


# Strengthening ENT Care in Low Resource Settings: Multidisciplinary and Technology Enabled Strategies to Reduce Preventable Morbidity

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**Abstract:** Ear, nose, and throat disorders remain an overlooked public health challenge in low resource settings, where shortages of trained specialists, limited diagnostic tools, and fragile health systems contribute to preventable disability. Somalia exemplifies the difficulties faced by countries affected by protracted conflict, widespread displacement, and underdeveloped healthcare infrastructure, where patients frequently present late with chronic ear infections, progressive hearing loss, airway obstruction, or advanced head and neck cancers. These challenges mirror conditions across many low and middle income countries in Africa and Asia. This commentary synthesizes published literature and institutional reports to examine the burden of ENT disease, health system gaps, and feasible strengthening strategies in Somalia and comparable low resource settings. It highlights the relevance of digital diagnostics, tele-medicine, task sharing, community screening, and surgical capacity development as realistic approaches to reducing preventable morbidity in fragile health systems.

**Keywords:** ENT care, Somalia, low resource settings, hearing loss, digital diagnostics, universal health coverage, health systems strengthening

## Introduction

Ear, nose, and throat disorders represent a major but often underrecognized cause of morbidity in low and middle income countries. More than one billion people live with hearing loss worldwide, and the majority reside in resource constrained regions where early evaluation and treatment remain scarce.<sup>1,2</sup> Over the past two decades, the global burden of chronic ear disease and progressive hearing impairment has increased, particularly in fragile and conflict affected settings. Somalia exemplifies these challenges due to prolonged instability, limited specialist availability, underdeveloped diagnostic capacity, and restricted access to surgical care.<sup>3,4</sup> This commentary synthesizes published literature and institutional reports to examine the burden of ENT disorders, health system gaps, and feasible strengthening strategies in Somalia and comparable low resource settings.

## The Somalia Context Within Global Low Resource Settings

Somalia demonstrates how protracted conflict, recurrent displacement, and chronic underinvestment shape access to healthcare. More than three million people live in internally displaced persons settlements with poor sanitation, high communicable disease risk, and minimal access to health facilities.<sup>5,6</sup> Rural and nomadic populations face barriers due to long travel distances, insecurity, and limited transportation. The Somalia Health and Demographic Survey reports that most households rely on primary health units with limited diagnostic capacity, and specialist services remain concentrated in Mogadishu.<sup>7</sup> Similar constraints exist in South Sudan, Niger, Ethiopia, Afghanistan, and South Asia, where insecurity, distance, financial hardship, and low health awareness delay care.<sup>8,9</sup> Nationally compiled data on the number of governmental and non-governmental ENT clinics, audiovestibular laboratories, speech pathology services, and



dedicated ENT operating capacity in Somalia remain limited in the published literature, underscoring an important evidence gap in service mapping and planning.

## Burden of ENT Disease in Low Resource Environments

Chronic suppurative otitis media remains highly prevalent across Africa and Asia. Global prevalence among children can exceed six percent in resource limited regions, substantially above global averages.<sup>10,11</sup> In Somalia and similar settings, children often present with long standing ear discharge, tympanic membrane perforation, and significant hearing impairment that affects learning, communication, and social development.<sup>12,13</sup> Hearing loss is strongly associated with reduced educational attainment and lower adult employment prospects.<sup>14</sup>

Adeno-tonsillar hypertrophy is common and contributes to sleep disordered breathing, growth delay, and behavioral difficulties.<sup>15,16</sup> Chronic sinus and allergic disorders remain underdiagnosed because facilities lack appropriate endoscopic tools.<sup>17</sup>

Late stage presentation of head and neck cancers is widespread across sub-Saharan Africa. More than seventy percent of patients present with advanced disease due to fragmented referral systems and lack of diagnostic services.<sup>18,19</sup> Somalia reflects this same trend.

## Persistent Barriers and Health System Gaps

Low resource contexts typically maintain fewer than one ENT specialist per million people.<sup>20</sup> Diagnostic tools including audiometers, tympanometry devices, and microscopes are often unavailable or nonfunctional due to limited maintenance capacity.<sup>21</sup> The Somalia Health and Demographic Survey confirms wide gaps in diagnostic infrastructure.<sup>7</sup> Although Somalia-specific quantitative ENT service indicators remain scarce, the limited available reports consistently point to specialist shortages, diagnostic constraints, delayed presentation, and fragmented referral pathways.

Financial barriers, insecurity, long travel distances, and low awareness delay care. Studies from Ethiopia, Malawi, Nepal, and Somalia demonstrate that families often postpone care due to transportation costs, insecurity, stigma, or lack of understanding of ENT illness.<sup>22,23</sup>

## Emerging Digital and Community Based Solutions

Digital innovations are expanding ENT access. Smartphone based otoscopy enables frontline workers to capture tympanic images and receive remote specialist interpretation with high diagnostic accuracy.<sup>24</sup> Portable audiometry devices make school and community hearing screening possible without sound treated booths.<sup>25</sup> Artificial intelligence algorithms can support interpretation of otoscopic images and assist triage in settings where specialists are few.<sup>26</sup> Tele ENT consultation networks connect rural clinics to specialists.

Community based interventions are equally important. Task sharing programs training nurses, community health workers, and general practitioners to recognize early ear disease, manage uncomplicated infections, perform basic hearing checks, and initiate referrals have shown success.<sup>27</sup> School based screening programs have proven effective for early detection of hearing impairment.<sup>28</sup>

## Strengthening Surgical and Workforce Capacity

Surgical care is essential for reducing preventable disability from ENT disorders. Tympanoplasty, mastoid surgery, and adeno-tonsillectomy are effective when delivered safely and early. These require functioning operating theatres, reliable electricity, sterilization systems, anesthesia capacity, and maintenance of specialized equipment.<sup>21</sup> Workforce expansion must include ENT surgeons, audiologists, speech therapists, anesthetists, and primary care health workers. Regional training partnerships and supervised skill transfer models have shown promise for increasing capacity in resource limited settings.<sup>29</sup>

## Discussion

Taken together, the reviewed evidence suggests that the major constraints facing ENT care in Somalia are not isolated clinical problems but interconnected health system challenges involving access, workforce, diagnostics, referral

**Table 1** Key Challenges, Evidence Gaps, and Feasible Strengthening Strategies for ENT Care in Somalia and Comparable Low Resource Settings

| Domain              | Key Challenge   | Evidence Gap   | Feasible Strengthening Strategy   |
|---------------------|---|--|---|
| Service access      | Delayed presentation and limited access outside major urban centers | Limited national mapping of ENT facilities and support services                | Expand referral pathways, outreach services, and teleconsultation links           |
| Workforce           | Severe shortage of ENT specialists and allied professionals         | Scarce national workforce density data for ENT, audiology, and speech services | Support task sharing, regional training, and supervised skills transfer           |
| Diagnostics         | Limited availability of audiometry, endoscopy, and imaging support  | Incomplete data on diagnostic coverage and equipment functionality             | Deploy portable diagnostics, smartphone otoscopy, and maintenance systems         |
| Community detection | Low awareness and delayed care seeking                              | Limited school and community screening coverage data                           | Scale school screening, community education, and basic primary care triage        |
| Surgery             | Limited operating capacity and equipment support                    | Scarce published data on national ENT surgical volume                          | Strengthen safe operating capacity, equipment procurement, and anesthesia support |

pathways, and financing. Framing these issues within a broader low resource context strengthens the relevance of the manuscript for other fragile and conflict affected settings. The manuscript also highlights an important evidence gap, namely the scarcity of systematically documented national data on ENT infrastructure, workforce, and service availability in Somalia. Addressing this gap should be a priority for future research and policy planning. A concise summary of the main challenges, evidence gaps, and feasible strengthening strategies is presented in (Table 1).

## Policy Implications and the Path Toward Universal Health Coverage

ENT disorders influence communication, education, employment, and social participation. Integrating ENT care into national health strategies aligns with universal health coverage goals. Strengthening referral pathways, ensuring reliable procurement and maintenance of diagnostic tools, promoting community based screening, and reducing financial barriers are essential steps. Digital health solutions provide an opportunity for rapid expansion of diagnostic and clinical support even in fragile health systems.

## Conclusion

Somalia reflects a broader global pattern of preventable ENT morbidity resulting from specialist shortages, weak referral systems, limited diagnostic tools, and financial barriers. Yet scalable solutions exist. Digital diagnostics, telemedicine, task sharing, community screening, and strengthened surgical systems offer realistic opportunities for improving ENT care. With coordinated investment and alignment with universal health coverage objectives, low resource countries can substantially reduce preventable disability and improve population wellbeing. These recommendations are grounded in the reviewed evidence and are intended to support pragmatic, policy relevant strengthening of ENT services in fragile and underserved settings.

## Ethics Statement

Ethical approval was not required because this commentary does not involve human subjects or identifiable data.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

## Disclosure

The authors declare no conflicts of interest in this work.

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