structured referral networks (leveraging those already existing), integration of informal providers and non-governmental organisation–Ministry of Public Health partnerships.
⇒ This study may also inform new policies to better address relevant gaps in ECO care.

INTRODUCTION

Emergency, critical and operative (ECO) services are essential pillars of a resilient healthcare system, are integral to achieving universal health coverage and are recognised as core components of comprehensive

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primary healthcare (PHC).[1] They encompass a continuum of life-saving interventions delivered across the healthcare system—emergency medical services, emergency and critical care, and surgical and anaesthesia services—that are fundamental to reducing morbidity and mortality, particularly in low-resource settings.[2 3] Globally, the imperative to strengthen ECO care has gained momentum through key policy frameworks, such as the 76th World Health Assembly Resolution and the Lancet Commission on Global Surgery (LCoGS).[1 3] In Afghanistan, access to ECO services is limited, leading to preventable deaths and health inequities, especially in the most remote areas.[4] Afghanistan's health indicators are near the bottom of international indices: road traffic incidents kill 24 people every 100 000 (globally 15), maternal mortality lies at 520/100 000 (globally 197).[5] The country's economic instability and depletion of resources after four decades of conflict further compound these challenges.[6] Primary healthcare facilities provide most health services.[7] There is a dearth of healthcare workers, with a density of doctors lying at 2.5 per 10 000 population, compared with, for example, 55 in Austria and 64 in Belgium.[5] Many workers left the country following the end of the war in August 2021, after international troops left the country and the national Taliban government was established, worsening the widespread and chronic understaffing. As a consequence, 13 million people are left underserved.[8] Access to basic health services is particularly challenging for women and girls, who over the past few years have been progressively excluded from public life, and female-oriented mobility restrictions are expected to have considerable impacts on the health and economy of all Afghans.[6]

Reforms in Afghanistan's health sector have been introduced since 2005, when the Ministry of Public Health (MoPH) implemented the Basic Package of Health Services (BPHS) and complemented it with an Essential Package of Hospital Services (EPHS), a standardised list of essential services according to each hospital's type, size and catchment area. These included clinical/diagnostic services accompanied by administrative and supportive services, with a focus on 24-hour emergency, surgical and obstetric services for all hospital levels from district to provincial to regional. Non-governmental organisations (NGOs) were contracted to deliver both BPHS and EPHS, seeking to make the provision of services more uniform among the many providers and are paramount to ensure minimum access to healthcare.[9] The BPHS was meant to be reviewed every 3–4 years, but it has not been updated since 2010. In 2019, the MoPH of the previous republican government and its partners developed the Integrated Package of Essential Health Services (IPEHS), which, though, has never been implemented.[8 10] Following the political transition in August 2021, most development financing, including for health, was paused, thus limiting the provision of basic services. The Health Sector Transition Strategy 2023–2025—a consensus resolution of MoPH, WHO, UNICEF, ICRC and local implementing partners—was introduced to minimise avoidable morbidity and mortality in the short-medium term. Among other goals which focused on communicable diseases, it has reiterated the critical importance of strengthening ECO services, calling for harmonised financing and improved financial risk protection, including community-based interventions, cross-sector collaboration also with the private sector, integration of ECO care into EPHS and the adoption of a people-centred approach via training of community health workers.[11]

However, translating national and global mandates into actionable strategies requires context-specific evidence and understanding of local health needs, challenges and system gaps. Ultimately, providing quality ECO services in post-conflict settings can determine the trajectory of healthcare recovery and equity. This has proved true for women in underserved areas in South-Sudan,[12] for the development of emergency medicine in Liberia,[13] and for the hospital admission rate in Sierra Leone, which improved by 43% after establishment and standardisation of a National Emergency Medical System.[14]

While anticipating strong economic and gender-based barriers—given the existing evidence—this study investigates the capacity and delivery of ECO services in 11 public hospitals across nine Afghan provinces and is guided by two objectives: (1) to evaluate the capacity, safety and availability of ECO services in the surveyed facilities, and (2) to understand their integration and their relation with barriers, facilitators and system level factors contributing to the delay to receive ECO care in Afghanistan.

MATERIALS AND METHODS

Study design

This study employed a concurrent mixed-methods design with parallel collection of quantitative and qualitative data, which included an adopted health facility assessment and a semistructured interview, respectively. Data analysis, interpretation and reporting followed an explanatory approach, whereby quantitative results informed and were complemented by qualitative findings. Such approach will allow a better understanding of the quantitative data via the qualitative findings and to provide a more complete understanding of the research question.[15] The concurrent design enabled parallel data collection, which was logistically essential in the challenging Afghan context. It also provided a snapshot of the country, reducing bias that could arise from the rapidly evolving post-conflict setting.

Eleven health facilities across nine provinces were selected using convenience sampling, although allowing for an adequate representation of the country (figure 1). The selected provinces corresponded to those where EMERGENCY NGO operates and are spread across the country from north to south. They equally represent both urban and rural settings, and they host ca. 30% of

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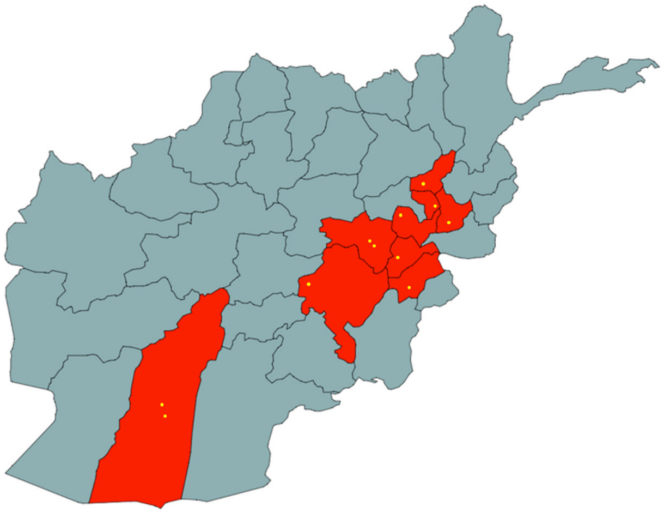

Figure 1 Provinces (red) and facilities (yellow dots) involved in the study, whose hospitals were contacted and agreed to participate in the study.

the total Afghan population and three of the ten biggest cities. The 11 selected health facilities cover specialised maternal and public hospitals of various levels of care from district to provincial to regional, as classified by the EPHS.

The theoretical framework underpinning data extraction tools was formed by the measures of emergency care access by Hirner *et al*[16]—(1) availability (ie, the relationship between emergency services and patients); (2) accessibility (ie, the vicinity of a patient to care); (3) accommodation (ie, the organisation of emergency services); (4) affordability (ie, costs of emergency services); and (5) acceptability (ie, the sociocultural realm of the patient-service relationship); the 4 Delay Model by Odland *et al*[17]—which includes the (1) delay to seek, (2) to reach, (3) to receive and (4) to stay in care—and the dimensions of timeliness, capacity and safety of surgical care of the LCoGS,[3] as commonly used within the global health and global surgery environment.[18–20]

Patient and public involvement

Participants were not involved in the design of this research; however, local healthcare workers—including local EMERGENCY NGO staff, facility managers and nurses—were included in the conduct and administration of the research, and participants' selection, thus meeting authorship criteria. Once published, participants will be informed of the results via personal communication.

Study participants

Hospital directors, chief surgeons and chief gynaecologists from 11 MoPH-led facilities from nine provinces were contacted and all agreed to participate. The facilities included two regional hospitals, five provincial hospitals, one district hospital and two maternal hospitals, as classified by the EPHS: district hospitals support primary care with basic diagnostic and treatment services; provincial hospitals offer more advanced care and some specialist services; regional hospitals are tertiary care centres with specialised services, research and training functions. From both maternal hospitals, the hospital directors and chief gynaecologist took part in the interview; from the regional facilities, hospital director, chief gynaecologist and chief surgeon; from the district hospital the hospital director; from the provincial hospitals, the director was always present, whereas the chief surgeon only half of the times. A summary can be found in online supplemental table S1.

Quantitative data collection

A structured checklist was developed based on the WHO Harmonized Health Facility Assessment (HHFA)[21] and the WHO Surgical Assessment Tool.[22] The tools were adapted to the Afghan context and to the collection process, considering the challenging setting, the mobility and safety of the research team and the limited time-availability of participants. The checklist assessed facilities' ECO capacity: workforce, supplies, infrastructure and service organisation. Other specific topics included safety measures, staff training, use of guidelines and protocols, the presence of quality improvement and monitoring systems, structural readiness, availability of Bellwether procedures (emergency laparotomy, caesarean section and treatment of open fractures)[23] and of other essential surgical interventions,[24] affordability of services and factors contributing to the third delay to care access (full version available in online supplemental figure 1). Checklist development was performed by authors PR, FB, MV and AL-C and did not follow a peer review process. The checklist was delivered via email to hospital directors 3 weeks before the qualitative phase of the study. Completed checklists were collected by the research team on the day of each interview.

Qualitative data collection

The qualitative data collection followed the COREQ (Consolidated criteria for Reporting Qualitative research) checklist.[25] A semistructured interview guide (full version in online supplemental figure 2) composed of open-ended questions was developed to conduct interviews with key stakeholders of the selected facilities to gather contextualised information about ECO services.

Participants were purposefully selected to ensure a range of roles and genders, with the criterion of having a leading role as hospital director, chief surgeon or chief gynaecologist, or being their deputy. The interview guide was designed to complement the checklist themes, covering accessibility, availability, affordability and timeliness, capacity and safety of ECO care.[3 16]

Interviews took place at EMERGENCY NGO hospitals in Kabul and Lashkar Gah or at the MoPH facilities depending on interviewees' availability to travel to the EMERGENCY NGO hospitals; they were conducted by authors PR, IM and MV, researchers with previous academic and cultural knowledge of the country and experience both in qualitative research and access-to-care

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research, and lasted on average 1 hour. Participants were instructed on the scope of research and were given the option to remain anonymous and signed a consent form. Whenever requested, the interview guide was shared in advance, allowing participants time to reflect on the questions and choose how they preferred the interview to be conducted. No repeat interview was conducted.

Data processing

Quantitative data were collected on paper and subsequently entered in an Excel database. Quantitative data are descriptively reported. Qualitative data were audio-recorded, transcribed verbatim using the online platform Sonix, and imported into Atlas.ti for coding and thematic analysis by authors PR, IM and MV. Interviewees did not review the transcripts. Thematic coding was conducted between November and December 2024; it followed Braun and Clarke's framework[26] and was informed by the themes outlined in the quantitative data collection. After familiarisation with the data, the transcripts have been coded into different themes, including demographics, general information on delivery of ECO care, information on the referral system, hospital capacity, individuals' barriers, examples and stories of emergency cases, community awareness and health education, quality of ECO services, guidelines and staff training.

RESULTS

Safety of ECO services

As shown in table 1 and online supplemental table S2, all but one hospital implement some ECO-related guidelines. Eight hospitals apply a structured triage system, while four provide staff training on triage protocols. Also, eight follow surgical sterility protocols. Nine facilities use national obstetric and five national anaesthesia guidelines. Six hospitals apply the WHO Surgical Safety Checklist, while three reported lacking a safe surgery protocol. One hospital met all the checklist items for guideline implementation, while none met all those for staff training. Quality and safety monitoring systems exist in five hospitals.

Protocols are typically MoPH or WHO-issued, but some hospitals rely on staff experience. Complications are addressed via committees or specialist referrals from specialised facilities. Hospitals across all levels appear to have mass casualty incidents protocols, shaped by years of conflict and frequent road traffic accidents. However, space and supply limitations hamper surge capacity activation. Additionally, outdated guidelines on ECO capacity, that is, the EPHS, were designed for lower patient volumes and no longer reflect demand. After the change of government of 2021, increased patients' mobility has led to higher volumes and facilities are now ill-equipped to manage them.

Triage system functionality varies. Small hospitals often lack protocols; large hospitals face implementation barriers due to overcrowding and resource shortages. Typically, initial binary triage occurs at reception to separate emergency and outpatient cases, with subsequent colour-coded triage for emergencies.

Training for ECO staff is provided by NGOs and international organisations like the WHO, UNICEF or internally, but training gaps exist in critical care, surgery, equipment use, for example, ventilators and especially in rural and underserved areas: "We need trainings, in general surgery, trauma, trauma life support, at all levels of the health system."

ECO staff capacity

Two facilities lack emergency medicine specialists, but all have 24/7 nursing coverage; eight have general practitioners in the emergency department (ED). Radiology, laboratory and pharmacy services operate 24/7 in nine, nine and eight hospitals, respectively. One provincial hospital completely lacks trained anaesthesia staff.

There is widespread shortage of ECO specialists, exacerbated by high turnover rates and brain drain outside of the country. Anaesthesia is often provided by undertrained technicians, instead of trained anaesthesiologists. Other critical staff shortages include paediatric surgery, scrub nurses and biomedical engineers. Even when specialists are present, a lack of backups means service delivery is disrupted if a key professional is absent. Reportedly, some staff members are working without remuneration: "More or less 50 staff are working without salary, especially female staff."

Communication, referral, counter-referral and transportation system

All 11 hospitals operate 24-hour emergency and referral services (online supplemental table S3). Eight reported ambulance availability for referral under 15 min, from formal request to patients' actual transport; two facilities exceed 1 hour. Ambulances are never used for prehospital services, but ambulance referral services operate 24/7 in cities, for example, with the Kabul Ambulance Service, but not in rural areas. Ambulance equipment and staffing vary: some vehicles lack oxygen or monitoring devices, others lack medical staff or drivers onboard. One hospital reported having four ambulances but only two drivers: "So we are using two ambulances 1 day, two ambulances the other day."

Inter-hospital communication is unreliable. Nine hospitals have radio or phone systems for intra-facility and inter-facility communication; however, referring facilities rarely notify the receiving hospitals, which is left unprepared: "They prepare just a referral sheet. They don't call." Even in Kabul, where WhatsApp groups have been created, they are inconsistently used out of fear of refusal: "If I warn the hospital, they say they don't have place. So, we refer without communicating." In turn, patients are often rejected or rerouted in life-threatening situations and drivers must seek alternative solutions: "We referred one patient for a foreign body aspiration, but the [receiving] hospital didn't have the bronchoscopy,

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Table 1 Responses to the checklist regarding the dimension of safety of ECO services ('green'=yes; 'red'=no; 'blank'=not responder)

Safety of ECO services								
	Guidelines					Staff training		
	Integrated management of emergency and essential surgery	WHO Surgical Safety Checklist, or similar	Structured triage tool	System for tracking implementation of quality and safety actions	Meetings to review emergency cases for quality improvement	Skills to perform Bellwether procedures	Comprehensive obstetric care	Use of the triage tool
Paktia (R)	No	No	No	No	Yes	No	Yes	N/A
Kabul (R)	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Kapisa (P)	Yes	No	Yes	No	No	Yes	No	No
Laghman (P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wardak (P)	N/A	No	No	Yes	Yes	No	No	No
Helmand (P)	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A
Ghazni (P)	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes
Logar (P)	Yes	Yes	Yes	N/A	N/A	Yes	Yes	Yes
Panjshir (D)	Yes	N/A	Yes	Yes	Yes	N/A	N/A	N/A
Kabul (M)	Yes	N/A	Yes	Yes	Yes	No	N/A	N/A
Helmand (M)	Yes	Yes	No	No	Yes	No	N/A	No

(R)=regional hospital, (P)=provincial hospital, (D)=district hospital, (M)=maternal hospital.

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and they rejected [him]. So, the ambulance driver called me."

Given the spread lack of a pre-hospital system, patients in remote areas often travel several hours by foot, animal or private vehicle across challenging roads and adverse weather conditions like heavy snowfall in winter. "Many patients that have bowel obstruction or peritonitis come after three or four days in a very bad situation; they didn't have the possibility to come [earlier]."

Financial challenges to pay for fuel further delay transportation. Individuals tend to seek care only in emergencies, and chronic conditions are frequently diagnosed only when exacerbating or in case of concurrent acute issues. "Not all Afghans know that they have (health) problems, especially the ladies. You have problems when they are coming (to the hospital) for the caesarean section or else, as they become bombs … we face (many) complications."

Lack of awareness on system navigation and mistrust in closer-to-home facilities worsens delays. Patients often seek treatment straight at higher-level hospitals or from private—often unlicensed—informal providers, who are more accessible: "We have this kind of doctors that they are not doctors, but they act as doctors." Such unawareness-led detours often worsen patients' conditions before they eventually seek professional medical help. "There is a lot of people who are coming for the haemodialysis. Because (they are giving) drugs that are nephrotoxic."

Hospitals organise informative health Shuras (community health committees) in waiting rooms to improve awareness. A MoPH-supported programme involves community health workers (CHWs) in close contact with the local population. Mullahs (religious leaders) also support health education: "Mullahs are telling (the people) in the mosque to (not) drive faster than 40 (mph)."

ECO supplies and structures

As shown in table 2, online supplemental tables S3 and S4, two hospitals experienced oxygen supply interruptions in the past year, back-up electricity is missing in one hospital, and one lacks clean water. One facility lacks patient monitoring devices and two others reported shortages of resuscitation bags. All hospitals have protective equipment for sterile procedures (gowns, gloves, disinfectants), and all have essential medications. X-rays are universally available, ultrasounds in ten facilities, CT in one, MRI in none. All but two facilities provide 24-hour radiology services.

Key equipment is lacking or non-functional, especially essential devices for trauma and obstetrics, such as needles, monitoring machines and ventilators, and functional laboratories. Systemic funding instability, budget cuts, and the expiration of contracts with external funding agencies remain a root cause of these deficiencies. To cope, some hospitals request a fee, or require patients to purchase supplies from the bazaar, despite ECO services being officially free. One hospital implemented a flat fee of 20 AFN with add-on expenses depending on the type of service, though a committee intervenes when patients cannot afford to pay. Contrarily, some hospitals reported plans for future improvements, such as the MoPH-supported development of fully equipped intensive care units in Helmand.

Facilities face structural deficits in beds and space, particularly in EDs, ORs and outpatient departments (OPDs). Many hospitals are in disrepair due to decades of conflict, limited funding and lack of maintenance and

Table 2 Responses to the checklist in regard to supplies to provide immediate emergency support to airway ('A'), breathing ('B') and circulation ('C') ('green'=yes; 'red'=no; 'blank'=not responder)

Availability to immediate treatment							
	Definitive airway to adults	Oxygen available 24 hours	Pulse oximeter	Chest tubes and underwater seal bottle	Continuous positive airway pressure	Tourniquet	Pelvic binder
Paktia (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kabul (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kapisa (P)	Yes	Yes	Yes	Yes	Yes	Yes	No
Laghman (P)	Yes	Yes	Yes	N/A	Yes	Yes	Yes
Wardak(P)	Yes	Yes	Yes	Yes	No	Yes	No
Helmand (P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ghazni (P)	N/A	Yes	Yes	Yes	Yes	Yes	Yes
Logar (P)	Yes	Yes	Yes	Yes	No	Yes	N/A
Panjshir (D)	Yes	Yes	N/A	N/A	N/A	N/A	N/A
Kabul (M)	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Helmand (M)	Yes	Yes	Yes	No	No	Yes	No

(R)=regional hospital, (P)=provincial hospital, (D)=district hospital, (M)=maternal hospital.

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the closure of OPDs in the afternoons further exacerbate ED congestion, as patients are redirected there.

Surgical service delivery

Regional hospitals have six to seven major ORs; most provincial ones have two to three; one provincial and one maternal have one major and one minor OR; the district hospital has one single OR (online supplemental table S5). All surgical units have 24/7 oxygen, postoperative recovery rooms and essential surgical equipment.

As shown in table 3 and extensively in online supplemental table S6, of the Bellwether procedures, all hospitals perform caesareans and laparotomies 24/7, four (including maternal hospitals) do not perform long bone repairs. Vasectomy and skin grafting are performed in three hospitals. Most regional/provincial hospitals provide tubal ligation, dilation and curettage, ectopic pregnancy surgery, hysterectomy, appendectomy, gallbladder surgery, bowel obstruction management, stoma placement, trauma laparotomy and chest tube insertion. Neurosurgical procedures, cleft lip repair and cataract surgery are offered in only one regional hospital. No hospital performs laparoscopic or oncologic surgeries. Beyond the EPHS, all but the maternal regional and district hospitals perform repair of intestinal perforations, partial or total colectomies and small bowel resections. Tracheostomy, thyroidectomy and trauma thoracotomy are rarely provided. No facility offers elective thoracic surgeries.

Elective surgeries are frequently postponed with systems heavily oriented towards emergencies. Regional hospitals manage various surgical specialties via multiple ORs. Conversely, district hospitals typically have a single OR, forcing the referral of emergent cases when elective surgeries are in progress.

Common emergency procedures include caesareans, blunt traumas, war wounds, appendectomies and intestinal obstructions, haemorrhages and hysterectomies. Common elective surgeries include gallbladder and kidney stone removal, hernia and hydrocele repairs and haemorrhoid surgery.

Obstetric and gynaecological service delivery

As shown in table 4 and extensively in online supplemental table S7, all hospitals offer abortion services. All but one provide emergency obstetric and newborn care. Eight facilities reported adequate OBS/GYN supplies and infrastructure to manage complicated deliveries. Service gaps in one regional hospital include lack of thermal protection, skin-to-skin contact, immediate breastfeeding within 1 hour and vacuum extraction-assisted delivery. Two provincial facilities reported not offering delayed cord clamping, and one does not provide skin-to-skin contact or immediate breastfeeding. One of the two maternal hospitals reported offering all services.

Reportedly, most OBS/GYN procedures are emergencies and elective procedures are the minority: “Some of them have a rupture inside because this is the second time, third time they are rupturing, so 70% [of caesareans] are emergency cases”. According to the interviewee, this is strongly attributable to gender norms affecting women’s care-seeking behaviour due to stigma, lack of communication about their symptoms, or reliance on traditional healers and family members. Their conditions are often downplayed, until they become life-threatening: “Ladies don’t say they have a problem. If they have some missed abortions, some active bleeding, they do not tell [until] when near to the shock. The reason is that they don't have any education.” Once in the hospital, triage protocols may be compromised by gender norms, which force women to stay fully covered and skip initial assessment: “Nobody allowed [women] to expose themselves, to see where the problem is. [In one case], the patient had a missed abortion, was bleeding [and] was in shock. When they admitted her to OPD, she didn’t allow them to assess and see [her].”

DISCUSSION

Big gaps in ECO safety and staff capacity were identified in rural and lower-level hospitals, a finding consistent with previous studies.[27 28] This yields true especially for staff training in ECO services, general surgery, trauma and anaesthesia, despite the presence of a MoPH-led Post Graduate Department for medical education. Along with limited use of clinical guidelines and protocols, such gaps contribute to preventable morbidity and mortality.[29 30] The shortage of specialised and backup personnel and the lack of remuneration—especially for females—drive brain drain and reduce staff motivation for self-improvement and performing at high standards.[31 32] To contextualise, 63 600 healthcare workers were censused in 2023, working in public and private Afghan facilities, with only 900 surgeons and 700 obstetrics/gynaecologists.[33]

Although widely conceptualised at global level, the practical use of clinical guidelines remains inconsistent in post-conflict settings.[34 35] These discrepancies disenfranchise and demoralise health providers causing unintentional harm to patients.[36] NGOs and UN agencies provide some training, but these efforts alone are insufficient to ensure service safety and local-level initiatives are essential. Solutions may include implementing existing protocols such as the WHO Safe Surgical Checklist, which has shown to lower surgical mortality,[37] or co-creating context-specific guidelines with local health providers applying a bottom-up approach, as previously successfully done in Kenya and Zanzibar.[35 38] Our findings indicate that different care-level hospitals reported adopting protocols and training programmes, suggesting that such implementation is feasible regardless of care level. Co-creating programmes can foster staff enthusiasm and ownership, increasing the likelihood of sustained best practices. Following the African examples, co-creators may function as trainers across the system of hospitals, leveraging on the already existing Afghan referral

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Table 3 Responses to the checklist regarding surgical and anaesthesia care ('green'=yes; 'red'=no; 'blank'=not responder)

Types of surgery performed								
	Bellwether procedures			General, gynaecologic and trauma				
	Open long-bone fracture repair	Emergency laparotomy	Caesarean section	Hysterectomy	Chest tube insertion	Colostomy/ileostomy	Placement of external fixator	Paediatric colostomy
Paktia (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Kabul (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Kapisa (P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Laghman (P)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Wardak (P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Helmand (P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ghazni (P)	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Logar (P)	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Panjshir (D)	No	Yes	Yes	N/A	N/A	N/A	N/A	N/A
Kabul (M)	No	Yes	Yes	No	N/A	No	No	No
Helmand (M)	No	Yes	Yes	Yes	N/A	No	No	No

(R)=regional hospital, (P)=provincial hospital, (D)=district hospital, (M)=maternal hospital.

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Table 4 Responses to the checklist regarding maternal and obstetric care ('green'=yes; 'red'=no; 'blank'=not responder)

Obstetrics/gynaecology service capacity								
	Emergency obstetric and newborn care	Immediate skin to skin contact	Rooming in (the newborn stays with the mother)	Delayed cord clamping	Antibiotics for mothers	Assisted vaginal delivery	Manual removal of placenta	Neonatal resuscitation
Paktia (R)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kabul (R)	No	No	No	Yes	Yes	No	Yes	Yes
Kapisa (P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Laghman(P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wardak(P)	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Helmand(P)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ghazni (P)	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Logar (P)	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Panjshir (D)	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kabul (M)	Yes	N/A	N/A	N/A	N/A	Yes	N/A	N/A
Helmand (M)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(R)=regional hospital, (P)=provincial hospital, (D)=district hospital, (M)=maternal hospital.

mechanisms of specialised personnel, the extensive NGO network, or CHW-based task shifting in the rural areas.

The communication, referral and counter-referral system in Afghanistan is fragile. Patients struggle to reach facilities due to systemic dysfunctions. Inter-facility communication is rare, referrals are often made without prior notice, and ambulances are understaffed and underequipped. These issues contribute to lack of awareness on system navigation and general mistrust, driving patients towards closer-to-home unlicensed informal providers. As corroborated by previous findings,[39–41] Afghanistan's weak transportation system jeopardise safety, as critical cases are misdirected to low-resourced hospitals, or patients face prolonged travel time and out-of-pocket expenses. Funding from major international actors like WHO and UNICEF is currently under threat due to budget cuts from donor countries (eg, the USA), making large-scale aid, designs and implementations difficult to replicate, such as Sierra Leone's 2015 emergency medical services overhaul, where a unique national coding system for all health facilities and rural communities was applied to eliminate location ambiguities and ensure accurate and rapid ambulance dispatch.[42] Clear facilitators to access stand out, such as active community networks, BHC anchoring that support decision-making and continuity, and existing referral procedural standards. However, alternative solutions demand the nation-wide strengthening and standardisation of already existing best practices, such as the use of a WhatsApp group among clinical directors to coordinate referrals in the Kabul area, thus avoiding mis-direction or potential refusal of critical patients by high-level facilities. Building on the virtuous example of the Madwaleni region in South Africa,[43] informal providers could be integrated into the formal system to expand ECO access in underserved areas and appropriately direct patients to healthcare facilities. With appropriate safeguards, this approach can enhance pre-hospital triage, reduce delays, and improve overall system responsiveness without compromising quality. If well integrated, informal providers could serve as triage or screening sentinels in the community to accelerate access by redirecting individuals in need of ECO care straight to the healthcare facility. To be effective, it requires a comprehensive mapping of informal providers currently active across Afghanistan, coupled with the development of shared protocols, supervision mechanisms, and a task-sharing training agenda aligned with national standards. Leveraging the existing network of informal providers, including those engaged in midwifery and frontline care, offers a pragmatic, short-term strategy to mitigate the anticipated shortage of female health workforce, a foreseeable consequence of recent restrictions on women's education, as further discussed below. Adopting this whole-of-health-system perspective not only addresses immediate access barriers, but it also lays the groundwork for longer-term system resilience. As such, it exemplifies the principles of the humanitarian–development–peace nexus in practice.[44]

In addition, our findings show that current surgical and maternal service levels fall short of WHO standards—despite maternal services seemingly being more advanced—as none of the assessed facilities can deliver the full set of essential surgeries,[2] and major delays threaten women's access to ECO services. These limitations—exacerbated by the post-conflict-driven political and societal instability[4]—require low-resourced approaches, such as surgical task-shifting via training of non-physician clinicians or CHW, as positively done in Pakistan,[45] or services decentralisation towards existing facilities, by strengthening integration with the NGOs already operating in the country. Ultimately, expanding ECO services via a PHC-strengthening approach does not

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only lead to improved access and quality of care, but it also increases resilience toward disasters and recurrent crisis, in an already exposed and fragile Afghan healthcare system.

Nevertheless, ECO service strengthening and integration necessarily imposes a compromise between the Afghan authorities' approach and that of international partners, especially regarding maternal care. Afghanistan has one of the highest maternal mortality rate globally—638/100 000 live births, compared with 16.6 in the USA.[46 47] Government's measures significantly restrict women's access to care. These include the ban on women to autonomously move in public and work in NGOs, and on girls' education beyond sixth grade,[48–50] which will result in fewer educational opportunities for female staff,[18] and consequently to increased maternal mortality and reduced national income as projected by the World Bank.[51 52] Because of cultural stigma, women do not report their symptoms to male family members or refuse being assessed to avoid showing their bodies, as shown in our study. Reluctance to support the current government by international donors has led to increased inadequacy in service delivery.[53] Mitigating this strained relationship requires compromise and mutual understanding. While human rights across both genders must be upheld, international interventions should derive from a culturally sensitive continuous assessment of population needs and wills.

This study was conducted using a rigorous methodology. However, results cannot be generalised to the entire Afghan ECO care system. The sample comprised facilities in 9 of the 34 Afghan provinces, and the vastity of factors influencing ECO care access could not be thoroughly explored by the adapted checklist and the limited time of the interviews. To mitigate sample selection bias, participants were asked about general barriers to accessing ECO care, and data collection occurred in diverse locations, including urban and rural provinces with varied historical, socioeconomic and geographical contexts. The reliance on established theoretical frameworks for data collection ensures that the findings are comparable to those of other studies in similar settings.[18–20] Notably, the mixed methodology applied in this study allowed a deeper understanding of the research aim. As already suggested by other authors, a mixed-methods approach is better suited for understanding complex issues in global health, as relying solely on one methodology can strongly confound data interpretation.[54 55] For instance, most facilities assessed in this study reported having ambulances and communication means in place, but only on qualitative data collection could systemic dysfunctions be unveiled. Similarly, quantitatively, barriers to maternal services appeared minimal, likely linked to years of international donors' campaign which improved supplies and materials; however, interviews revealed major challenges, further underlying the importance of a broad research approach and of the trans-sectoral aforementioned recommendations.

Nevertheless, the extent to which barriers to seek care—whether cultural, societal or political—influence access to ECO care as well as the exact transportation strategies used by the population to reach the healthcare facilities are still unclear. Future research should focus on a user-centred approach that prioritises assessment of the population needs. Ultimately, this is the starting point for context-specific solutions tailored on the local challenges and the local cultural system.

The study reveals critical barriers to access emergency, critical and operative care in nine Afghan provinces. They include shortages in workforce and its training, essential equipment and infrastructure, fragmented inter-facilities communication and referral system, and strong gender inequalities in service availability and ECO care access possibilities. Some hospitals deliver basic care; none meet standards for essential surgical procedures. Exploiting already available resources, such as informal providers or the extensive presence and funding mechanisms of NGOs, as well as an existing though struggling national healthcare system—especially in a time of underfunding for national and international agencies—may represent alternative, context-specific and effective solutions to strengthen ECO system.

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Acknowledgements The authors want to warmly thank all the staff in Afghanistan for their essential contribution throughout the study and the data collection process. This manuscript is the result of a study conducted in the framework of the International PhD in Global Health, Humanitarian Aid and Disaster Medicine, organised by Università del Piemonte Orientale (UPO).

Contributors PR, FB, IM, AL-C and MV: Conceptualisation and methodology, PR, IM, AL-C and MV: data curation, formal analysis and visualisation. PR: Investigation and original draft preparation. GA, MSN, MH and MTA: Investigation and resource management. FB and AL-C: Funding acquisition and project administration. LR and FB-A: Supervision and validation. FB, LR, FB-A, AL-C and MV: Writing – review and editing. PR is the guarantor for this submission and he accepts full responsibility for the finished work and/or the conduct of the study, had access to the data and controlled the decision to publish. AL-C and MV are and contributed equally as co-senior authors.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Map disclaimer The inclusion of any map (including the depiction of any boundaries therein), or of any geographic or locational reference, does not imply the expression of any opinion whatsoever on the part of BMJ concerning the legal status of any country, territory, jurisdiction or area or of its authorities. Any such expression remains solely that of the relevant source and is not endorsed by BMJ. Maps are provided without any warranty of any kind, either express or implied.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval As reported in the Methods section, the study complies with the Declaration of Helsinki and ethical approval was received via email communication from the Afghan Ministry of Public Health Institutional Review Board on 24 September 2024; all relevant ethical principles were adhered to in the collection, storage and

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management of data. A reference ID number was not provided by the reviewing institution. The data collected was anonymised, access to the data was restricted to the coauthors of this paper. The approving institution is: IRB Secretary Public Health Research & Clinical Studies Directorate Afghanistan National Public Health Institute (ANPHI), MoPH 5th & 6th Floors, Central Blood Bank Building, Cinema Pamir Area, Kabul-Afghanistan; Phone #: +93700552210/+93 (0) 202109105. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. On reasonable request, data will be shared with requesters.

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Author note The lead author (the manuscript's guarantor) affirms that the manuscript is an honest, accurate and transparent account of the study being reported; no important aspects of the study have been omitted; and any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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