



Abandoned at the edge of the Sahara: A physician's field report from Ghat, Libya

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Keywords:

Context-adapted health policy
Diabetic ketoacidosis
Evidence-based medicine
Ghat
Libya
Resource-limited settings

ABSTRACT

Following severe floods in March 2026, Ghat—a remote city in southwestern Libya bordering Algeria and Niger—faces a silent health crisis. As a general medicine specialist practicing there for one week, I observed a profound gap between international clinical guidelines and the reality of patient care. This article describes key barriers to evidence-based practice in Ghat: chronic shortages of diagnostics, medications, and specialists; absence of continuing medical education and reliable internet; and critical delays in referral due to distance and infrastructure collapse.

I present the case of a 43-year-old patient with diabetic ketoacidosis who developed pre-renal acute kidney injury and shock. While international guidelines recommend intensive monitoring, serial electrolytes, and intensive care unit (ICU) care, these were unavailable. Management relied on clinical judgment, limited laboratory testing, and empirical therapy, which contributed to the patient's death. Ghat's challenges mirror those of "last-mile" communities across conflict-affected and rural regions. Evidence-based medicine cannot be global if it is not adaptable. I propose context-adapted solutions: decentralized emergency drug lists, telemedicine-based continuing medical education (CME), and national guidelines for resource-limited settings. This report highlights the urgent need for context-adapted health policies in Libya's remote south.

مهجورة على حافة الصحراء: تقرير ميداني لطبيب من غات، ليبيا

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الكلمات المفتاحية:

البيئات محدودة الموارد
الحمض الكيتوني السكري
الطب المبني على الدليل
السياسات الصحية المتكيفة مع السياق
غات
ليبيا

الملخص

في أعقاب الفيضانات الشديدة في مارس 2026، تواجه غات، وهي مدينة نائية في جنوب غرب ليبيا على الحدود مع الجزائر والنيجر، أزمة صحية صامتة. وخلال ممارستي كطبيب باطنة هناك لمدة أسبوع، لاحظت فجوة عميقة بين الإرشادات السريرية الدولية والواقع الفعلي لرعاية المرضى. يصف هذا التقرير أبرز العوائق أمام تطبيق الطب المبني على الدليل في غات، بما في ذلك النقص المزمن في وسائل التشخيص والأدوية والاختصاصيين، وغياب التعليم الطبي المستمر والاتصال الموثوق بالإنترنت، والتأخر الحرج في الإحالة بسبب المسافة وتضرر البنية التحتية. كما يعرض التقرير حالة مريضة تبلغ 43 عامًا أصيبت بالحمض الكيتوني السكري مع إصابة بفشل كلوي حاد وصدمة. ورغم أن الإرشادات الدولية توصي بالمراقبة المكثفة والقياسات المتسلسلة للأملاح والرعاية في وحدة العناية المركزة، فإن هذه الإمكانيات لم تكن متاحة. واعتمد التدبير على الحكم السريري والفحوص المخبرية المحدودة والعلاج التجريبي، في سياق انتهى بوفاة المريضة. وتشبه تحديات غات ما تواجهه مجتمعات المناطق النائية والمتأثرة النزاعات. ويقترح التقرير حلولًا متكيفة مع السياق، تشمل قوائم لامركزية لأدوية الطوارئ، والتعليم الطبي المستمر عبر التطبيب عن بُعد، وإرشادات وطنية مخصصة للبيئات محدودة الموارد، بما يدعم تطوير سياسات صحية عملية لجنوب ليبيا النائي.

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Abbreviations and Acronyms

ABG, arterial blood gas; CME, continuing medical education; CT, computed tomography; DKA, diabetic ketoacidosis; ECG, electrocardiogram; GP, general practitioner; ICU, intensive care unit; IEHK, Interagency Emergency Health Kit; IV, intravenous; VBG, venous blood gas; WHO, World Health Organization.

1. Introduction

1.1. The Crisis in Ghat

In March 2026, severe flash floods devastated the southwestern Libyan oasis city of Ghat, causing significant displacement and infrastructure damage. Local health facilities and pharmacies were heavily impacted, with heightened risks of waterborne illnesses. The desert oasis of Ghat, situated near the Algerian border, faces harsh weather fluctuations that submerge neighborhoods and compromise critical infrastructure. The sudden influx of water left thousands of local Libyans and migrants displaced, amplifying the need for targeted medical support. Survivors face vulnerability to flood-related injuries and diseases caused by contaminated water sources. To prevent health crises from escalating, emergency medicine centers, the Libyan Ministry of Health, and state authorities mobilized. Immediate requirements included prepositioned emergency health kits, trauma care, and mental health support for the traumatized city.

The healthcare burden in Ghat is not merely anecdotal. A recent study from Ghat General Hospital and Al-Birket Health Center documented a significant prevalence of anemia among pregnant women in the region, reflecting the high burden of nutritional and preventable conditions affecting the local population [1]. This finding aligns with the clinical observations from our mission, where metabolic and chronic conditions dominated the case mix, reflecting broader public health challenges in Ghat.

1.2. The Medical Convoy Role and the Setting

It was my pleasure that I joined a medical convoy heading to Ghat, where I served as the Internal Medicine and Gastroenterology specialist in charge for one week (June 3-8, 2026). My mission was to provide specialized care, diagnose medical and digestive diseases, perform diagnostic endoscopy procedures whenever indicated, and support the local medical community in Ghat. Ghat lies 1,400 km south of Tripoli and 2,000 km southwest of Benghazi, pressed against Libya's borders with Algeria and Niger. It is a city of mud-brick architecture and Tuareg heritage, but from a health system perspective, it feels abandoned. According to local hospital statistics, the rudimentary rural hospital serves approximately a catchment area of more than 20,000 people across hundreds of kilometers of desert. Yet it functions with intermittent electricity, no computed tomography (CT) scanner, a laboratory that cannot run basic electrolytes daily, and a pharmacy that runs out of basic drugs for weeks. The driving distance between Ghat and Sabha (the nearest city with an equipped hospital) is approximately 552 kilometers—a desert route typically taking 6 to 7 hours of continuous driving.

1.3. The Gap Between Policy and Reality

I arrived in Ghat expecting the usual challenges of rural practice. What I found was a larger gap than I expected—between what guidelines demand and what the setting can provide. Evidence-based medicine assumes access to diagnostics, drugs, specialists, and time. In Ghat, all four are scarce.

The challenges identified in this report were not new, as previous research articles had already revealed similar diagnostic challenges. A study on muscular dystrophy disorders in Ghat highlighted the substantial challenges associated with specialized diagnostic assessment [2], demonstrating that access to confirmatory testing and expert evaluation remains severely constrained outside major urban centers. This reinforces the systemic nature of diagnostic gaps that extend well beyond Ghat alone.

Continuous logistical support and medical convoys traversing areas such as Tripoli, Benghazi, and Sabha remain essential to sustain Ghat's healthcare system during its recovery. Through this article, I convey the healthcare challenges of this city to the widest possible audience, both locally and globally.

2. Methods

2.1. Clinical Setting and Duration

This field report is based on clinical observations and patient consultations conducted during a one-week medical mission to Ghat General Hospital from June 3 to 8, 2026. The hospital serves as the primary healthcare facility for a catchment area of over 20,000 people across hundreds of kilometers of desert in southwestern Libya. As a visiting specialist in internal medicine and gastroenterology, I conducted outpatient consultations, performed ward rounds, and carried out diagnostic endoscopy procedures where indicated.

2.2. Data Collection

Clinical data were recorded during routine patient consultations and ward visits. Diagnoses were made based on clinical history, physical examination, available laboratory investigations (limited to basic chemistry and hematology when electricity permitted), and bedside ultrasound where available. No formal research protocol was employed; all observations were part of routine clinical practice. Patients included both new presentations and follow-up of known chronic conditions. Consultations were conducted in outpatient clinics, with additional ward rounds for hospitalized patients. A total of 240 patient consultations were recorded over six working days.

2.3. Awareness Campaign

As part of our mission, we conducted an awareness campaign for the residents of Ghat about non-communicable diseases, held at a local archaeological society managed by a local civil organization that invited us to this activity and introduced us to Ghat's community. This campaign addressed low health literacy, traditional medicine preferences, and the importance of early presentation for chronic disease management.

2.4. Ethical Considerations

All patient data were anonymized. No patient identifiers or images are included in this report. The diabetic ketoacidosis (DKA) case was presented in a way that ensures patient confidentiality while preserving the clinical and ethical lessons.

2.5. Limitations

This report has several important limitations. First, it represents a single-center field observation over a limited timeframe of one week, which may not capture the full spectrum of healthcare challenges or seasonal variations in disease burden. Second, as a visiting clinician rather than a formal researcher, my observations are subjective and based on clinical impressions rather than systematic data collection. Third, the findings may not be generalizable to other remote areas in Libya or elsewhere, as each setting has unique geographic, political, and infrastructural factors. Fourth, the data presented are not representative of all care provided in Ghat, as I was a single specialist and did not observe all clinical activities. These limitations should be considered when interpreting the findings and recommendations of this report.

3. Results

3.1. Patient Demographics and Diagnostic Breakdown

During 6 working clinic days from June 3-8, 2026, approximately 40 patients were seen daily, totaling 240 consultations, in addition to endoscopy procedures and ward rounds. Patients presented both as new cases and for follow-up of known chronic conditions. Consultations were conducted in outpatient clinics, with additional ward patients reviewed during rounds. Diagnoses were made based on clinical assessment, available laboratory tests (when electricity permitted), and bedside investigations where feasible. Table (1) outlines the diagnostic breakdown of these 240 patients, highlighting a predominantly chronic disease population, with metabolic conditions comprising the absolute majority.

The following patient data outline the diagnostic breakdown of 240 patients over 6 working days at Ghat General Hospital. They highlight a predominantly chronic disease population, with metabolic conditions making up the absolute majority, as shown in Table (1).

Table 1: A structured breakdown of the observed cases.

Category	Conditions included	Patients, % (number)
Metabolic	Diabetes, dyslipidemia, gout, hypertension, and thyroid disorders	60% (144)
Gastroenterology	Gastritis, functional disorders, altered bowel habit, suspected malignancy, fatty liver, and cirrhosis	20% (48)
Neurology	Cerebrovascular accident (stroke), Parkinson's disease, and meningitis	10% (24)
Miscellaneous	Cardiovascular, hematological, urological, and rheumatological conditions	10% (24)

3.2. Illustrative Case: A Preventable Tragedy

A patient I will never forget was diagnosed with diabetic ketoacidosis (DKA) in the absence of the infrastructure required to provide treatment and monitoring basics.

She was a lady in her forties who presented with a 2-week history of vomiting, abdominal pain, and altered consciousness. Blood glucose was 350 mg/dL. The urine dipstick showed 3+ ketones. She was hypotensive, tachycardic, and had barely recordable urine output. Clinically, this was diabetic ketoacidosis with pre-renal acute kidney injury and hypovolaemic shock.

The protocol in my training was clear: intravenous (IV) fluids (normal saline 0.9%) with careful titration, hourly glucose and potassium monitoring, blood gases, and intensive care unit (ICU) admission.

Ghat's reality was different, as we only had Ringer's lactate and regular insulin, but no arterial blood gas (ABG) machine, no electrolyte panel after the first test, and no ICU beds. Potassium monitoring could not be performed hourly as it was only available in a remote private laboratory that went out of order when the city ran out of electricity.

Just a day after my return from Ghat, the devastating news reached me: the patient had passed away. During her final hours, a total blackout had plunged the entire city into darkness. Without power, her life-sustaining insulin infusion failed, and the hospital was left completely blind, unable to even check her skyrocketing potassium levels. The unavailability of air ambulance service left the medical staff powerless, forcing them to witness the steady deterioration without adequate intervention. This patient's death cannot be attributed to clinician error or lack of knowledge. Rather, it was a system failure—a cascade of unavailability: no ICU, no reliable laboratory services, no power backup, no air ambulance, and no specialist coverage.

Perhaps this case was not an exception. From the perspective of doctors in Ghat, it appears to be something they have no choice but to get used to, until their reality changes.

4. Discussion and Perspectives

The observations from our one-week mission to Ghat, while limited in duration, reveal systemic challenges that are consistent with published evidence from southern Libya and other resource-limited settings. This discussion synthesizes our field observations with available local and regional data to identify recurring patterns of healthcare system failures and proposes context-adapted solutions that could bridge the gap between policy and practice in Libya's remote south.

4.1. Systemic Failures, Not Individual Failures

The case presented here illustrates the catastrophic consequences when health system failures intersect with clinical emergencies. The diagnostic limitations documented in this report and similar previous research, particularly the inability to perform diagnostic or basic monitoring tests, reflect a broader pattern across southern Libya, where even basic specialized diagnostic services remain severely constrained [2].

4.2. The Dilemma with Imported Guidelines

Evidence-based medicine must not become evidence-exclusive medicine. "Reality medicine" is a better description of the kind of medical practice I experienced in Ghat. If guidelines cannot be implemented, they are not useful. For cities like Ghat, we need evidence that is adapted to context, not abandoned because of context.

This is a recurring pattern across conflict-affected and rural regions. Similar challenges have been documented in sub-Saharan Africa, parts of South Asia, and other conflict-affected settings where the gap between policy and practice remains wide [3]. However, Libya's unique geography—with vast distances and a centralized health system—exacerbates these challenges.

4.3. The Experience of Visiting Clinicians

Witnessing these limitations forced me into a painful realization as I began to deeply question the ultimate benefit of short-term visiting clinicians. Perhaps this fragile community does not just need temporary aid; it desperately requires resident, highly trained, and qualified medical staff who can provide long-term, life-saving care every single day.

Yet, amidst the heartbreak, it was an incredibly rewarding and unforgettable experience. Seeing the joy on patients' faces—as they received what they believed to be accurate diagnoses and treatments, obtained relief from chronic pains, and found reassurance they had long been searching for—made every effort worthwhile. The memory of our geriatric patients asking us not to abandon them still lingers, giving me and my colleagues the momentum and purpose to formally communicate their critical needs to both the Ministry of Health and international health authorities.

4.4. Awareness Campaign

We concluded the convoy mission by conducting an awareness campaign for the residents of Ghat about non-communicable diseases, held at a local archaeological society managed by a local civil organization that invited us to this activity and introduced us to Ghat's community. This campaign addressed low health literacy, traditional medicine preferences, and the importance of early presentation for chronic disease management. Our observations of low health literacy and late presentation align with documented patterns of preventable conditions in the region, such as the high prevalence of anemia among pregnant women in Ghat and awareness of preventable pediculosis in Misurata [1], [4], suggesting that improved health education could yield measurable benefits.

5. Recommendations

I must acknowledge that I am neither a disaster medicine specialist nor a health policy maker. I am, however, a committed advocate for all my patients, and I recognize an urgent need for sustainable solutions to Ghat's healthcare system problems.

Below are recommendations that could help untangle the complexities of the health situation in Ghat and similar cities.

5.1. Strengthen the Rural Health Workforce

No guideline works without doctors. Ghat loses young physicians every year due to low salaries, lack of housing, and professional isolation. Financial incentives must be paired with non-financial ones: guaranteed continuing medical education (CME) credit, fast-track access to postgraduate training, and hardship allowances paid on time. A doctor who stays 3 years in Ghat should enter residency with priority points. Without people, drugs and protocols are useless. This is the highest priority because all other recommendations depend on having skilled, motivated clinicians of all specialties to implement them.

5.2. Create a Decentralized Emergency Drug List for Remote Cities

National procurement in Libya is centralized in Tripoli, Benghazi, and other large northern cities. For Ghat, this means 2-3 month delays for insulin, antibiotics, and antihypertensives. A pre-approved emergency list of 30-40 life-saving drugs should be stored regionally in Sabha or Ghat itself, with direct replenishment bypassing central bureaucracy. The World Health Organization (WHO) Interagency Emergency Health Kit (IEHK) model could be adapted for chronic remote areas [5-8], not just acute disasters. Stockout of insulin should not be a reason for DKA mortality.

5.3. Use Low-Bandwidth Telemedicine for Asynchronous CME and Specialist Support

Ghat has intermittent satellite internet, but no fiber connection and no resident consultants. Online groups are needed where general practitioners (GPs) can send electrocardiograms (ECGs), laboratory photos, and clinical consultations to specialists in Tripoli, Benghazi, and Sabha and receive responses within hours. These telemedicine methods have been shown to be effective in similar settings [9], [10]. The Ministry of Health, in partnership with Libyan medical societies, should formalize this approach and give CME credits to rural doctors who participate. Knowledge decay is reversible if the connection exists.

5.4. Develop National Clinical Guidelines for Resource-Limited Settings

Parallel (Plan B) versions for district hospitals should be proposed: the same clinical goal, but with different tools. Example: for DKA, Plan A says "check K⁺ and venous blood gas (VBG) every 2 hours." Tier B says: "If no ABG, monitor glucose, potassium, and electrolytes only and adjust fluid and insulin rate accordingly; monitor signs of acidosis clinically rather than biochemically." Libya's National Center for Disease Control can lead a working group with GPs from Ghat and similar cities to draft these gaps and discuss them with national experts.

5.5. Strengthen Community Health Education

Awareness campaigns have demonstrated measurable impact on health outcomes in Libya. A structured health education intervention in Misurata significantly reduced head lice infestation among schoolchildren, confirming the effectiveness of community-based awareness programs in the Libyan context [4]. Similarly, our experience in Ghat—where we observed low health literacy, traditional medicine preferences, poor adherence, and late presentation with complications—suggests that systematic health education campaigns could yield tangible benefits. It would be very helpful to engage local civil society organizations to raise health awareness, given their demonstrated readiness and willingness to assist in this service [11].

6. Conclusion

Ghat is not abandoned by its people. Its people cross the Sahara for care, share insulin, and trust clinicians who work with extraordinary dedication despite limited resources. The Libyan Ministry of Health has made repeated commitments to universal health coverage, and frontline health workers in the south share that vision wholeheartedly.

However, the gap between national policy and remote reality is not a failure of will; it is a logistical and structural challenge common to vast, conflict-affected countries. The same guidelines that serve Benghazi's tertiary hospitals cannot simply be transplanted to Ghat without adaptation. This is not a critique of central planning but a call for collaborative problem-solving between the Ministry, regional health authorities, and frontline clinicians.

Evidence-based medicine is a moral commitment we all share. That commitment is incomplete when the evidence cannot reach the patient in a form that is practical, affordable, and context-aware. I believe that with modest investments in decentralized drug reserves, low-bandwidth tele-education, and tiered clinical protocols, Libya can lead the region in showing how universal health coverage works not just in cities, but at the edge of the desert.

The clinicians of Ghat are ready partners in this effort. They ask not for sympathy, but for tools that match their dedication. With Ministry leadership and frontline collaboration, the distance between Tripoli, Benghazi, Sabha, and Ghat can become a bridge—not a barrier—to health equity.

The principal advantage of this field report is its direct frontline perspective on the mismatch between standard clinical guidance and care delivery in a remote setting. Its limitations are the single-center, one-week observational timeframe and reliance on clinical impressions rather than systematic research data; its practical application is to inform context-adapted workforce, supply-chain, telemedicine, health-education, and clinical-guideline strategies for remote Libyan communities.

7. Funding

This work received no specific grant from any funding agency.

8. Competing Interests

The author declares no competing interests.

9. Ethics Approval

As this is a commentary based on anonymized clinical experience without patient identifiers or images, formal ethics approval was not required by institutional policy. Informed consent was not applicable.

10. Data Availability

No additional data are available.

11. Acknowledgments

The author thanks the medical and nursing staff at Ghat General Hospital for their resilience and commitment under extremely limited conditions. The author extends his thanks to the Libyan Ministry of Health, which took the recommendations from field practitioners seriously. Special gratitude is owed to the patients of Ghat, whose trust and resilience continue to inspire advocacy for health equity in Libya's most marginalized communities.

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