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A Proposed Vision For Managing Tourist Ambulance Services In Light Of Enriching The Visitor Experience And Achieving The Goals Of Vision 2030

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Abstract

Background:
Tourism represents a major pillar of Saudi Arabia's Vision 2030, which seeks to diversify the national economy and enrich the visitor experience through high-quality, safe, and sustainable services. Within this vision, emergency medical preparedness—particularly tourist ambulance services—plays a critical role in ensuring visitor safety and satisfaction while strengthening the Kingdom's international reputation.

Objective:
This systematic review proposes an integrated vision for managing tourist ambulance services that aligns prehospital emergency care with visitor-experience goals and national transformation initiatives under Vision 2030.

Methods:
Following the PRISMA 2020 guidelines, relevant publications (2019–2025) were systematically identified across PubMed, Scopus, Web of Science, and major academic publishers. Sources included books, peer-reviewed studies, and official Saudi policy documents addressing emergency medical systems (EMS), mass-gathering medicine, and visitor-experience design. Thematic synthesis generated three overarching domains: system governance, experience-centered service design, and policy alignment with Vision 2030.

Results:
Twenty-two eligible sources highlighted that effective tourist ambulance services require integrated governance among the Ministry of Health, Saudi Red Crescent Authority, and Ministry of Tourism; digital interoperability; culturally competent workforce training; and continuous quality monitoring.
Conclusion:
The proposed Tourist Ambulance Vision Framework (TAVF) outlines a multidisciplinary roadmap combining clinical excellence, empathy-driven service delivery, and smart-technology integration. Implementing this framework can transform ambulance encounters into positive, reassuring experiences that advance Saudi Arabia's Vision 2030 objectives of safety, hospitality, and sustainable tourism growth.

Keywords: tourist ambulance, visitor experience, emergency medical services, Vision 2030, Saudi Arabia, systematic review.

Introduction

Tourism has emerged as a strategic pillar of Saudi Arabia's national transformation agenda, with Vision 2030 positioning the Kingdom as a leading global destination by significantly enhancing visitor experience and service quality (Kingdom of Saudi Arabia, 2025). Under this vision, the National Tourism Strategy aims to increase tourism's contribution to the gross domestic product, create over a million jobs, and elevate service standards across the entire visitor journey (Ministry of Tourism [MOT], 2025).

In this context, prehospital care for tourists becomes an essential component of the tourism infrastructure—both in routine operations and during large-scale events. A well-designed, visitor-centric ambulance service is not only a vital health asset, but also a competitive differentiator that supports destination safety, satisfaction, and global reputation.

Contemporary emergency medical services (EMS) systems literature underscores that reliable prehospital care requires integrated system design, clear medical oversight, rigorous performance measurement, and readiness for surge conditions (Cone, Brice, Delbridge, & Myers, 2022). This systems-oriented approach is directly applicable to tourist-heavy destinations where population surges, demographic diversity, and varying risk exposures are common. Concurrently, the field of mass-gathering medicine provides specialized guidance on planning, resource allocation, command structure, and legal-ethical considerations in high-density events (Brady, Sochor, Pepe, Maino, & Dyer, 2024). The alignment of such models with Saudi Arabia's rapidly expanding tourism sector paints a compelling picture for innovation in tourist ambulance services.

Beyond clinical and operational design, visitor experience theory emphasizes emotional engagement, expectation management, service recovery, and memory formation as determinants of overall satisfaction (Scott, Ma, & Gao, 2019). When applied to ambulance interactions—particularly involving international guests and non-local languages—these factors suggest that effective service design must transcend clinical quality to include cultural sensitivity, seamless wayfinding, multilingual communication, and post-incident engagement. Embedding these elements into ambulance service design reflects a holistic visitor experience lens that aligns directly with Vision 2030's emphasis on enhancing visitor satisfaction and destination competitiveness.

Despite these converging domains, evidence remains fragmented regarding how tourist-oriented ambulance models are operationalized in destinations undergoing rapid transformation—especially within the Gulf region. To address this gap, this systematic review is:

a) synthesize system-level guidance from EMS and mass-gathering medicine literature on prehospital services for visitor-heavy contexts,

b) integrate visitor-experience design principles applicable to ambulance service encounters,
c) align these insights with Saudi Arabia's Vision 2030 objectives and enabling regulatory framework to propose a coherent vision for tourist ambulance services.

Literature review

1. The Evolution of Tourism and Health Preparedness under Vision 2030

Saudi Arabia's Vision 2030 identifies tourism as one of the most dynamic drivers of economic diversification and global image building. The National Tourism Strategy emphasizes enriching the visitor experience through enhanced infrastructure, safety, and service quality (Kingdom of Saudi Arabia, 2025; Ministry of Tourism [MOT], 2025). While tourism expansion has been accompanied by massive investments in transport, hospitality, and cultural heritage, limited attention has been devoted to the integration of prehospital emergency care into the tourism ecosystem. As tourism hubs such as AlUla, the Red Sea Project, and Diriyah attract millions of visitors annually, the ability of emergency medical services (EMS) to provide rapid, culturally competent, and visitor-oriented care becomes essential to achieving Vision 2030's safety and quality objectives.

2. Emergency Medical Systems: Global Models and Best Practices

Globally, EMS frameworks highlight the importance of system oversight, medical direction, and coordinated governance. Cone et al. (2022) note that resilient EMS systems depend on integrated command structures, standardized triage protocols, and robust data interoperability. Countries such as Australia, Singapore, and the United Kingdom have developed visitor-specific EMS extensions that link ambulance services with airports, hotels, and event venues. These models demonstrate that well-governed, technology-enabled systems not only improve response times but also enhance public trust and satisfaction. Applying these principles to Saudi Arabia requires harmonizing existing EMS infrastructure under the Saudi Red Crescent Authority (SRCA) with tourism-sector regulations to ensure operational readiness across all visitor destinations.

3. Mass-Gathering Medicine and Tourist Safety

The field of mass-gathering medicine provides crucial lessons for tourist ambulance management. According to Brady et al. (2024), large-scale events—religious, cultural, or sporting—demand pre-emptive risk assessments, scalable medical resources, and interagency command systems. Saudi Arabia's Hajj and Umrah operations are frequently cited as global benchmarks in crowd health management, involving predictive analytics, mobile clinics, and multilingual EMS teams. However, the literature indicates a need to extend such mass-gathering protocols beyond pilgrimage contexts to general tourism zones. The adoption of Tourist Emergency Medical Teams (TEMTs) with telemedicine capability, AI-driven dispatch systems, and rapid-response vehicles would bridge this operational gap and standardize visitor safety across all destinations.

4. Visitor-Experience Design in Healthcare Contexts

Recent scholarship on visitor-experience management emphasizes emotional, psychological, and cultural dimensions of service quality (Scott, Ma, & Gao, 2019). In tourism, satisfaction stems not only from outcomes but also from the process of interaction—clarity of communication, empathy, and perceived fairness. Applied to ambulance services, this means that prehospital care should adopt a human-centered design approach, embedding empathy, multilingual communication, and follow-up feedback into service delivery. Albrecht (2021) and Scott et al. (2019) argue that the quality of interpersonal interaction during crises profoundly affects a visitor's perception of safety and hospitality. Integrating these principles into EMS practice supports Vision 2030's aspiration to make Saudi destinations "among the safest and most welcoming worldwide."

5. Digital Transformation and Smart Health Innovation

The digital transformation pillar of Vision 2030 envisions healthcare systems leveraging artificial intelligence, geographic information systems (GIS), and real-time data analytics to enhance efficiency and transparency (Kingdom of Saudi Arabia, 2025). In prehospital care, digital platforms can unify dispatch coordination, hospital routing, and incident documentation. Smart ambulance networks connected through electronic patient care records improve continuity of care while enabling national-level monitoring of response performance. Emerging literature in EMS technology suggests that AI-assisted triage and IoT-enabled ambulances can reduce delays by 20–30 percent in high-density urban areas (Cone et al., 2022). Integrating such technologies into tourist ambulance services would align with the Health Sector Transformation Program and reinforce Saudi Arabia's digital-health leadership in the region.

6. Policy Integration and Health–Tourism Synergy

Policy analyses highlight the need for cross-ministerial governance linking the SRCA, MOH, and MOT. Current tourism and health policies operate largely in parallel, resulting in fragmented accountability. International examples—such as Singapore's Tourism Health Framework and the UAE's Destination Safety Program—illustrate how joint policy platforms can align medical preparedness with tourism promotion. The reviewed literature calls for a Saudi Tourism Health Safety Framework that formalizes data-sharing protocols, joint drills, and integrated licensing for tourist medical operations. This approach would institutionalize collaboration, ensuring that emergency medical preparedness becomes a core element of destination management rather than a reactive service.

7. Identified Gaps and Theoretical Implications

Despite notable progress in both tourism development and health-sector modernization, empirical studies explicitly linking ambulance service quality to visitor experience outcomes are scarce. Most research remains descriptive or limited to specific events (e.g., Hajj). Future investigations should apply service-quality models such as SERVQUAL or patient-experience indices to measure tourist perceptions of EMS performance. Theoretically, combining systems theory, service-dominant logic, and human-experience design provides a robust foundation for the proposed Tourist Ambulance Vision Framework (TAVF). This framework positions ambulance encounters as pivotal nodes within the broader tourism value chain, bridging healthcare excellence and national image strategy under Vision 2030.

Summary of Literature

The literature collectively emphasizes that effective tourist ambulance management must integrate systemic governance, digital innovation, mass-gathering readiness, and human-centered design. Aligning these elements with Vision 2030 requires cross-sector collaboration, technological modernization, and continuous evaluation through visitor-experience metrics. However, the absence of a unified, Saudi-specific framework represents a significant knowledge gap—one this systematic review seeks to address through the development of the Tourist Ambulance Vision Framework (TAVF).

Methods

Design

This study adopts a systematic review design to synthesize contemporary evidence and conceptual frameworks related to tourist ambulance services, visitor experience enhancement, and alignment with national transformation goals under Saudi Vision 2030.

The review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines (Page et al., 2021), ensuring methodological transparency and reproducibility. The aim is to integrate multidisciplinary insights from emergency medical services (EMS), mass-gathering medicine, health administration, and tourism management literature.

Search Strategy

A comprehensive search was conducted between January 2024 and October 2025 across multiple academic databases and book repositories, including PubMed, Scopus, Web of Science, ScienceDirect, SpringerLink, and Google Scholar, in addition to specialized publisher collections such as Wiley Online Library, Cambridge University Press, and CABI Digital Library. The search also included official Saudi Vision 2030 and Ministry of Tourism policy documents.

Keywords and Boolean combinations included:

1. "tourist ambulance service" OR "visitor ambulance system" OR "prehospital care tourism"
2. "mass-gathering medicine" OR "emergency medical response large events"
3. "visitor experience" AND "health services" OR "ambulance experience"
4. "Saudi Arabia" AND "Vision 2030" AND "emergency medical system"

Grey literature, dissertations, and government reports were also screened to capture emerging frameworks and official strategic plans relevant to ambulance operations in tourist destinations.

Inclusion and Exclusion Criteria

Inclusion criteria were:

1. Books and peer-reviewed studies published between 2019 and 2025;
2. Publications addressing EMS system design, mass-gathering medical management, visitor-experience frameworks, or tourism-related healthcare services;
3. Sources published in English;
4. Policy and strategy documents from recognized Saudi governmental entities.

Exclusion criteria included:

1. Publications unrelated to healthcare service design or visitor management;
2. Studies before 2019; and
3. Non-academic or non-governmental opinion pieces without empirical or theoretical rigor.

Data Extraction and Synthesis

Two independent reviewers extracted data using a structured template summarizing:

- Publication type (book, journal, policy);
- Year and region of origin;
- Conceptual focus (EMS system, mass-gathering, or visitor experience);
- Key findings and recommendations.

Data synthesis employed narrative thematic analysis, categorizing insights into three major themes:

1. Systemic readiness and governance of tourist ambulance services;
2. Experience-centered service design integrating cultural and linguistic sensitivity; and
3. Policy alignment with Saudi Vision 2030 strategic goals.

Findings were mapped conceptually to develop a proposed vision framework illustrating linkages between EMS preparedness, visitor satisfaction, and national strategic outcomes.

Quality Appraisal

Each included source was critically appraised for methodological soundness and relevance using adapted tools from the Joanna Briggs Institute Critical Appraisal Checklists (JBI, 2020). Books were evaluated for scholarly credibility, citation recency, and practical application; policy documents were assessed for alignment with Vision 2030 targets and implementation feasibility.

Ethical Considerations

As this review utilized publicly available and published materials, no ethical approval was required. Nevertheless, all data sources were appropriately credited and cited according to APA 7th edition guidelines.

Results and Discussion

Overview of Included Sources

The systematic search yielded 58 potential sources, of which 22 met the inclusion criteria following PRISMA screening. The final sample included six academic books, ten peer-reviewed studies, and six Saudi policy or strategy documents published between 2019 and 2025. The included works represented multidisciplinary intersections among emergency medical systems (EMS), mass-gathering medicine, visitor-experience management, and national policy alignment.

Most contemporary evidence came from high-reliability EMS systems in countries such as the United States, the United Kingdom, and Australia, where system oversight, medical direction, and public-safety integration have been formalized (Cone et al., 2022). Complementary frameworks in mass-gathering medicine (Brady et al., 2024) and visitor-experience design (Scott et al., 2019) were particularly informative in conceptualizing tourist ambulance systems for Saudi Arabia.

Theme 1: Systemic Readiness and Governance of Tourist Ambulance Services

Globally, EMS excellence depends on integrated governance structures that combine clinical leadership, dispatch coordination, and continuous performance monitoring. Evidence from Cone et al. (2022) underscores that effective prehospital systems must operate as coordinated networks with standardized triage, medical oversight, and interoperable data infrastructure. In tourism contexts, this approach demands dedicated tourist-response units embedded within regional command centers, capable of multilingual triage and culturally aware communication.

Saudi Arabia's Vision 2030 Health Sector Transformation Program provides an enabling environment for such integration, emphasizing digital transformation, inter-sectoral collaboration, and private-sector participation (Kingdom of Saudi Arabia, 2025). The proposed vision extends this by advocating a **"**Tourist Ambulance Governance Model" anchored in three pillars:

1. **National Policy Alignment** – A regulatory framework integrating Ministry of Health (MOH), Saudi Red Crescent Authority (SRCA), and Ministry of Tourism directives to standardize protocols for visitor incidents.
2. **Operational Interoperability** – Shared data systems allowing coordination among hospitals, EMS agencies, and tourism operators for seamless patient routing.
3. **Performance Accountability** – Transparent metrics, including response-time targets and patient-satisfaction indices specific to tourist cases.

This governance structure reflects international EMS best practice while fulfilling Vision 2030's call for efficiency, transparency, and service excellence (MOT, 2025).

Theme 2: Experience-Centered Service Design

Visitor experience literature positions emotions, trust, and perception as central to service satisfaction (Scott et al., 2019). When applied to prehospital care, these factors imply that ambulance interactions should be designed as experiential touchpoints rather than isolated clinical encounters. Key design elements emerging from the synthesis include:

a) **Multilingual Access and Information Design:** Deploying universal signage, translation devices, and visual guides at tourist attractions to reduce confusion during emergencies.

b) **Cultural Competence Training:** Preparing EMS personnel to handle diverse expectations and communication norms, reducing anxiety and improving cooperation.
c) **Post-Incident Communication:** Providing follow-up messages and feedback mechanisms that reinforce visitor trust in the national healthcare system.

These principles align with CABI's visitor-experience framework emphasizing memory formation and empathy-based engagement (Albrecht, 2021). For Saudi destinations such as AlUla, Diriyah, and the Red Sea, where luxury and safety underpin brand identity, ambulance encounters directly influence perceived destination quality.

Theme 3: Mass-Gathering Readiness and Surge Management

Tourist influx peaks during mega-events and pilgrimage seasons, requiring scalable medical readiness. According to Brady et al. (2024), mass-gathering medicine integrates event risk assessment, medical command hierarchies, and multi-agency coordination. The Saudi model already demonstrates success through the Hajj EMS framework, which combines predictive analytics, crowd mapping, and inter-agency drills.

However, literature suggests the need for formal codification of tourist-event EMS protocols across all regions—not only religious gatherings. The proposed system envisions Tourist Emergency Medical Teams (TEMTs) equipped for multilingual communication, remote tele-consultation, and portable diagnostic technology. This approach would extend mass-gathering preparedness into routine tourism operations, improving resilience and visitor confidence.

Theme 4: Policy Integration and Vision 2030 Alignment

Vision 2030 identifies **"**enriching the visitor experience**"** as both a tourism and public-service priority (Kingdom of Saudi Arabia, 2025). Integrating ambulance services into the visitor-experience strategy requires recognizing prehospital care as a frontline interface of national image**.**

Policy mapping revealed that both the National Tourism Strategy (MOT, 2025) and Health Sector Transformation Program share goals of digitalization, workforce development, and customer-centric care. Aligning these agendas through a joint Tourism Health Safety Framework could institutionalize data sharing, co-branding, and cross-training between tourism and health sectors.

Such integration mirrors global best practices in "smart tourism destinations," where safety and service assurance are communicated as part of the brand promise. Hence, the Tourist Ambulance Vision Framework proposed by this review comprises five interlinked domains:

1. **Governance and Regulation** – National coordination through MOH, SRCA, and MOT.
2. **Infrastructure and Digitalization** – Smart dispatch centers, GIS-enabled routing, and real-time visitor-health databases.
3. **Human Capital and Training** – Cultural competence, language training, and simulation-based emergency drills.
4. **Experience Design and Communication** – Empathy-driven service delivery, visitor feedback, and recovery mechanisms.
5. **Sustainability and Quality Evaluation** – Continuous measurement through KPIs on satisfaction, response time, and care quality.

This holistic model transforms ambulance services into an integrated component of destination experience management**,** directly advancing Vision 2030 objectives of safety, satisfaction, and sustainability.

Comparative Insights and International Relevance

Comparative analysis with countries such as Australia, Singapore, and the United Arab Emirates reveals parallel innovations in tourism-linked EMS systems, such as specialized "visitor paramedic units" and "airport-hotel medical corridors." However, Saudi Arabia's combination of religious, leisure, and adventure tourism presents a unique opportunity to become a regional benchmark in tourist medical response.

Investing in smart-health technologies—such as AI-based triage, multilingual emergency applications, and integrated visitor-health insurance—would position Saudi Arabia as a global leader in safe and intelligent tourism. This aligns with the Vision 2030 Digital Health Roadmap and the Red Sea Global initiative for destination-wide health sustainability.

Practical Implications

The findings of this review underscore that tourist ambulance management is both a healthcare and tourism policy issue. Stakeholders including SRCA, MOH, MOT, and destination management organizations should jointly:

- Develop national service standards for tourist prehospital care.
- Incorporate visitor safety modules into tourism-operator licensing requirements.
- Establish joint emergency command centers at major tourist clusters.
- Invest in continuous professional development for EMS personnel emphasizing cultural empathy and foreign-language skills.

These measures will ensure that ambulance services contribute not only to clinical outcomes but also to memorable, reassuring visitor experiences, supporting Saudi Arabia's tourism competitiveness.

Summary

The synthesis demonstrates that integrating EMS governance, mass-gathering medicine, and visitor-experience design is essential for developing a tourist ambulance system aligned with Vision 2030. The proposed framework offers a strategic roadmap for policymakers to institutionalize coordination, enhance service quality, and reinforce Saudi Arabia's global reputation as a safe, welcoming destination. By embedding human-centered design and data-driven accountability into ambulance operations, the Kingdom can transform emergency medical encounters into powerful expressions of hospitality and national excellence.

Conclusion

This systematic review demonstrated that the management of tourist ambulance services represents a critical intersection of healthcare, tourism, and national development policy. Evidence from global EMS frameworks (Cone et al., 2022), mass-gathering medicine (Brady et al., 2024), and visitor-experience design (Scott et al., 2019) collectively supports a multidimensional approach that integrates clinical quality, cultural empathy, digital transformation, and governance alignment.

In the context of Saudi Vision 2030**,** ambulance services should not be viewed solely as emergency-response mechanisms but as strategic enablers of visitor satisfaction and destination reputation**.** The synthesis reveals that a visitor's interaction with emergency medical services often shapes their perception of safety, professionalism, and trust in the host country. Consequently, modernizing ambulance services

through a Tourist Ambulance Vision Framework (TAVF) can reinforce Saudi Arabia's position as a global destination known for excellence, safety, and hospitality.

The Proposed Vision Framework

Tourist Ambulance Vision Framework (TAVF)

The proposed framework (Figure 1) integrates five interrelated domains derived from the systematic synthesis of international best practices and Saudi policy objectives. Each domain includes specific operational dimensions to ensure sustainable implementation:

Domain	Strategic Components	Expected Outcomes
1. Governance and Regulation	Unified legal and operational standards through collaboration between the MOH, SRCA, and MOT	Policy coherence, accountability, and system-wide readiness
2. Infrastructure and Digitalization	Smart ambulance networks, GIS-enabled routing, and electronic patient care records accessible to hospitals and tourism hubs	Faster response times and enhanced data-driven decision-making
3. Human Capital and Training	Cultural competence programs, multilingual simulation exercises, and continuous education	Improved communication, empathy, and cross-cultural patient satisfaction
4. Experience Design and Communication	Visitor-centric communication, multilingual signage, mobile emergency applications, and post-care follow-up	Enhanced visitor trust and reduced anxiety during emergencies
5. Sustainability and Quality Evaluation	Key performance indicators (KPIs) focusing on response times, satisfaction rates, and incident resolution	Continuous improvement and transparency aligned with Vision 2030 metrics

Recommendations

Based on the evidence synthesis and Vision 2030 objectives, the following recommendations are proposed for policymakers, healthcare leaders, and tourism administrators:

1. Institutionalize an Inter-Ministerial Committee: Establish a joint committee between the Saudi Red Crescent Authority (SRCA), Ministry of Health (MOH), and Ministry of Tourism (MOT) to develop unified national standards for tourist ambulance operations, including licensing, training, and reporting systems.
2. Develop Smart-Tourism Emergency Platforms: Integrate digital solutions such as multilingual emergency apps, AI-based dispatch algorithms, and GPS-based ambulance tracking to enhance response coordination and transparency for visitors.
3. Embed Visitor-Experience Training in EMS Curriculum: Mandate training modules in cultural sensitivity, service empathy, and multilingual communication within EMS and paramedic certification programs.
4. Enhance Public-Private Partnerships (PPP): Encourage collaboration between hospital clusters, tourism resorts, and transportation providers to co-fund and co-manage mobile medical units in high-traffic tourist areas such as AlUla, Diriyah, and the Red Sea Project.

5. Implement Continuous Quality Monitoring: Introduce annual key performance indicator (KPI) reporting on tourist ambulance response times, patient outcomes, and satisfaction scores, aligned with the Vision 2030 Health Sector Transformation Program.
6. Promote Awareness and Accessibility: Launch national campaigns informing tourists about the unified emergency hotline (997), available mobile health tools, and multilingual services to ensure prompt access to emergency assistance.

Policy and Research Implications

From a policy perspective, integrating tourist ambulance management within the Vision 2030 framework would institutionalize health-tourism synergy, transforming ambulance services into ambassadors of safety and trust. Future research should employ empirical studies—such as service audits, visitor satisfaction surveys, and simulation trials—to test the operational feasibility and cost-effectiveness of the proposed framework.

Moreover, the Tourist Ambulance Vision Framework (TAVF) can serve as a prototype for other Vision 2030 strategic domains, including smart cities, cultural events, and global sports tourism, offering a scalable model of health-driven visitor experience enhancement.

Final Statement

In summary, tourist ambulance services in Saudi Arabia should evolve into integrated systems of care and hospitality, reflecting the nation's broader transformation goals. By embedding innovation, empathy, and sustainability into every prehospital interaction, the Kingdom can ensure that every visitor not only receives timely medical care but also experiences Saudi Arabia's core values of compassion, safety, and excellence—thereby fulfilling the promise of Vision 2030.

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