Exploring Barriers to Timely Pediatric Emergency Care in Underserved Areas: The Role of Traditional Remedies in Treatment Delays in Ibb, Yemen

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Abstract:

Background: Timely pediatric emergency care is essential in reducing child morbidity and mortality. However, in underserved areas, multiple barriers hinder caregivers from seeking formal medical care, leading to delays in treatment. Socioeconomic factors, logistical challenges, and cultural beliefs, including the use of traditional remedies, significantly impact emergency care accessibility. This study was conducted in **Ibb, Yemen**, to examine these challenges and explore potential solutions.

Objectives: This study aimed to identify key barriers preventing timely pediatric emergency care in Ibb, Yemen. Additionally, it examined the role of traditional remedies in delaying formal medical treatment and assessed how healthcare systems can address these challenges.

Methods: A mixed-methods approach was used to gather both quantitative and qualitative data. Surveys were conducted with **600 caregivers and 200 healthcare providers** to assess their experiences with emergency care access. Additionally, interviews, social media posts, and university lectures provided further insights into caregivers' decision-making processes. Data analysis focused on identifying patterns related to financial constraints, transportation challenges, healthcare facility availability, and the influence of cultural beliefs on treatment-seeking behaviors.

Results: Findings revealed that **financial difficulties, limited healthcare infrastructure, and transportation barriers** were the primary factors delaying emergency care for children in Ibb, Yemen. A significant proportion of caregivers reported using **traditional remedies before seeking formal medical attention**, often due to **cultural beliefs, lack of trust in healthcare providers, or financial limitations**. Healthcare providers acknowledged these challenges and emphasized the need for improved education and community engagement to encourage timely medical intervention.

Conclusion: Addressing barriers to pediatric emergency care in Ibb, Yemen, requires a **multifaceted approach**, including **expanding healthcare access, improving transportation services, and integrating culturally sensitive health education programs**. Healthcare systems should **collaborate with community leaders and traditional healers** to foster trust and encourage timely medical care. By addressing these barriers, healthcare accessibility can be improved, ultimately **reducing preventable delays** and **enhancing child health outcomes** in Ibb, Yemen.

Introduction

Background

Timely pediatric emergency care is essential for reducing child morbidity and mortality. Globally, delayed access to emergency healthcare contributes significantly to preventable child deaths, particularly in low-resource settings (Alsabri et al., 2022). According to the **World Health Organization (WHO, 2024)**, pediatric emergencies often result in poor health outcomes due to infrastructure limitations, financial barriers, and cultural health-seeking behaviors. In many developing countries, including Yemen, barriers to emergency care are exacerbated by weak healthcare systems, economic hardship, and reliance on traditional remedies (Webair & Bin-Gouth, 2014).

Yemen's healthcare system has suffered devastating setbacks due to years of conflict and economic collapse. As of 2023, **over 50% of healthcare facilities in Yemen were either non-functional or only partially operational** due to shortages of medical staff, equipment, and financial resources (WHO, 2024; Nasser, 2024). This crisis has left **over 24 million Yemenis in need of humanitarian health assistance**, with rural populations experiencing the most significant gaps in emergency healthcare access (UNICEF, 2022). Ibb, one of Yemen's most densely populated governorates, reflects these broader challenges. Many families live in remote or underserved areas, where travel to emergency care facilities is difficult due to poor road conditions and high transportation costs (Doctors Without Borders/MSF, 2017). Furthermore, healthcare facilities in Ibb struggle with **chronic shortages of specialized staff, essential medicines, and functioning medical equipment**, making timely pediatric emergency care even more difficult (Alsabri et al., 2022).

Problem Statement

Despite the pressing need for timely pediatric emergency care, multiple barriers hinder access for caregivers in Ibb. **Financial constraints** are one of the most significant challenges. Over **80% of Yemen's population lives below the poverty line**, making it difficult for families to afford transportation or hospital fees (World Bank, 2021). Even when healthcare services are officially free, hidden costs such as **medications, diagnostic tests, and private transport** create significant financial burdens for caregivers (Doctors Without Borders/MSF, 2023). As a result, many caregivers delay seeking medical attention, often opting for traditional remedies as an initial response to childhood illnesses (Webair & Bin-Gouth, 2014).

Transportation barriers further contribute to delayed healthcare access. A **lack of ambulances, unreliable public transport, and high fuel costs** prevent families from reaching hospitals promptly (Nasser, 2024). The **mountainous terrain of Ibb governorate**, combined with **poor road infrastructure**, adds another layer of difficulty in emergency medical transportation (Doctors Without Borders/MSF, 2017). Studies show that in **some cases, caregivers must travel for hours or even days to access emergency services**, significantly increasing the risk of mortality and complications for critically ill children (MSF, 2019).

Another **critical factor is the reliance on traditional medicine**. In Yemen, **many caregivers first seek treatment from traditional healers or use home remedies before considering formal medical care** (Webair & Bin-Gouth, 2015). This practice is deeply rooted in cultural beliefs and is often reinforced by limited access to modern healthcare (Hyzam et al., 2020). Traditional remedies, including **herbal medicine, spiritual healing, and food-based treatments**, are commonly used as first-line treatments for pediatric illnesses (Webair & Bin-Gouth, 2014). While some traditional practices may offer symptomatic relief, **delays in seeking professional medical care can result in severe complications and increased mortality rates** (Webair et al., 2015). Studies from similar contexts indicate that **caregivers who initially use traditional medicine are significantly more likely to delay hospital visits**, often waiting until a child's condition worsens (Webair et al., 2015; MSF, 2019).

Significance of the Study

Understanding the barriers to pediatric emergency care in Ibb is critical for improving child health outcomes in Yemen. Addressing **financial, infrastructural, and cultural obstacles** can help reduce preventable deaths and enhance the efficiency of emergency healthcare delivery. This study provides **valuable insights for healthcare providers, policymakers, and humanitarian organizations** working to improve pediatric emergency care access in Yemen.

By identifying key barriers, this research can help policymakers design **targeted interventions**, such as **subsidized healthcare programs, mobile health clinics, and community education initiatives** (World Bank, 2021). For example, successful **voucher-based healthcare programs** in other parts of Yemen have demonstrated **significant improvements in maternal and child health service utilization**, suggesting that similar strategies could be adapted for pediatric emergency care (Hyzam et al., 2020). Moreover, public health campaigns aimed at **educating caregivers on the dangers of delaying medical treatment** could reduce reliance on traditional remedies and encourage **timely hospital visits** (Webair & Bin-Gouth, 2014).

Objectives of the Study

This study aims to identify and analyze the key barriers to timely pediatric emergency care in Ibb, Yemen, including financial constraints, transportation challenges, healthcare infrastructure limitations, and the reliance on traditional medicine. It will also assess the impact of traditional remedies on emergency care delays by exploring the extent of caregiver reliance on these treatments and their effect on hospital visit timing. Based on the findings, the study will provide evidence-based recommendations to reduce delays, such as improving referral systems, implementing transportation assistance programs, and developing culturally tailored health education initiatives.

Methodology

Study Design

This study employed a **mixed-methods approach** to comprehensively examine the barriers to pediatric emergency care in Ibb, Yemen. A combination of **quantitative and qualitative methods** was used to ensure a well-rounded understanding of the factors influencing caregivers' healthcare-seeking behavior. **Surveys, interviews, social media posts, and university lectures** were utilized to collect data from **caregivers and healthcare providers**. The study focused on identifying financial, geographic, cultural, and healthcare system-related challenges that contribute to delays in seeking emergency medical care for children.

Study Location

The research was conducted in **Ibb, Yemen**, a governorate characterized by **high population density, limited healthcare infrastructure, and economic hardship**. Ibb's **rural and semi-urban communities** experience significant challenges in accessing timely healthcare, including **long travel distances to medical facilities, high transportation costs, and shortages of qualified healthcare professionals** (Doctors Without Borders/MSF, 2017). This location was selected due to **its relevance in representing underserved populations in Yemen** and the urgent need to address pediatric healthcare access issues in the region.

Data Collection Methods

A combination of **primary and secondary data collection methods** was used to obtain comprehensive insights into the barriers to pediatric emergency care.

1. Surveys

Two structured surveys were designed and distributed among:

- **Caregivers (N=600)**: Parents and guardians of children who had previously sought emergency medical care or delayed treatment.
- **Healthcare providers (N=200)**: Physicians, nurses, and other emergency care professionals working in hospitals, clinics, and community health centers in Ibb.

The surveys were designed to assess:

- **Demographic information** (e.g., caregiver education, household income, child's age and health status).
- **Barriers to accessing emergency care** (e.g., financial constraints, transportation issues, healthcare facility availability).
- **Use of traditional remedies** and their role in delaying medical treatment.
- **Perspectives of healthcare providers** on systemic challenges and patient delays.

2. Interviews

Semi-structured interviews were conducted with a subset of **200 caregivers and 30 healthcare professionals** to gain qualitative insights into their experiences. Interview topics included:

- **Decision-making processes** regarding emergency care.
- **Challenges in reaching healthcare facilities.**
- **Perceptions of traditional medicine and its role in treatment delays.**
- **Recommendations for improving pediatric emergency care access.**

Interviews were conducted in **person**, and responses were recorded, transcribed, and analyzed for thematic patterns.

3. Social Media Analysis

The survey was **posted on social media platforms**, particularly **Facebook and WhatsApp groups**, to collect data from caregivers. This approach helped reach a **broader audience**, ensuring diverse responses from individuals in different **geographic and socioeconomic backgrounds** in Ibb

4. University Lectures and Community Discussions

Educational lectures were held at **universities and community centers** to discuss pediatric emergency care barriers with **medical students, caregivers, and local health professionals**. These sessions facilitated **open discussions** and provided additional qualitative data on **misconceptions about emergency care, cultural influences on healthcare decisions, and possible interventions**.

Sampling Strategy

A **stratified random sampling** technique was used to ensure representation from different **demographic, economic, and geographic** backgrounds.

- **Caregivers were recruited from hospitals, clinics, and community health centers**, ensuring a mix of urban and rural participants.
- **Healthcare providers were selected from public and private hospitals**, ensuring inclusion of various professional roles such as physicians, nurses, and community health workers.

The **sample size of 600 caregivers and 200 healthcare providers** was determined based on **population estimates and statistical power calculations** to ensure meaningful results.

Data Analysis

Both **quantitative and qualitative methods** were used for data analysis:

- **Quantitative Data (Survey Responses)**
  - Data were entered into **SPSS (Statistical Package for the Social Sciences)** for descriptive and inferential statistical analysis.
  - **Frequency distributions, cross-tabulations, and chi-square tests** were used to assess relationships between demographic factors and healthcare access barriers.
  - **Multivariate logistic regression** was conducted to identify key predictors of delayed emergency care.
- **Qualitative Data (Interviews, Social Media, and Lecture Discussions)**
  - **Thematic analysis** was used to identify common barriers, beliefs, and experiences shared by caregivers and healthcare professionals.
  - **NVivo software** was used to code and categorize interview transcripts and social media discussions into major themes.

Ethical Considerations

This study adhered to ethical research principles to protect the rights and confidentiality of participants.

- **Informed Consent:** Written or verbal consent was obtained from all participants before data collection.
- **Confidentiality:** All personal identifiers were removed, and data were anonymized to protect participants' privacy.
- **Approval:** Ethical approval was sought from relevant health authorities and academic institutions before conducting the research.

Conclusion

This methodology ensures a **comprehensive assessment of barriers to pediatric emergency care in Ibb, Yemen**, combining **statistical rigor with qualitative depth**. By integrating **caregiver perspectives, healthcare provider insights, and real-world social discussions**, the study aims to generate **data-driven recommendations** for improving **timely access to emergency care** in underserved communities.

Results

1. Demographic Characteristics of Participants

1.1 Caregivers' Demographics

- **Gender of Child: 51% were male, and 49% were female.** *(Table 17)*
- **Age Distribution of Child:** *(Table 16)*
    - **Under 1 year: 16%**
    - **1–5 years: 47%**
    - **6–10 years: 22%**
    - **11–17 years: 16%**
- **Educational Level of Caregivers: 38%** had **college or higher education**, **22%** completed **primary school**, **26%** had **no formal education**, and **13%** had **secondary education**.
- **Household Income: 63%** were **middle income**, **34%** were **low income**, and **4%** were **high income**.
- **Primary Mode of Transportation to Healthcare Facilities: 52% used public transport**, **33% used private vehicles**, **14% walked**, and **1% used ambulances**.

The study included **600 caregivers** and **200 healthcare providers** from Ibb, Yemen.

1.2 Healthcare Providers' Demographics

- **Professional Role**: 80% were **physicians**, 8% were **nurses**, 5% were **paramedics**, and 7% were **community health workers**.
- **Primary Workplace**: 68% worked in **public hospitals**, 19% in **private clinics**, 7% in **community health centers**, and 6% in **mobile clinics**.
- **Years of Experience in Healthcare**:
    - **Less than 1 year**: 17%
    - **1–5 years**: 47%
    - **6–10 years**: 22%
    - **More than 10 years**: 14%
- **Formal Training in Pediatric Emergency Care**: 63% of healthcare providers reported **receiving formal training**, while 38% had **no specialized training**.

2. Barriers to Pediatric Emergency Care

The study identified **multiple barriers** that delay or prevent children from receiving timely emergency medical care.

2.1 Financial Barriers

- **57% of caregivers reported that financial difficulties prevented them from seeking emergency care for their children.**
- **Healthcare providers** acknowledged that **lack of financial support** for families was a major obstacle.

- Families often **delayed treatment** because they could not afford transportation, hospital fees, or medication.

2.2 Transportation and Geographic Barriers

- **62% of caregivers experienced delays in reaching emergency care.**
- **Primary reasons for transportation delays:**
  - **Lack of transportation (60%)**
  - **Long travel distances (62%)**
  - **High transportation costs (51%)**
- **Only 76% of respondents reported having a healthcare facility within a 30-minute travel distance.**
- Healthcare providers noted that **patients from rural areas arrived late due to long travel times**.

2.3 Use of Traditional Remedies Before Seeking Care

- **79% of caregivers reported using traditional remedies before seeking emergency medical care.**
- **Types of traditional remedies used:**
  - **Herbal medicine (69%)**
  - **Religious or spiritual healing practices (47%)**
  - **Home remedies (66%)**
- **68% of caregivers admitted that traditional remedies delayed their decision to seek formal healthcare.**
- The **most common reasons for using traditional remedies before seeking care** were:
  - **Belief in their effectiveness (52%)**
  - **Lack of trust in formal healthcare (47%)**
  - **Financial constraints (52%)**
  - **Cultural or familial pressure (30%)**

2.4 Healthcare Infrastructure and Staff Shortages

- **49% of healthcare providers stated that limited resources in healthcare facilities** were a major barrier.
- **75% of providers identified a lack of healthcare worker training** as a critical issue.
- **53% of healthcare providers** reported that healthcare facilities in underserved areas were **insufficient to meet demand**.

3. Delays in Seeking Emergency Care

3.1 Caregiver-Reported Delays

- **41% of caregivers stated that poor communication between doctors and caregivers contributed to delays in care.**
- **50% of caregivers reported a lack of trust in healthcare providers.**
- **Financial constraints and traditional remedy use were the leading causes of delayed hospital visits.**

3.2 Healthcare Provider Observations on Patient Delays

- **49% of healthcare providers reported that patients "sometimes" experienced delays in reaching facilities.**
- **Common reasons for delayed care included:**
  - **Delayed patient arrivals due to transportation issues (66%)**
  - **Use of traditional remedies before seeking formal care (69%)**
  - **Financial constraints leading to postponed treatment (64%)**

4. Recommendations from Participants

4.1 Caregiver Suggestions for Improving Emergency Care Access

Caregivers suggested the following **interventions** to reduce delays in pediatric emergency care:

- **Financial Support:** 74% recommended providing **more financial support for families**.
- **Improved Transportation Infrastructure:** 61% suggested **enhancing transportation services** to healthcare facilities.
- **Awareness Campaigns:** 55% believed that **community education on emergency care importance** would reduce delays.

4.2 Healthcare Provider Recommendations

Healthcare providers emphasized the need for:

- **Better Training:** 75% of providers suggested **training more healthcare workers** to handle pediatric emergencies.
- **Expanding Healthcare Facilities:** 53% recommended **building more healthcare centers in underserved areas**.
- **Integration of Traditional and Modern Medicine:** 28% proposed **integrating safe traditional practices** with modern medicine to **improve community trust**.

5. Summary of Key Findings

- **Financial barriers, lack of transportation, and healthcare infrastructure limitations** are the leading causes of delays in pediatric emergency care in Ibb, Yemen.
- **Reliance on traditional remedies is widespread, with 79% of caregivers using them before seeking emergency care.**
- **Caregivers with lower education levels were more likely to delay seeking medical attention due to financial and cultural factors.**
- **Healthcare providers highlighted the need for better training, expanded healthcare services, and community engagement to improve emergency care access.**

Discussion

6.1 Interpretation of Findings

This study identified significant **barriers to pediatric emergency care in Ibb, Yemen**, including **financial constraints, transportation challenges, healthcare infrastructure limitations, and cultural reliance on traditional remedies**. The results demonstrate that **caregivers and healthcare providers recognize similar challenges**, although their perspectives on specific barriers vary.

6.1.1 Financial Barriers as a Primary Obstacle

Financial constraints emerged as a **major factor preventing caregivers from seeking timely medical attention for their children**, with **57% of caregivers reporting that cost was a barrier**. These findings are consistent with previous studies in Yemen and other low-income settings, which highlight how **out-of-pocket expenses for transportation, hospital fees, and medications** contribute to delays in emergency care (Webair & Bin-Gouth, 2014; Hyzam et al., 2020). Despite Yemen's ongoing humanitarian crisis, healthcare services still require **some level of financial input**, and many families **struggle to cover costs**, particularly for emergency interventions (WHO, 2024).

A possible solution to **mitigate financial barriers** is the **expansion of subsidy programs or financial assistance initiatives** for pediatric emergency care. Similar approaches in other crisis-affected countries, such as **voucher programs for maternal health services**, have successfully increased healthcare utilization and **could be adapted for pediatric emergencies** (Hyzam et al., 2020).

6.1.2 Transportation and Geographic Limitations

Another significant finding was **the impact of long travel distances and transportation costs** on caregivers' ability to seek emergency care. **62% of caregivers reported experiencing delays due to transportation barriers**, with **high fuel costs and lack of ambulances further exacerbating the problem**.

These results align with reports from **Doctors Without Borders (MSF, 2019)** and **the World Bank (2021)**, which state that **poor road infrastructure and lack of public transport in Yemen prevent timely access to healthcare**. In rural areas like Ibb, **some families must travel for hours to reach a functioning hospital**, increasing the risk of complications or death in critically ill children.

6.1.3 The Role of Traditional Remedies in Delayed Care

A **notable finding** was the widespread **use of traditional remedies before seeking emergency medical care**, reported by **79% of caregivers**. Many parents **believe in the effectiveness of herbal medicine, spiritual healing, and food-based remedies**, delaying hospital visits until symptoms worsen.

Similar trends have been observed in other **low-income and conflict-affected regions**, where **traditional medicine is often more accessible and trusted** than formal healthcare services (Webair & Bin-Gouth, 2014; Alsabri et al., 2022). While traditional medicine has cultural significance, **it can contribute to delayed medical interventions**, leading to **higher rates of preventable mortality and complications** (Webair et al., 2015).

Healthcare providers acknowledged this issue, with **40% stating that lack of trust in modern healthcare is a key challenge**. Therefore, interventions aimed at **bridging the gap between traditional and modern medicine—such as culturally sensitive health education programs—could help shift caregivers' perceptions and encourage earlier medical intervention.**

6.1.4 Shortages in Healthcare Infrastructure and Medical Personnel

The study also highlighted **significant gaps in healthcare infrastructure and human resources** in Ibb, Yemen. **49% of healthcare providers reported that limited resources in healthcare facilities contribute to delayed care**, and **75% identified insufficient training among healthcare workers** as a major issue.

These findings are consistent with **WHO (2024) and UNICEF (2022) reports**, which state that **only half of Yemen's health facilities are fully operational** and that the country has a **severe shortage of trained medical professionals**. The humanitarian crisis has resulted in **poorly staffed and underfunded hospitals**, further limiting **emergency care availability** for children.

Expanding **healthcare workforce training programs and increasing investment in emergency pediatric services** are crucial steps toward improving outcomes. Countries facing similar crises have successfully implemented **mobile health clinics, telemedicine, and community-based emergency response systems** to address these shortages (Nasser, 2024).

6.2 Comparison with Existing Literature

The study's findings align with **global research on barriers to healthcare access in conflict-affected regions**. Similar to findings from **previous studies in Yemen and sub-Saharan Africa**, **economic hardship, transportation barriers, and reliance on traditional medicine** significantly impact **pediatric emergency care delays** (Webair et al., 2015; Alsabri et al., 2022).

6.2.1 Financial and Transportation Barriers in Conflict Settings

In humanitarian crisis settings, financial constraints and transportation barriers are among the **leading causes of healthcare delays** (WHO, 2024; MSF, 2019). Yemen's war has **exacerbated these issues**, reducing household incomes and **disrupting transportation networks**. The **impact of high transportation costs** seen in Ibb is consistent with findings from **Nigeria and Sudan**, where **fuel shortages and road blockades** prevent families from reaching hospitals on time (Hyzam et al., 2020).

6.2.2 Cultural Influence on Healthcare-Seeking Behavior

The reliance on **traditional medicine before formal medical treatment** is common in many **low-income countries**, where **cultural beliefs shape health-seeking behaviors** (Webair & Bin-Gouth, 2014). Studies in Yemen have found that **illness classifications based on folk beliefs lead caregivers to delay seeking care**, which was **reinforced by this study's findings** (Webair et al., 2015).

Addressing **these cultural barriers** requires **community-centered interventions that involve traditional healers in modern healthcare systems**, an approach that has shown promise in **Ethiopia and Bangladesh** (Nasser, 2024).

6.3 Implications for Policy and Healthcare Interventions

The findings of this study have several **critical implications for healthcare policy and emergency care interventions** in Yemen:

1. **Financial Assistance Programs** – Subsidized healthcare services and **financial aid for pediatric emergencies** should be expanded to remove economic barriers.
2. **Improving Transportation Services** – Investment in **ambulance services and rural transportation infrastructure** could **reduce travel time for emergency cases**.

3. **Integrating Traditional Medicine into Public Health Programs** – Training traditional healers and **bridging the gap between cultural beliefs and modern healthcare** could **increase trust in formal medical services**.
4. **Healthcare Infrastructure Development** – Expanding healthcare facilities and **equipping hospitals with trained pediatric emergency staff** is essential for **improving service delivery in underserved areas**.
5. **Community Awareness Campaigns** – Educating caregivers on **the dangers of delaying emergency care and the limitations of traditional medicine** could lead to earlier health-seeking behaviors.

6.4 Study Limitations

While this study offers **valuable insights into barriers to pediatric emergency care in Ibb, Yemen**, several limitations should be acknowledged:

- **Self-reported data** – Caregiver responses may be influenced by **recall bias or social desirability bias**, affecting accuracy.
- **Limited geographic scope** – Findings are **specific to Ibb** and may not be **generalizable** to other regions of Yemen with different healthcare challenges.
- **Potential underreporting by healthcare providers** – Institutional pressures may have led some **providers to minimize systemic issues**, affecting the completeness of responses.
- **Cross-sectional design** – The study captures data **at a single point in time**, limiting the ability to assess **long-term trends in healthcare access**.

Future research should incorporate **longitudinal studies** to track **changes in healthcare access over time** and evaluate the **effectiveness of interventions** in reducing pediatric emergency care barriers.

6.5 Study Strengths

This study has several strengths that enhance its **validity, reliability, and contribution** to understanding pediatric emergency care barriers in Ibb, Yemen:

- **Comprehensive Mixed-Methods Approach**: Utilized **quantitative (surveys) and qualitative (interviews, social media, and university discussions)** methods for a well-rounded analysis.
- **Large and Diverse Sample Size**: Included **600 caregivers and 200 healthcare providers**, ensuring **representative findings** across **different socioeconomic and geographic backgrounds**.
- **Focus on a Conflict-Affected Region**: Provides **critical insights into healthcare access in Yemen**, particularly in underserved areas like **Ibb**.
- **Dual Perspective Approach**: Examined **both caregiver and healthcare provider experiences**, identifying **gaps in communication and healthcare expectations**.
- **Real-World Data Collection**: Leveraged **social media discussions and community lectures**, capturing **real-life experiences beyond traditional survey methods**.
- **Actionable Policy Recommendations**: Findings offer **practical solutions**, including **financial aid, transportation improvements, workforce training, and public health education**.
- **Contribution to Literature**: Expands knowledge on **healthcare access in Yemen**, serving as a **foundation for future research and policy development**.

6.6 Conclusion

The results of this study highlight **severe economic, transportation, and cultural barriers** to pediatric emergency care in Ibb, Yemen. Financial hardships, **geographic inaccessibility, and traditional healthcare-seeking behaviors** contribute to **delayed medical interventions, increasing morbidity and mortality rates among children**. Addressing these issues requires a **multi-pronged approach**, including **financial aid, transportation support, healthcare system improvements, and culturally sensitive public health campaigns**.

By implementing **policy recommendations based on these findings**, Yemen's healthcare system can **improve emergency pediatric care access**, ultimately **reducing preventable child deaths** in Ibb and other underserved regions.

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Table 1: Healthcare Providers' Roles Distribution

Professional Role	Percentage	Count
Physician	78.1%	156
Nurse	9.1%	18
Community Health Worker	7.0%	14
Paramedic	5.8%	12

Figure 1: **Healthcare Providers' Roles Distribution**

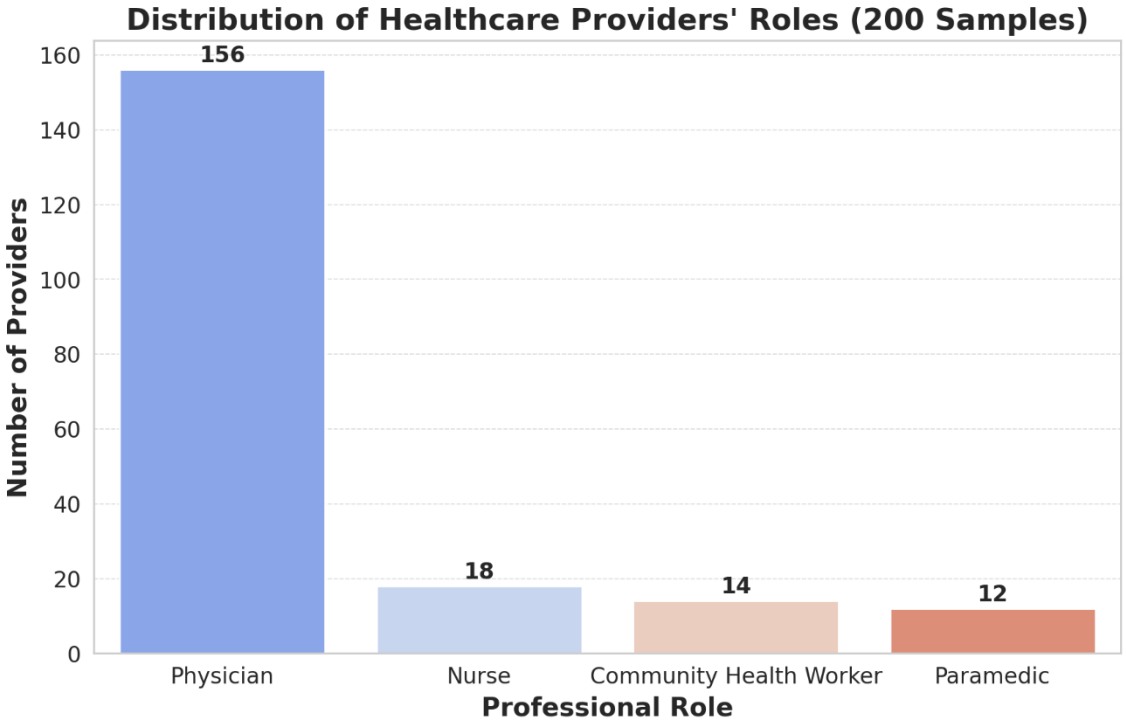

Table 2: Healthcare Providers' Workplace Settings

Workplace Setting	Percentage	Count
Public Hospital	68.0%	136
Private Clinic	19.0%	38
Community Health Center	13.0%	26
Mobile Clinic	0.0%	0

Figure 2: Healthcare Providers' Workplace Settings

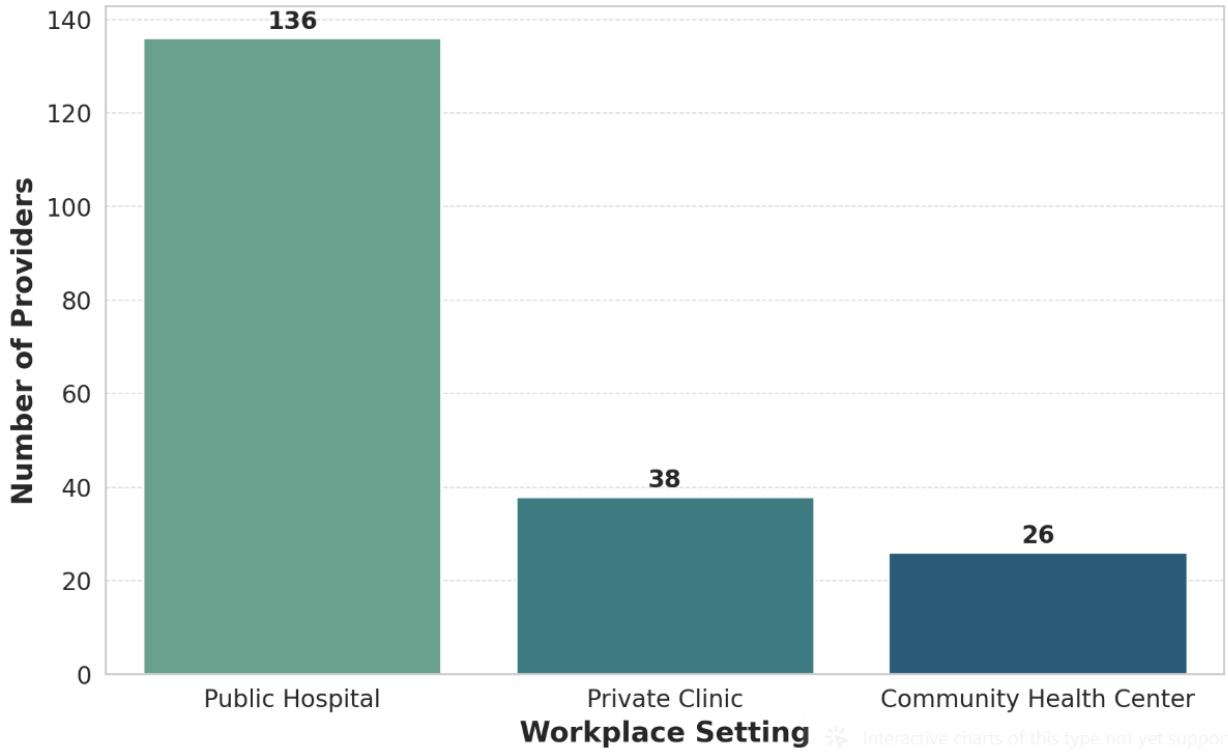

Table 3: Years of Experience for Healthcare Providers

Years of Experience	Percentage	Count
Less than 1 year	17.0%	34
1–5 years	47.0%	94
6–10 years	22.0%	44
More than 10 years	14.0%	28

Figure 3: Years of Experience for Healthcare Providers

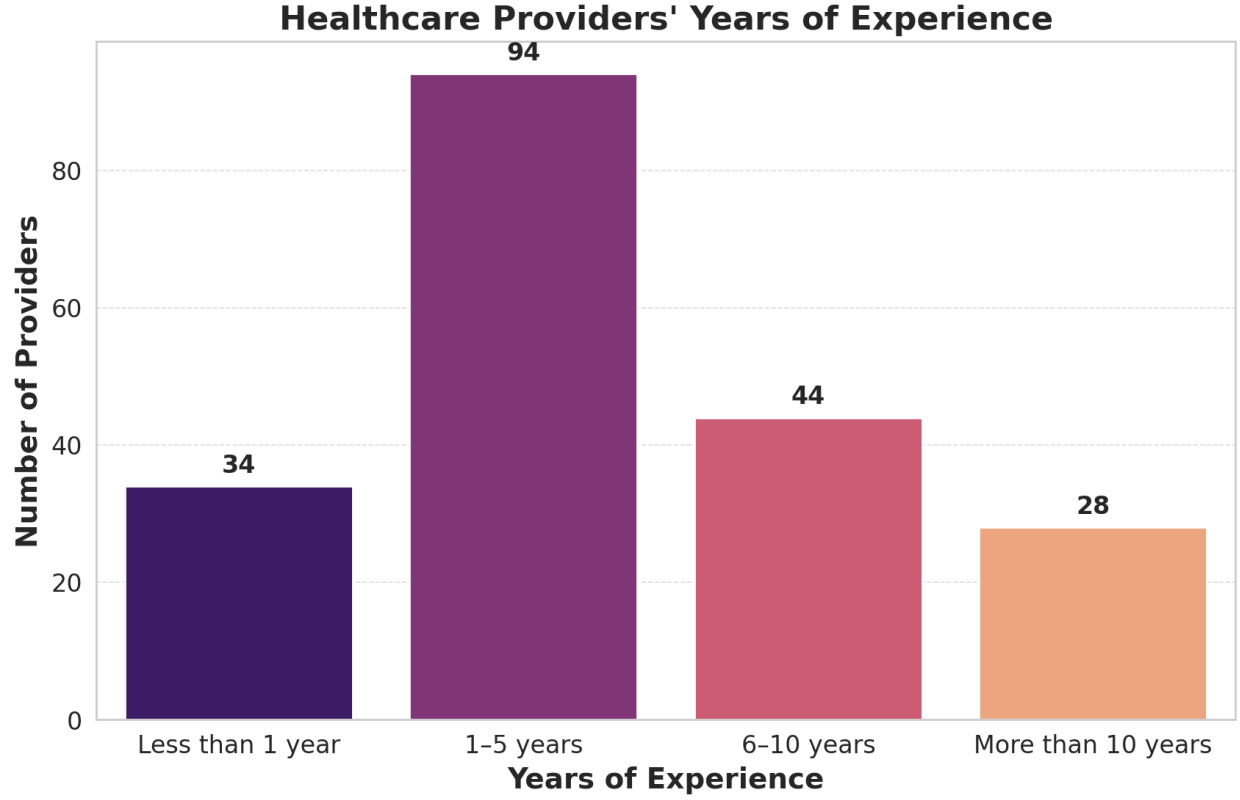

Table 4: Practice Location for Healthcare Providers

Practice Location	Percentage	Count
Urban Area	80.0%	160
Rural Area	20.0%	40

Figure 4: **Practice Location for Healthcare Providers**

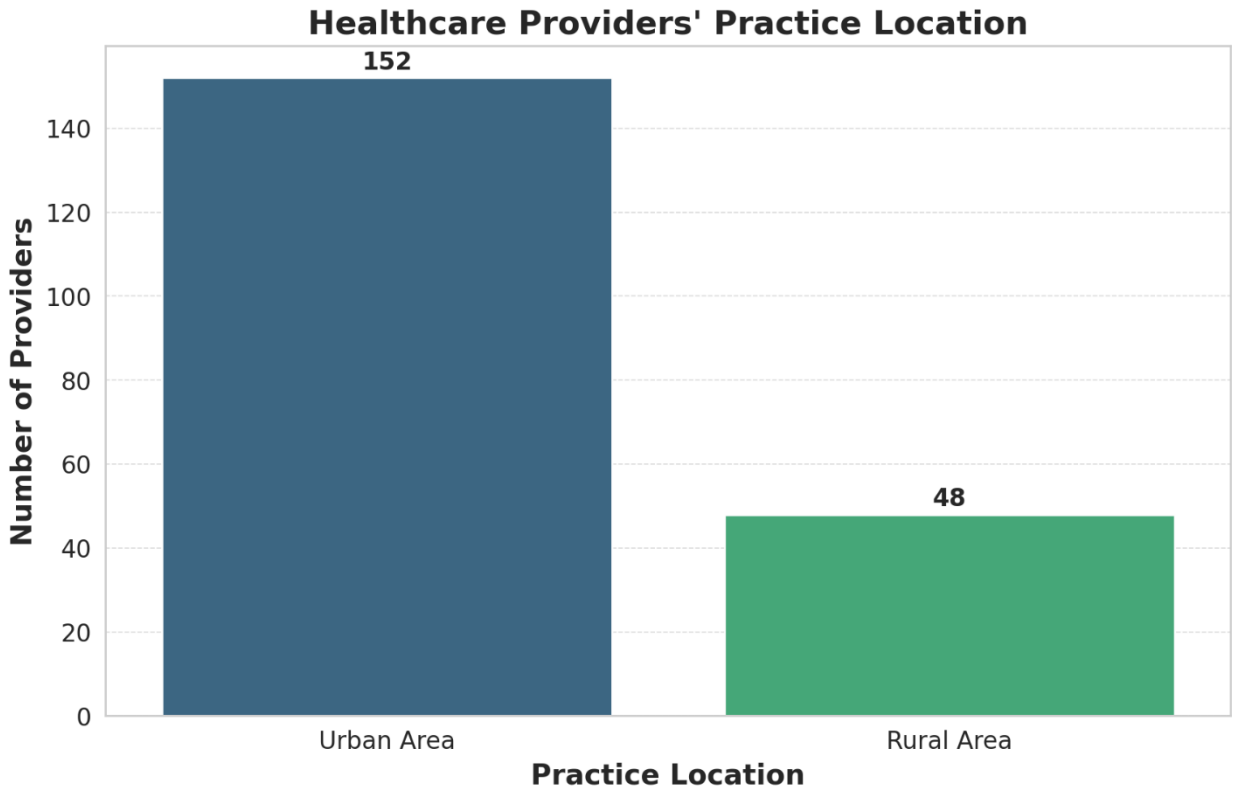

Table 5: Emergency Pediatric Training

Training Received	Percentage	Count
Yes	63.0%	126
No	37.0%	74

Figure 5: Emergency Pediatric Training for Healthcare Providers

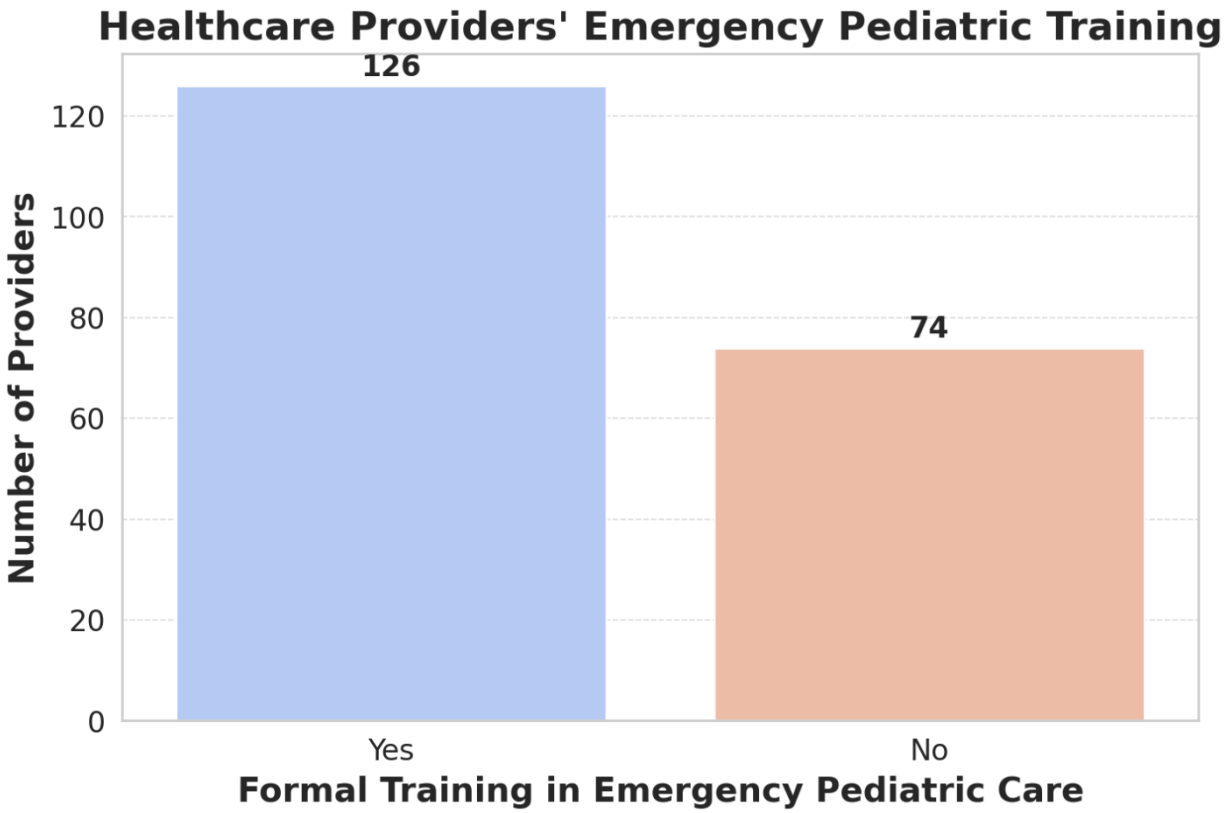

Table 6: Barriers to Pediatric Emergency Care (Healthcare Providers' Survey)

Barrier	Percentage
Limited resources (e.g., equipment, medications)	64%
Lack of trained staff	70%
Delayed patient arrivals	66%
Security concerns in the area	26%
Financial barriers for families	64%
People using Google or online resources instead of care	29%
Community pressure or belief that medical providers are not good enough	38%
Fear of infections in healthcare facilities	26%
Lack of trust in healthcare providers	40%
Poor communication between caregivers and doctors	47%
Paramedics reassuring caregivers the situation is not urgent	30%

Figure 6: Barriers to Pediatric Emergency Care (Healthcare Providers' Survey)

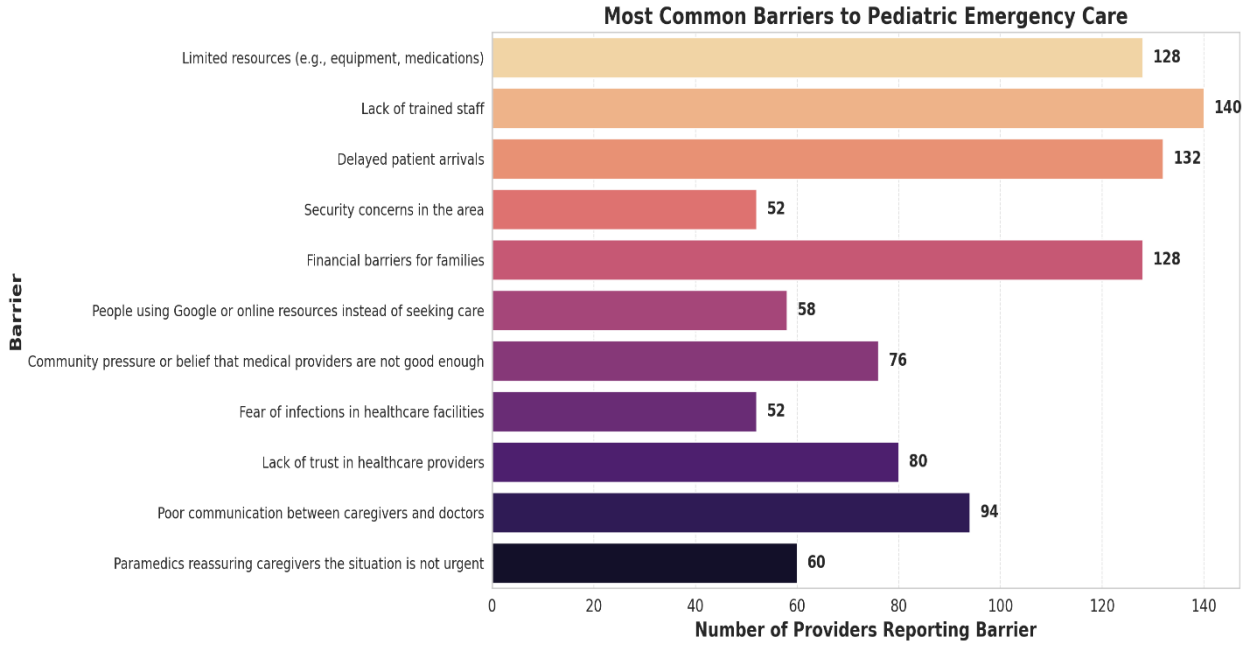

Table 7: Frequency of Delays (Healthcare Providers' Survey)

Delay Frequency	Percentage
Never	1.0%
Rarely	8.0%
Sometimes	49.0%
Often	28.0%
Always	14.0%

Figure 7: Frequency of Delays (Healthcare Providers' Survey)

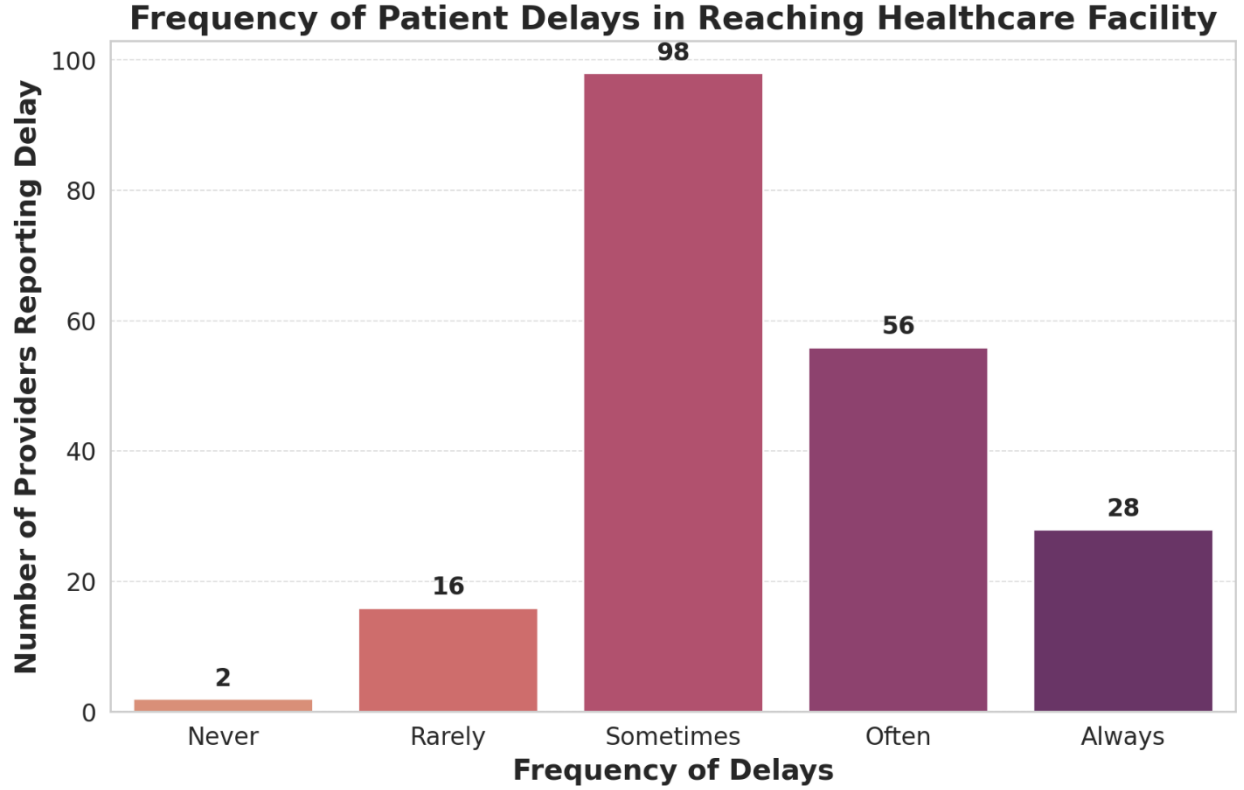

Table 8: Reasons for Delays (Healthcare Providers' Survey)

Reason for Delay	Percentage
Lack of transportation	60%
Use of traditional remedies before seeking care	69%
Financial constraints	64%
Distance to healthcare facilities	62%
Cultural beliefs or practices	47%
People using Google or online resources instead of care	28%
Community pressure or belief that medical providers are not good enough	33%
Fear of infections in healthcare facilities	18%
Lack of trust in healthcare providers	50%
Poor communication between caregivers and doctors	41%
Paramedics reassuring caregivers the situation is not urgent	31%

Figure 8: Reasons for Delays (Healthcare Providers' Survey)

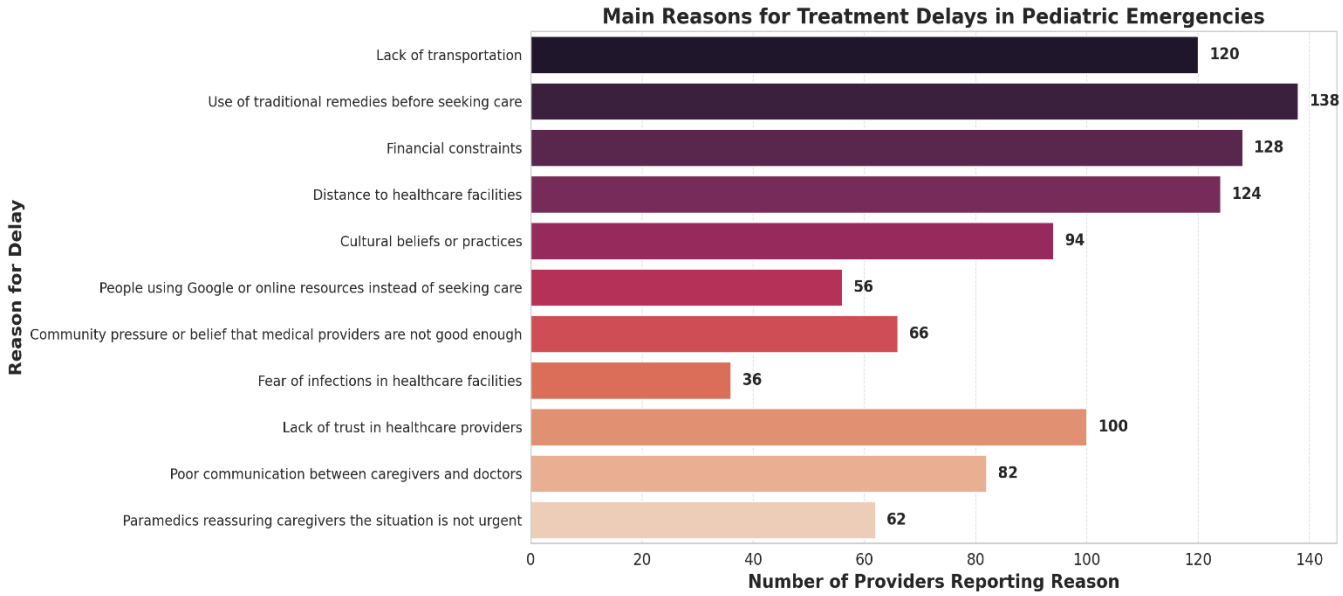

Table 9: Traditional Remedy Use Frequency (Healthcare Providers' Survey)

Frequency	Percentage
Never	8%
Rarely	13%
Sometimes	29%
Often	33%
Always	17%

Figure 9: Traditional Remedy Use Frequency (Healthcare Providers' Survey)

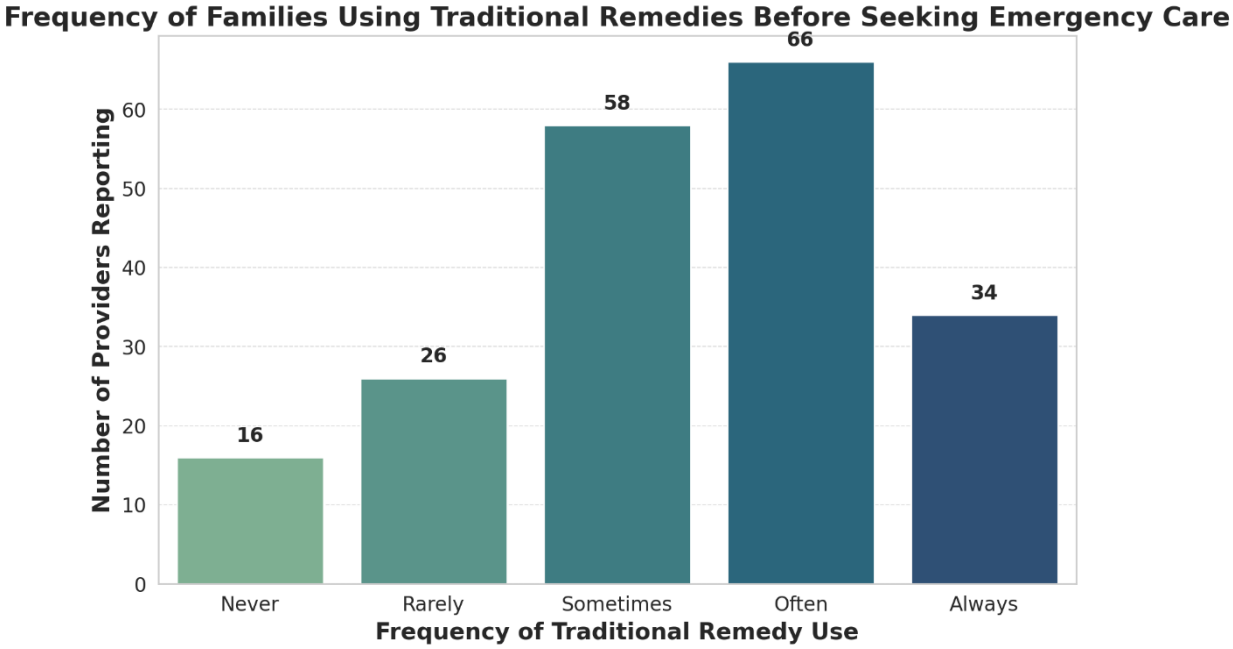

Table 10: Traditional Remedies Used (Healthcare Providers' Survey)

Traditional Remedy Type	Percentage
Herbal medicine	69%
Religious or spiritual healing practices	47%
Home remedies (e.g., food-based treatments)	66%

Figure 10: Traditional Remedies Used (Healthcare Providers' Survey)

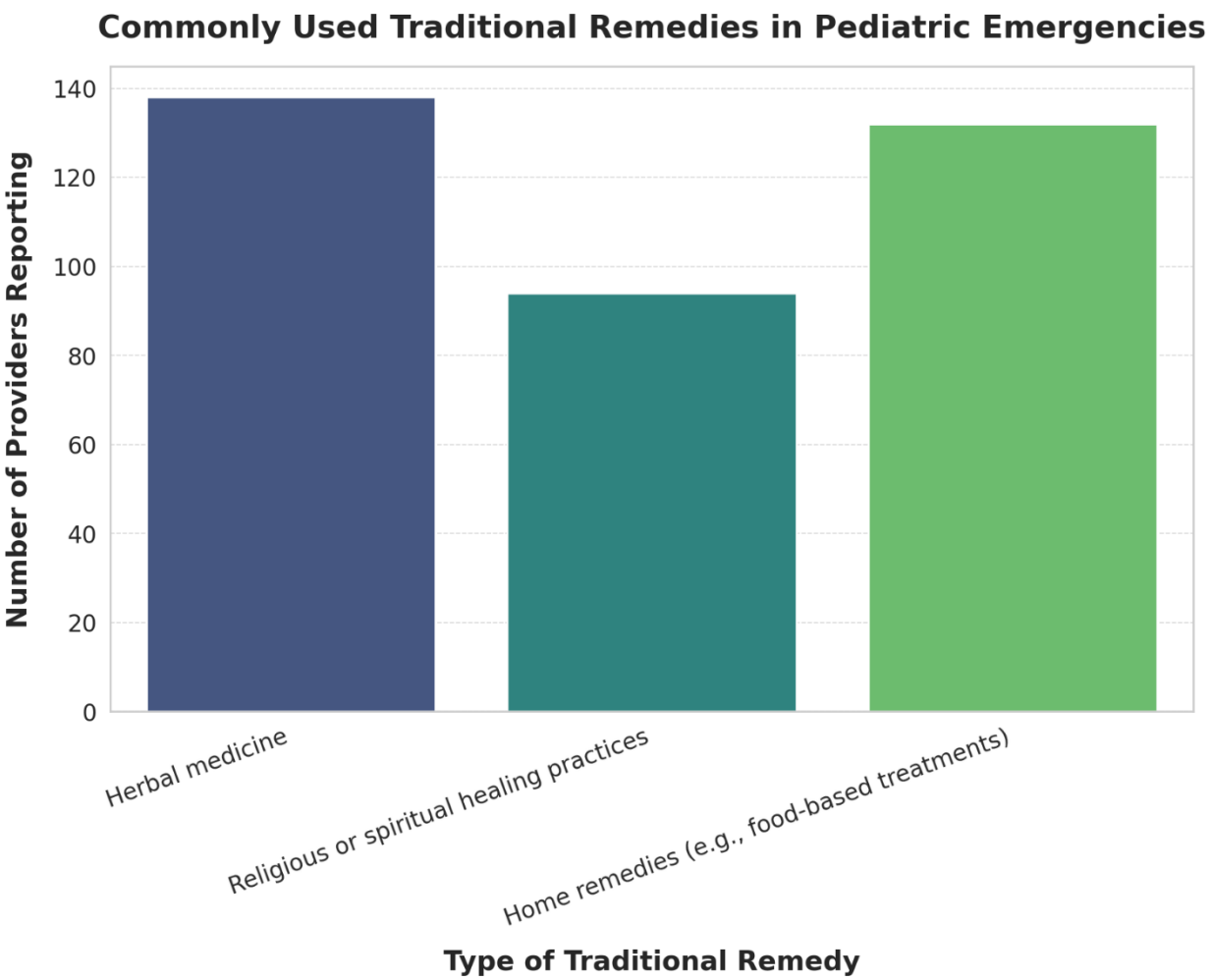

Table 11: Impact of Traditional Remedies on Healthcare Delays (Healthcare Providers' Survey)

Response	Percentage
Yes	79%
No	8%
Unsure	13%

Figure 11: Impact of Traditional Remedies on Healthcare Delays (Healthcare Providers' Survey)

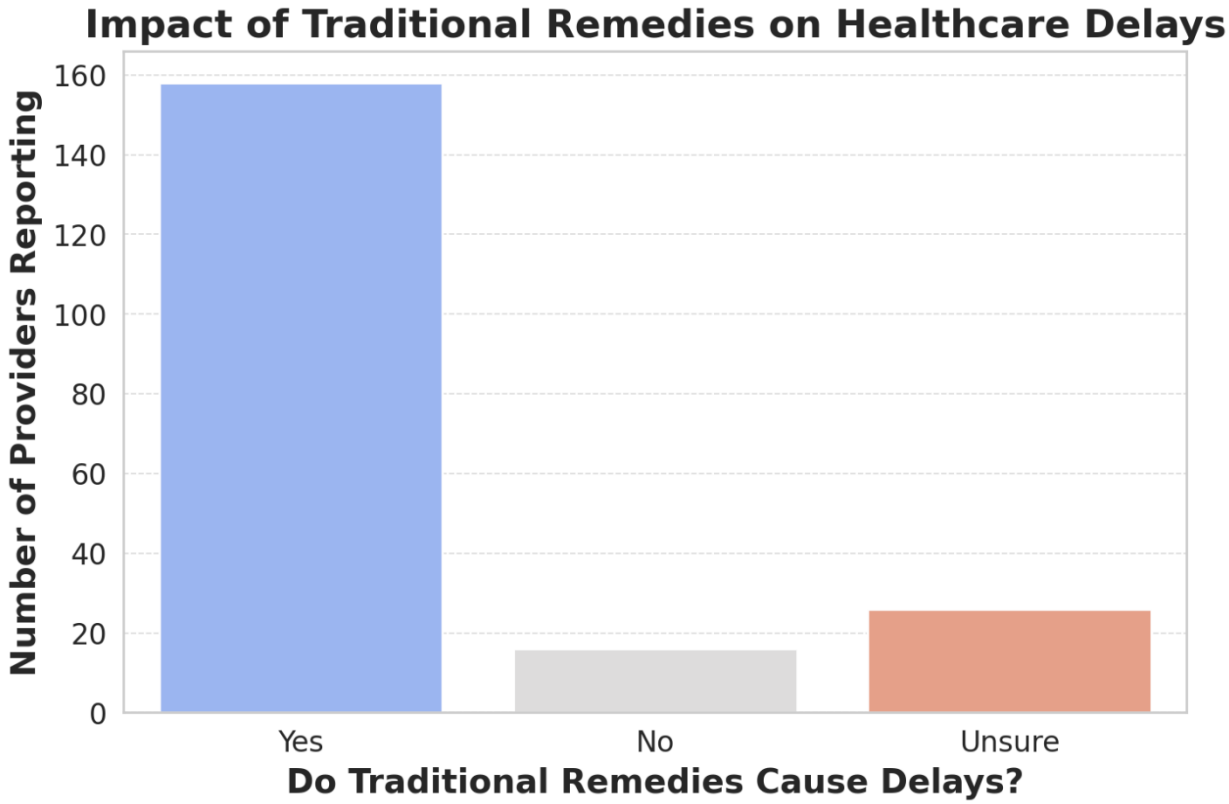

Table 12: Approach to Discussions (Healthcare Providers' Survey)

Approach	Percentage
Encourage integration with formal treatment	20%
Educate on the limitations of traditional remedies	74%
Avoid the topic unless necessary	6%

Figure 12: Approach to Discussions (Healthcare Providers' Survey)

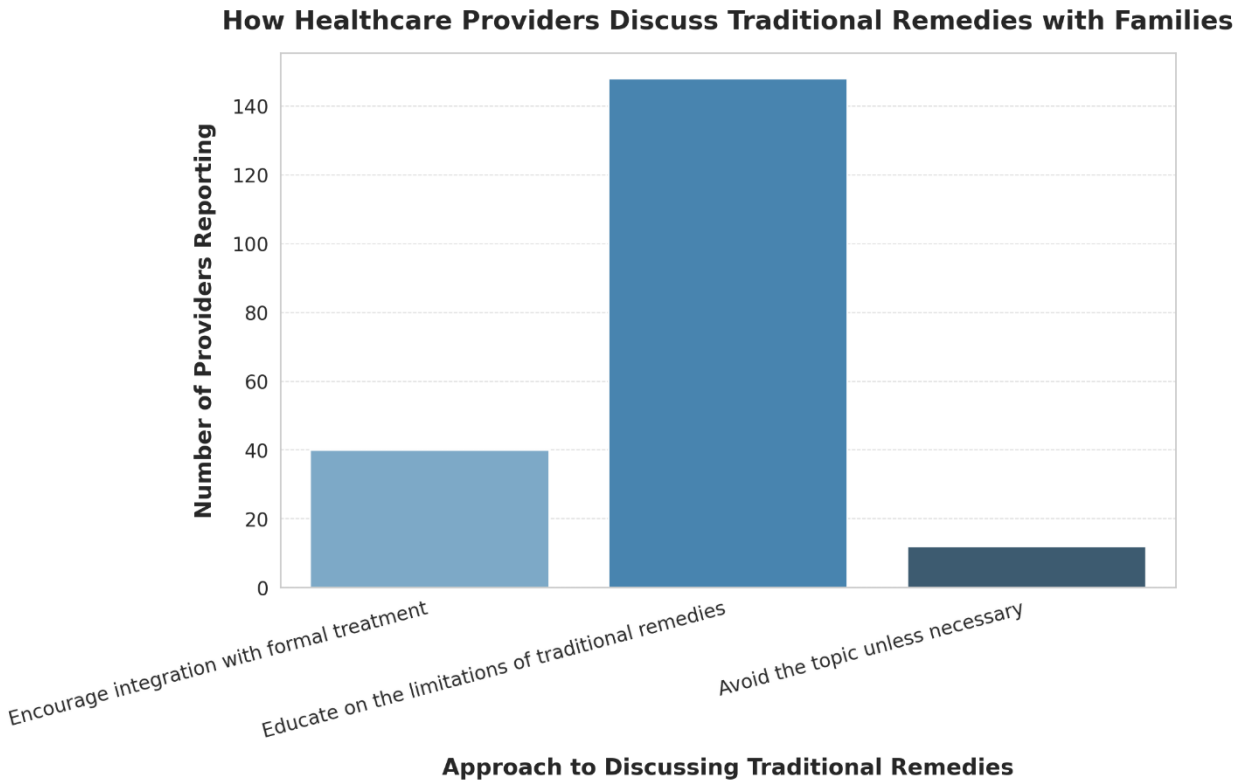

Table 13: Recommended Changes (Healthcare Providers' Survey)

Recommended Change	Percentage
Increase healthcare worker training	75%
Provide more financial support for families	74%
Improve transportation infrastructure	61%
Expand healthcare facilities in underserved areas	53%
Raise awareness about the importance of timely emergency care	75%

Figure13: Recommended Changes (Healthcare Providers' Survey)

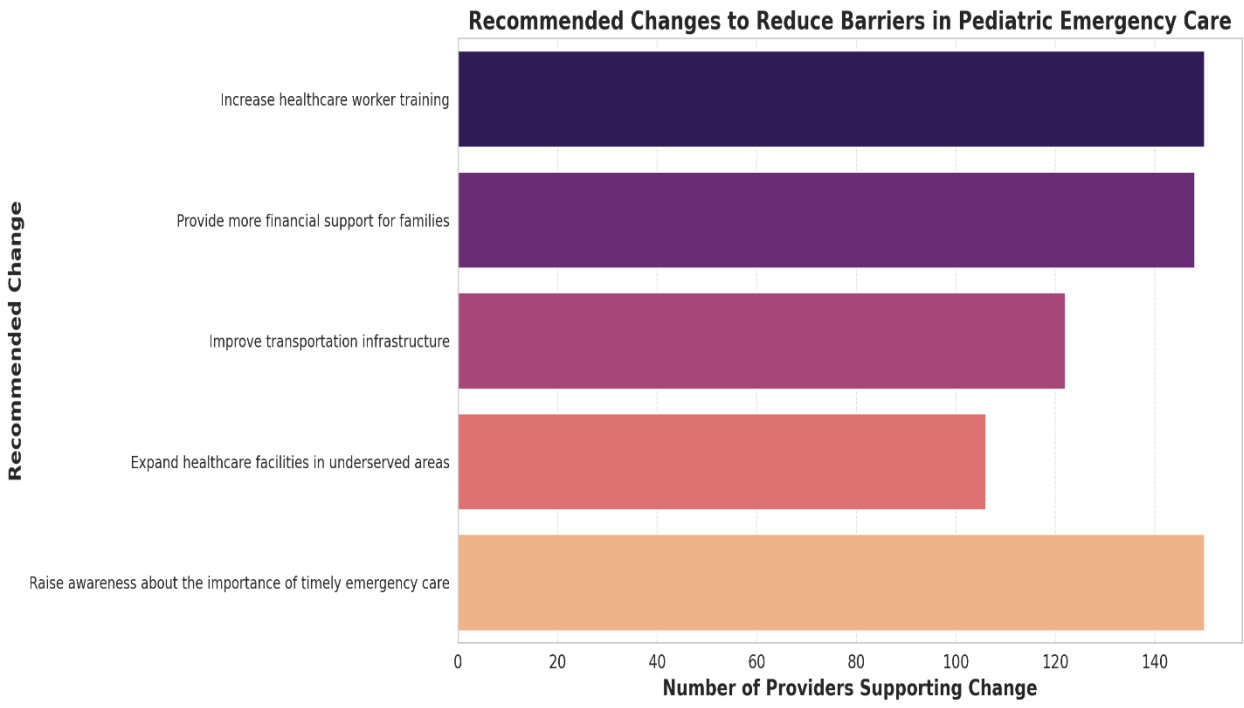

Table 14: Strategies for Addressing Traditional Remedies (Healthcare Providers' Survey)

Strategy	Percentage
Collaborate with local cultural leaders	15%
Integrate safe traditional practices with modern medicine	28%
Provide community education on the benefits of formal healthcare	57%

Figure 14: Strategies for Addressing Traditional Remedies (Healthcare Providers' Survey)

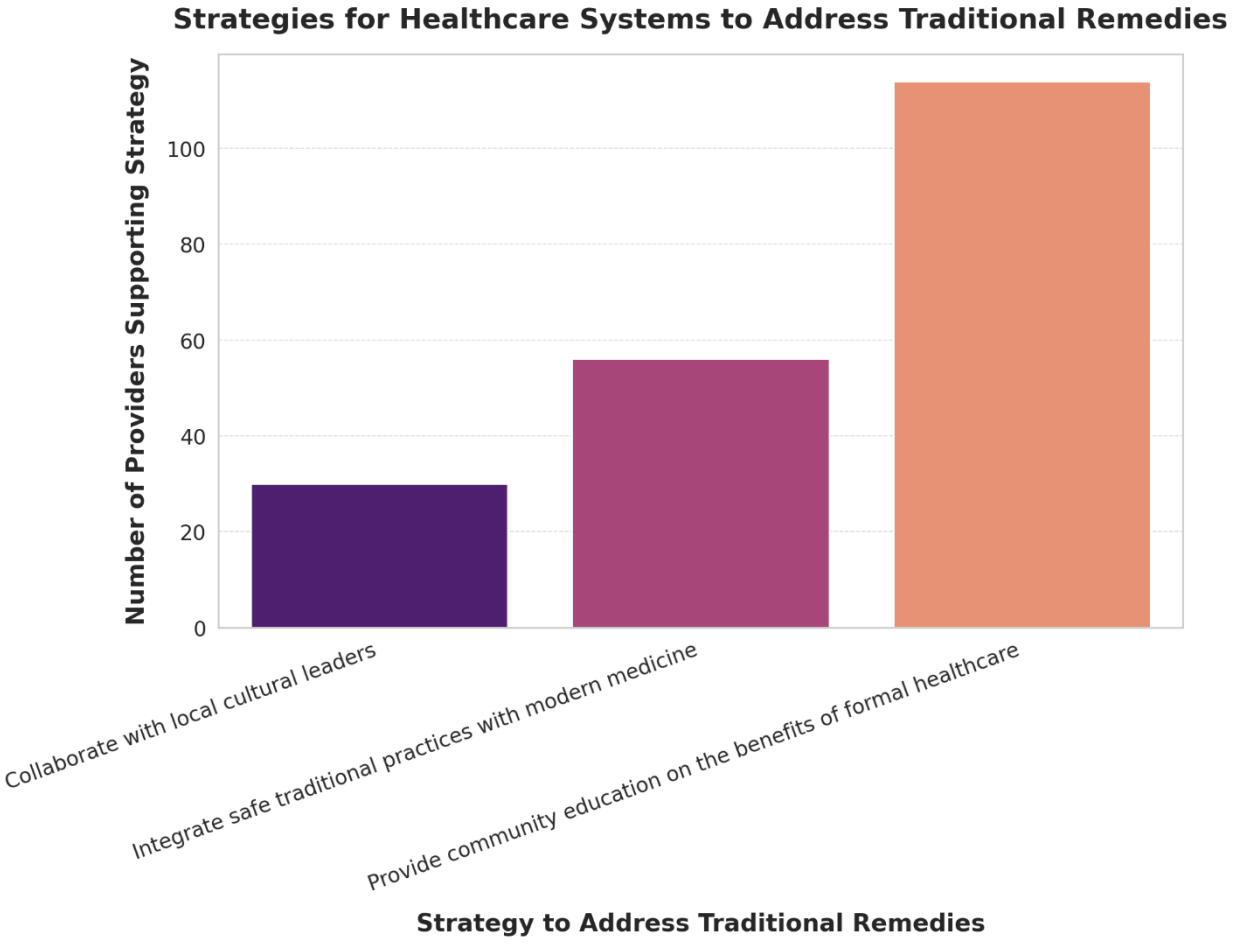

Table 15: Additional Resources Needed (Healthcare Providers' Survey)

Resource Needed	Percentage
More staff	11%
Access to better equipment and medications	33%
Security improvements in conflict zones	10%
Continuing medical education opportunities	45%

Figure15: Additional Resources Needed (Healthcare Providers' Survey)

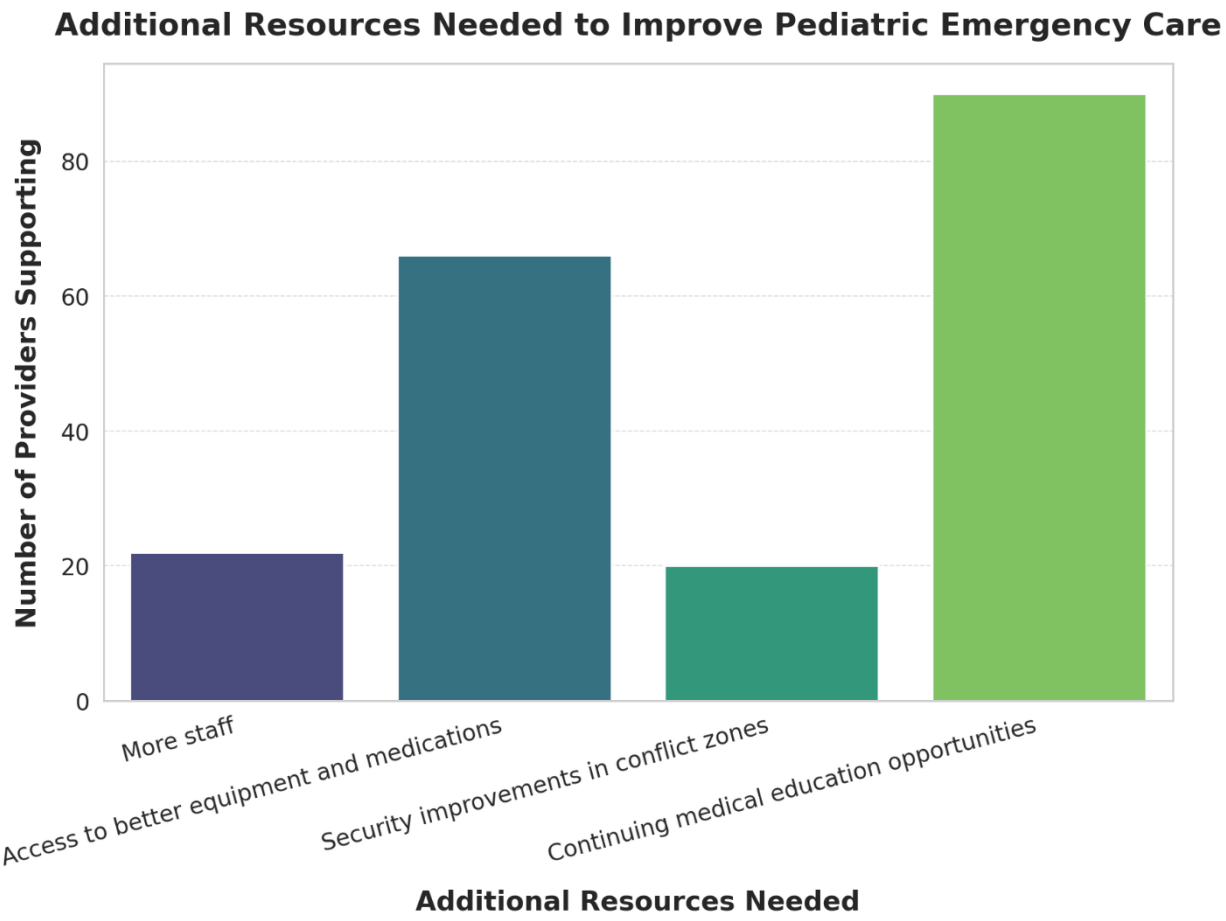

Table 16: Age of Child (Caregivers' Survey)

Age Group	Percentage
Under 1 year	16%
1–5 years	47%
6–10 years	22%
11–17 years	16%

Figure **16: Age of Child (Caregivers' Survey)**

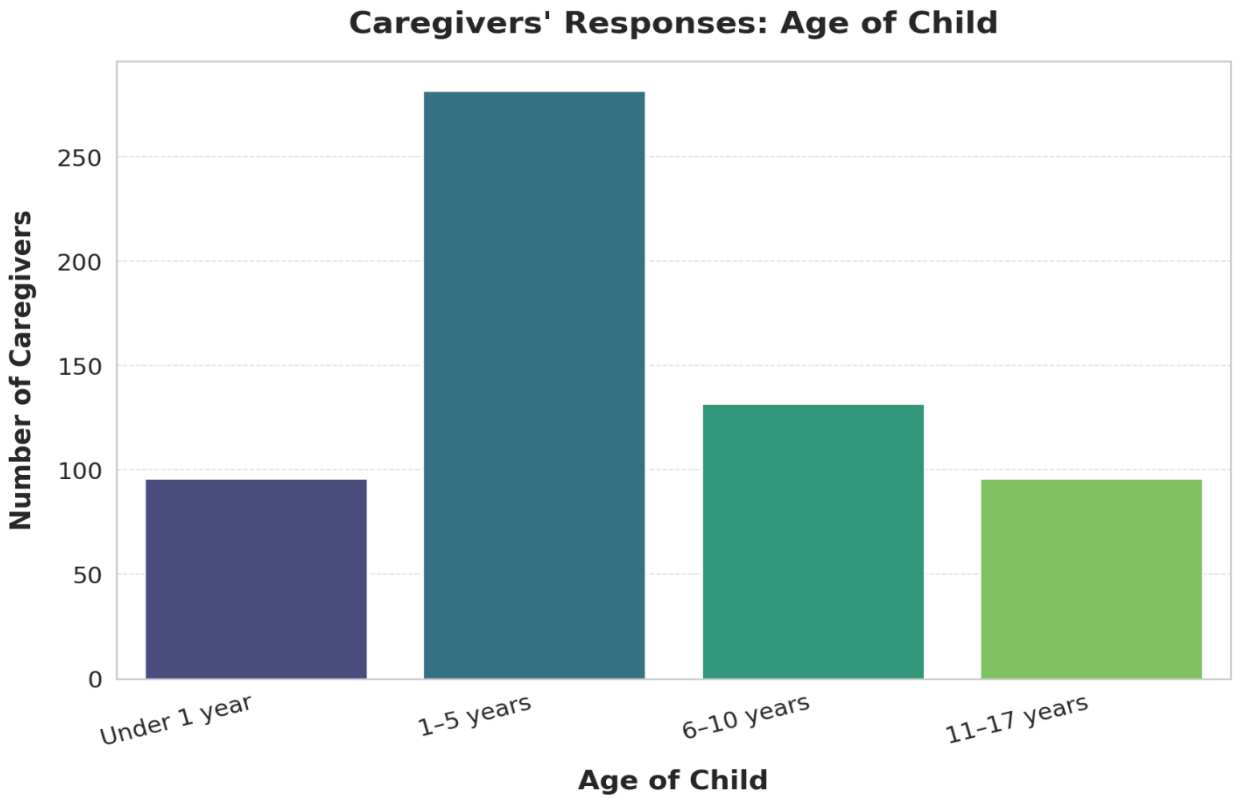

Table 17: Gender of Child (Caregivers' Survey)

Gender	Percentage	Count
Male	51%	306
Female	49%	294

Figure 17: Gender of Child (Caregivers' Survey)

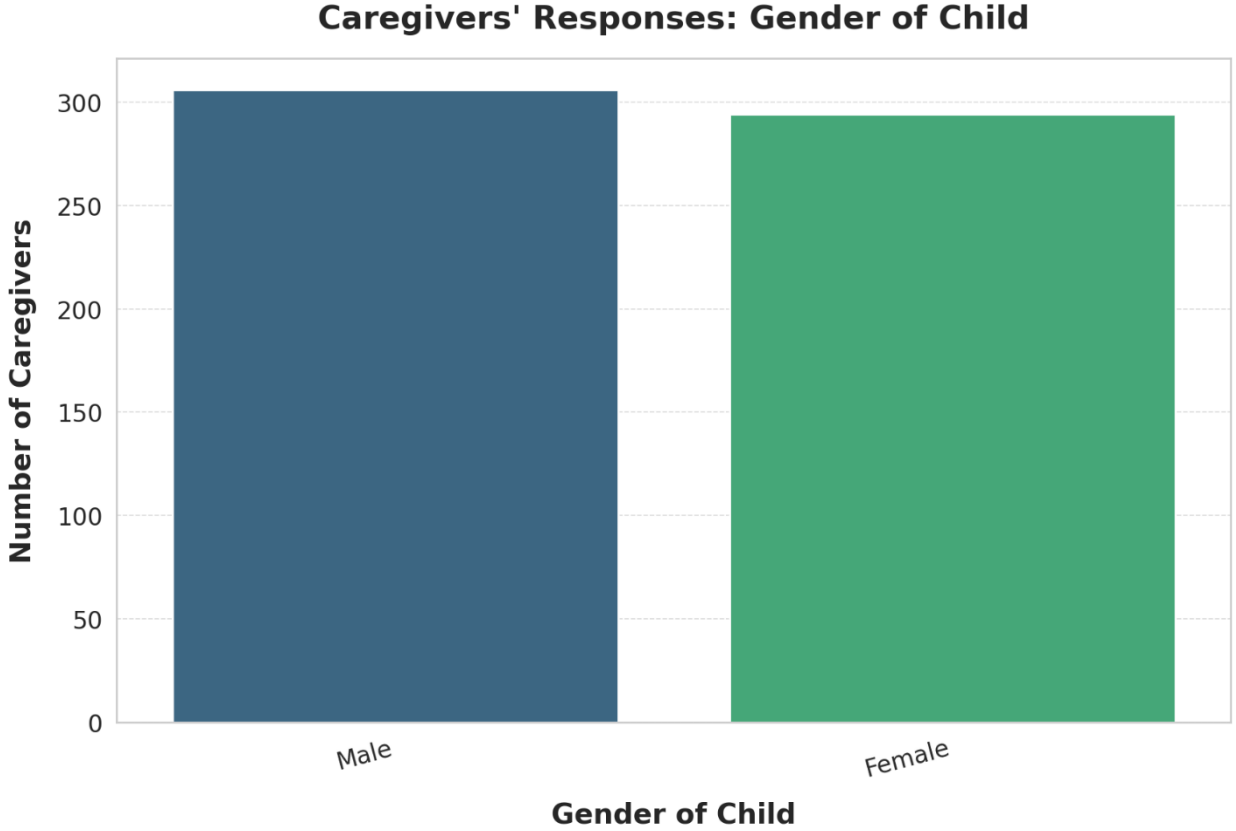

Table 18: Relationship to Child (Caregivers' Survey)

Relationship	Percentage	Count
Parent	81%	486
Guardian	19%	114

Figure 18: Relationship to Child (Caregivers' Survey)

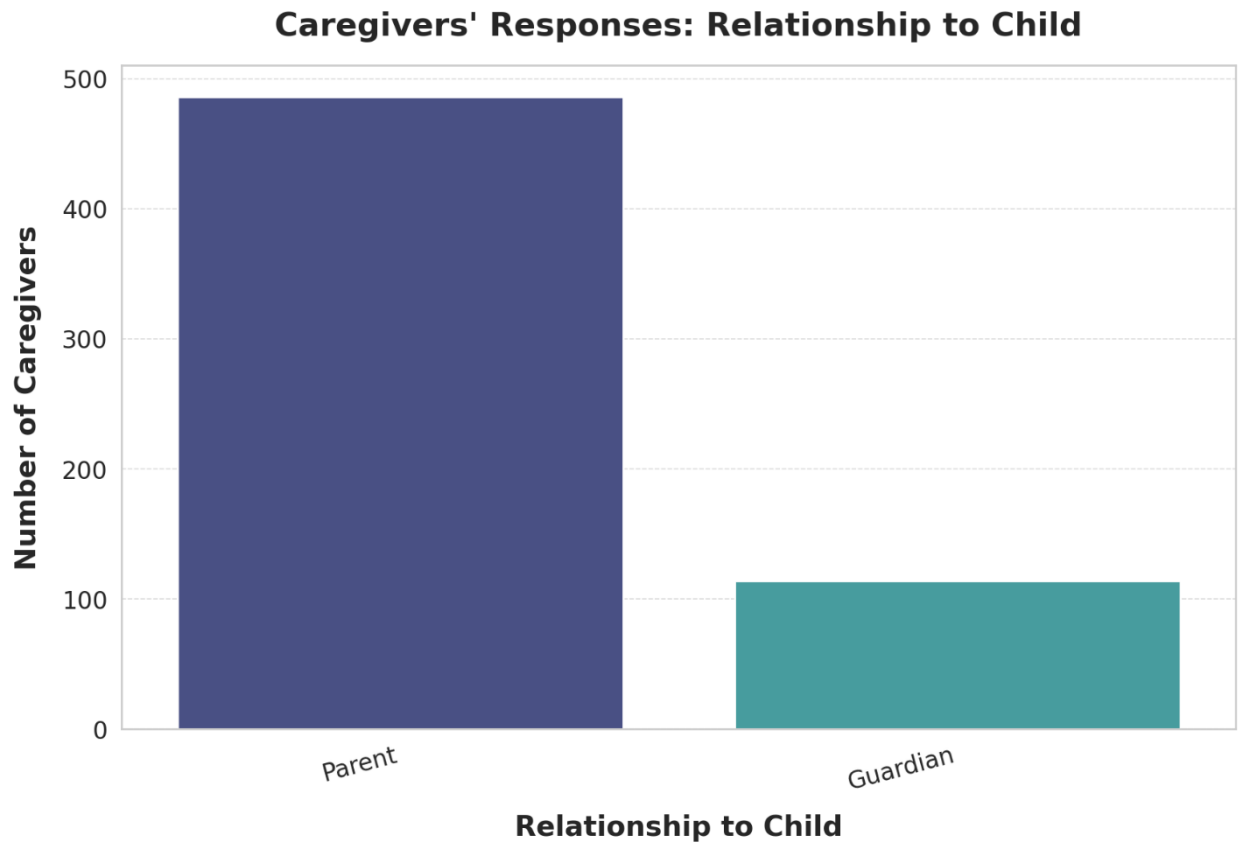

Table 19: Geographical Distribution of Caregivers' Residence **(Caregivers' Survey)**

Location	Percentage
Urban area	**73.0%**
Rural area	**27.0%**

Figure 19: Geographical Distribution of Caregivers' Residence **(Caregivers' Survey)**

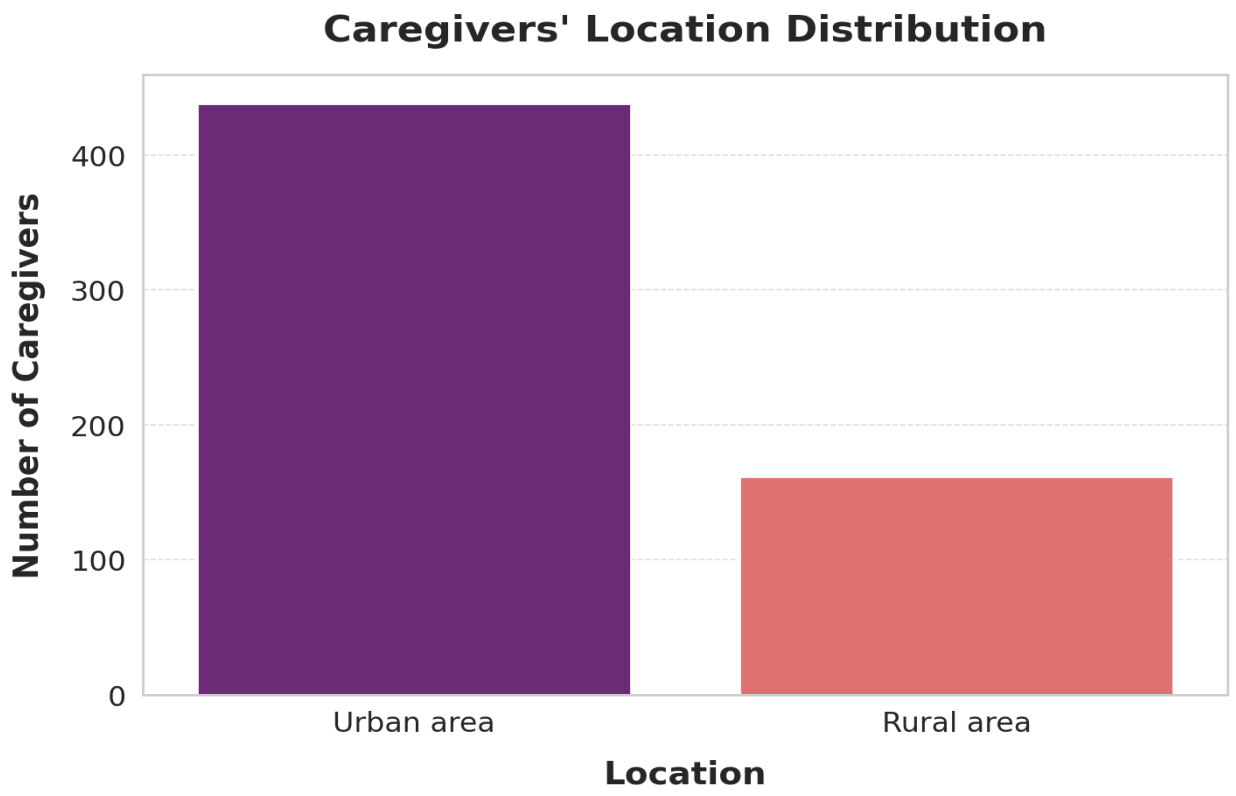

Table 20: Education Level of Caregiver (Caregivers' Survey)

Education Level	Percentage
No formal education	26%
Primary school	22%
Secondary school	13%
College or higher	38%

Figure 20: Education Level of Caregiver (Caregivers' Survey)

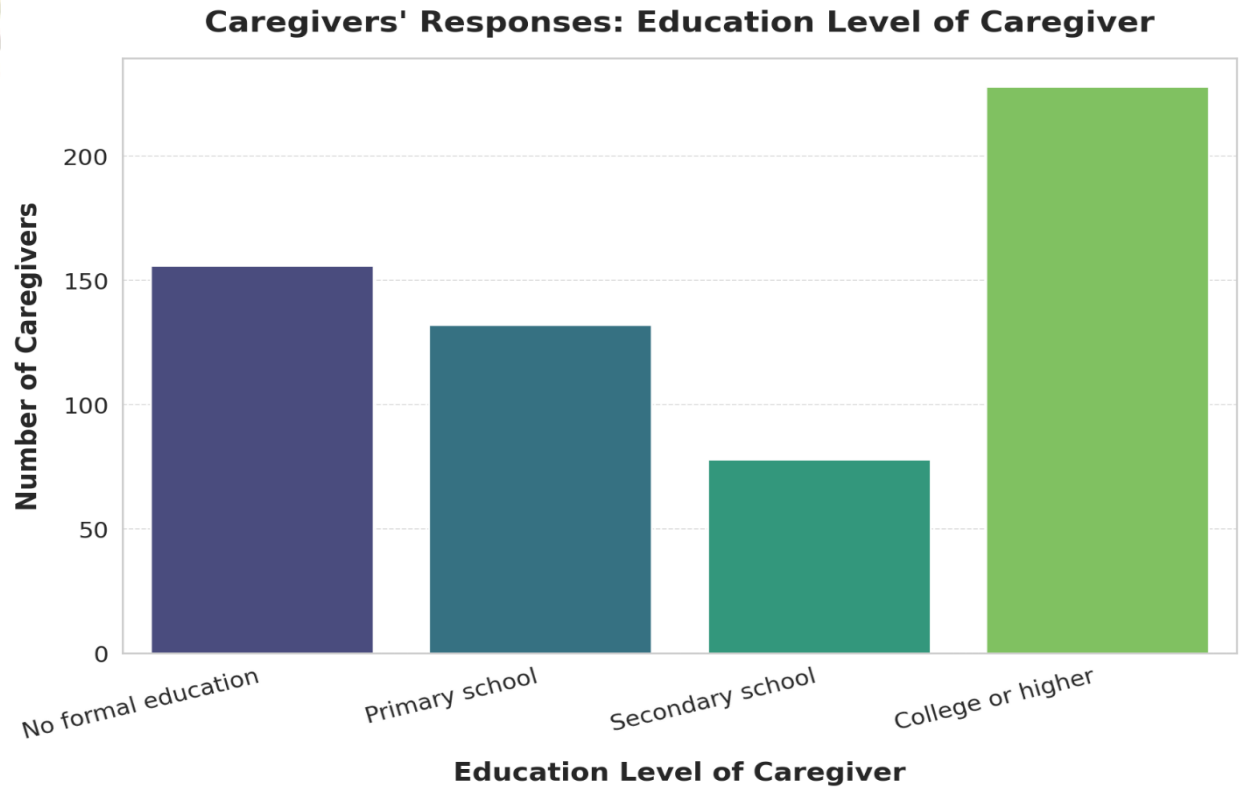

Table 21: Household Income (Caregivers' Survey)

Income Level	Percentage
Low income	34%
Middle income	63%
High income	4%

Figure 21: Household Income (Caregivers' Survey)

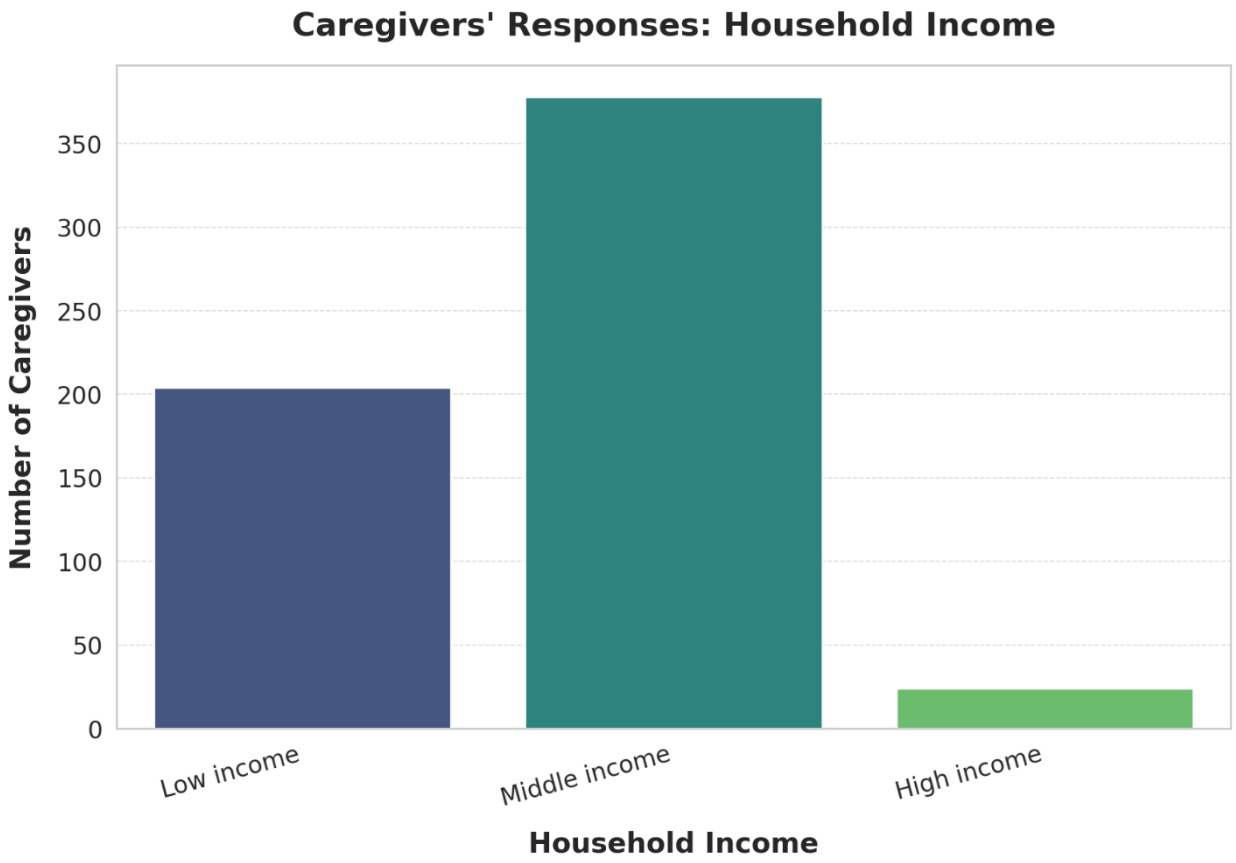

Table 22: Primary Mode of Transportation (Caregivers' Survey)

Transportation Mode	Percentage
Walking	14%
Private vehicle	33%
Public transport	52%
Ambulance	1%

Figure 22: Primary Mode of Transportation (Caregivers' Survey)

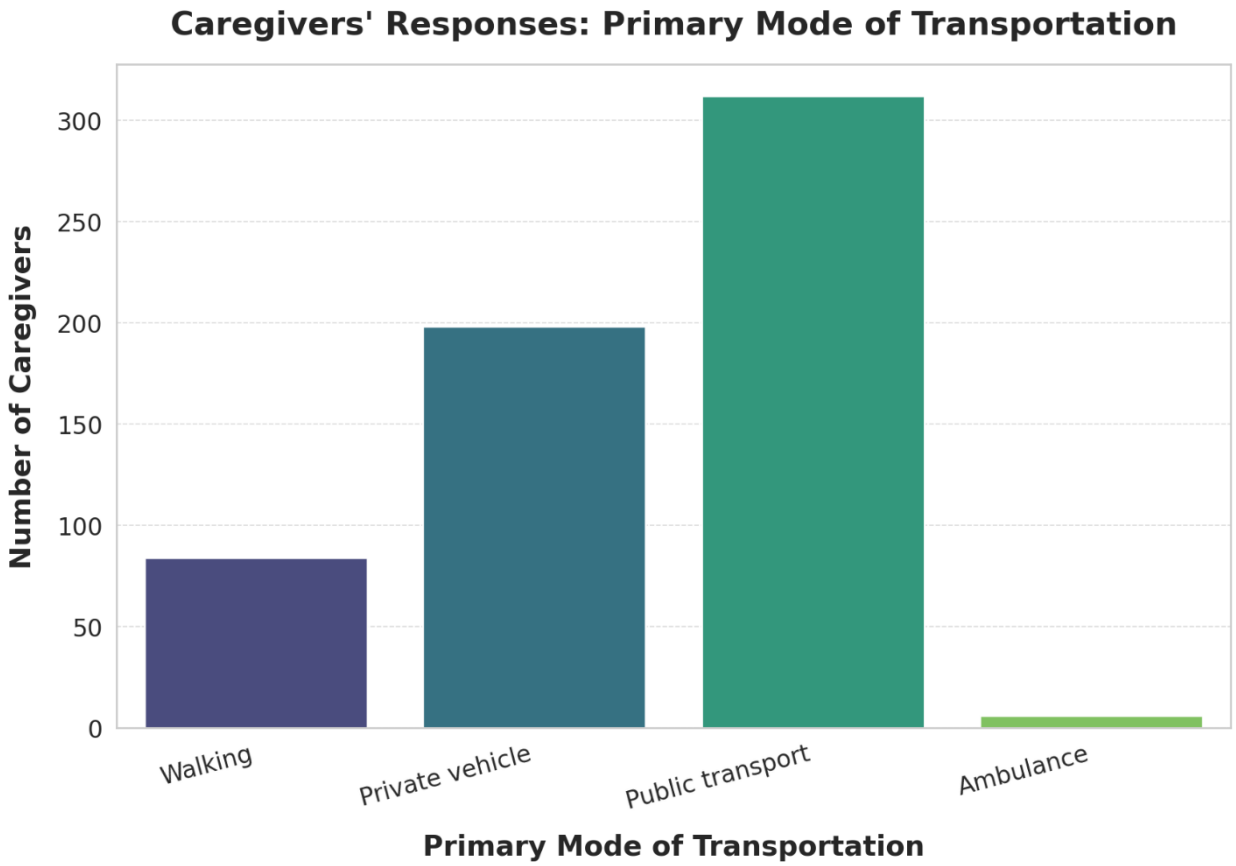

Table 23: Experienced Delays in Emergency Care (Caregivers' Survey)

Response	Percentage
Yes	62%
No	38%

Figure 23: Experienced Delays in Emergency Care (Caregivers' Survey)

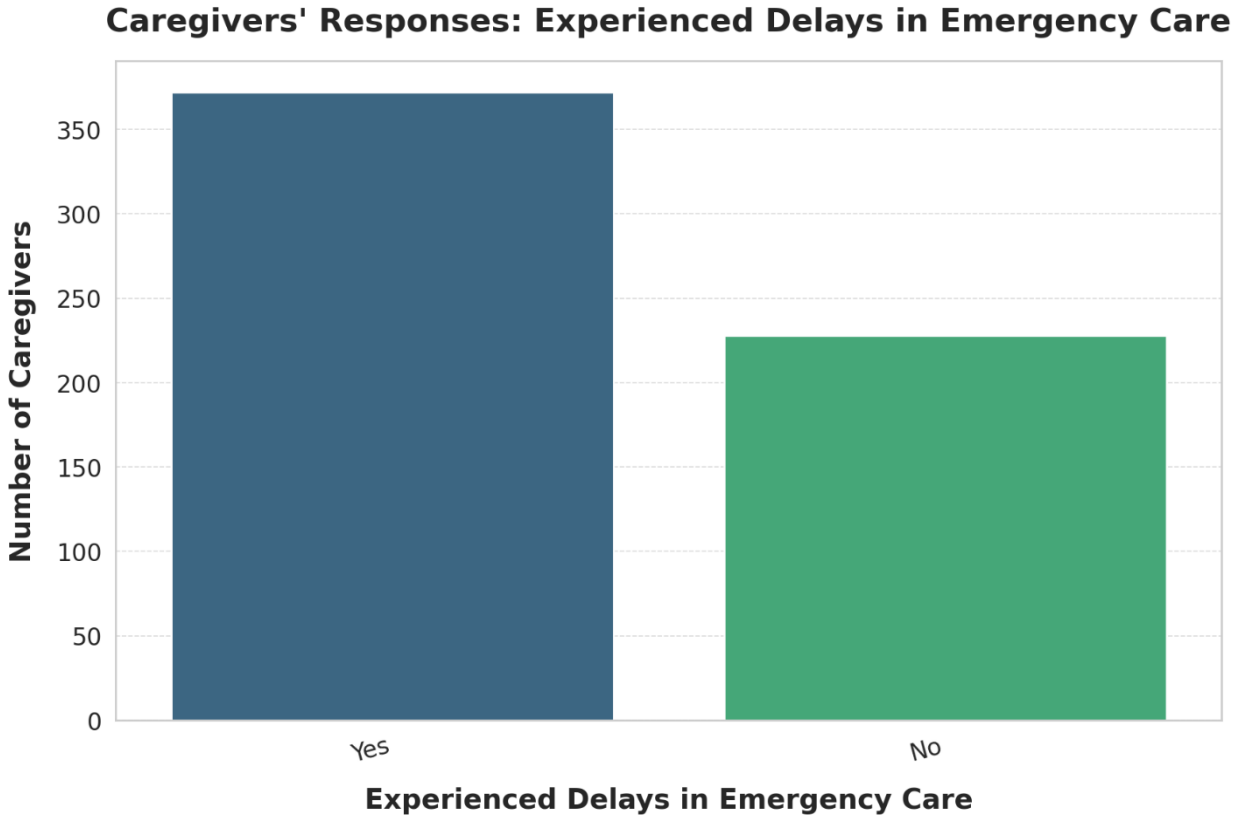

Table 24: Causes of Delays in Emergency Care (Caregivers' Survey)

Cause of Delay	Percentage
Lack of transportation	39%
Financial constraints	51%
Distance to facility	38%
Security concerns	22%
Cultural or religious beliefs	12%
Using online resources instead of seeking care	13%
Community pressure	35%
Fear of infections in healthcare facilities	28%
Lack of trust in healthcare providers	38%
Poor communication between caregivers and doctors	38%
Paramedics reassuring caregivers that the situation is not urgent	14%

Figure 24: Causes of Delays in Emergency Care (Caregivers' Survey)

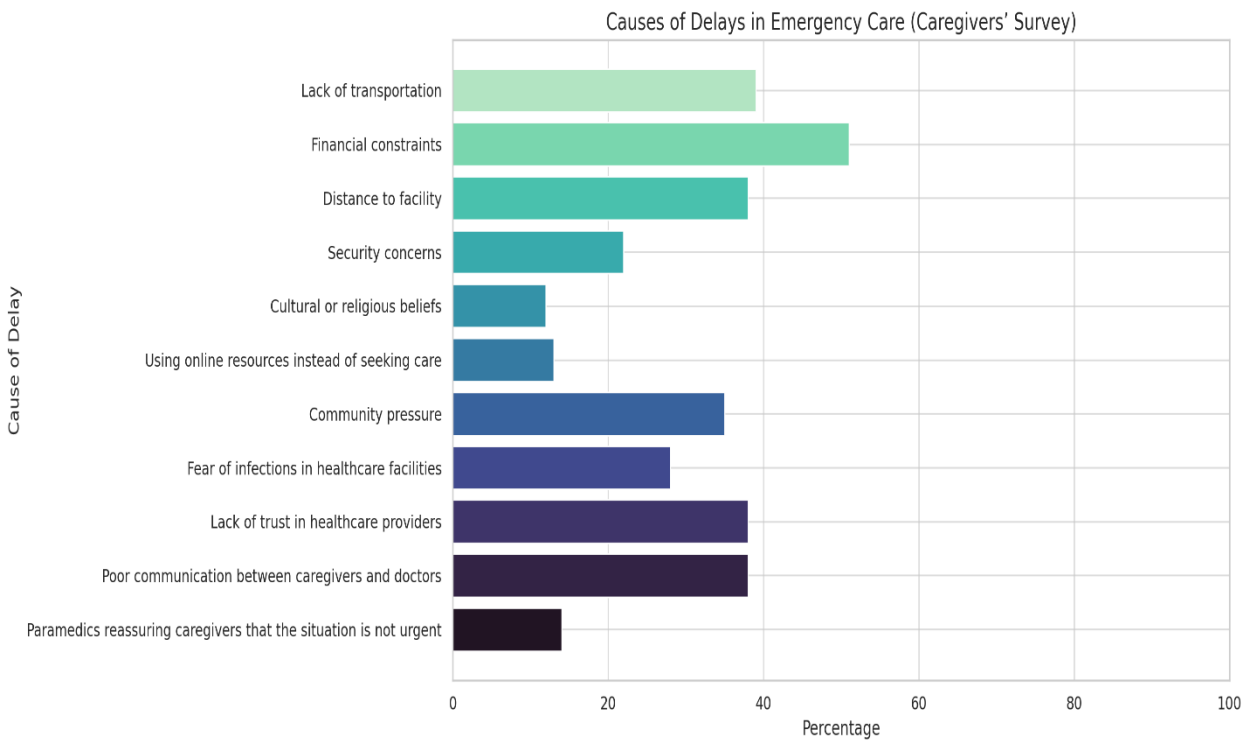

Table 25: Availability of Healthcare Facilities Within 30-Min Travel Distance (Caregivers' Survey)

Response	Percentage
Yes	76%
No	24%

Figure 25: Availability of Healthcare Facilities Within 30-Min Travel Distance (Caregivers' Survey)

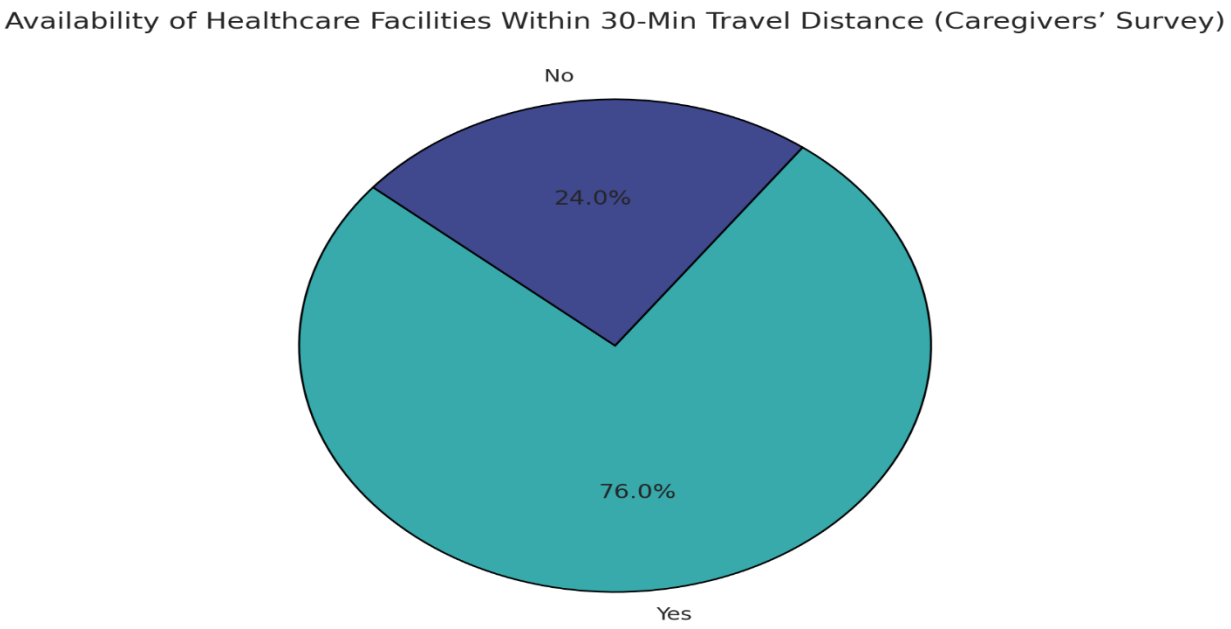

Table 26: Financial Difficulties Preventing Emergency Care (Caregivers' Survey)

Response	Percentage
Yes	57%
No	43%

Figure 26: Financial Difficulties Preventing Emergency Care (Caregivers' Survey)

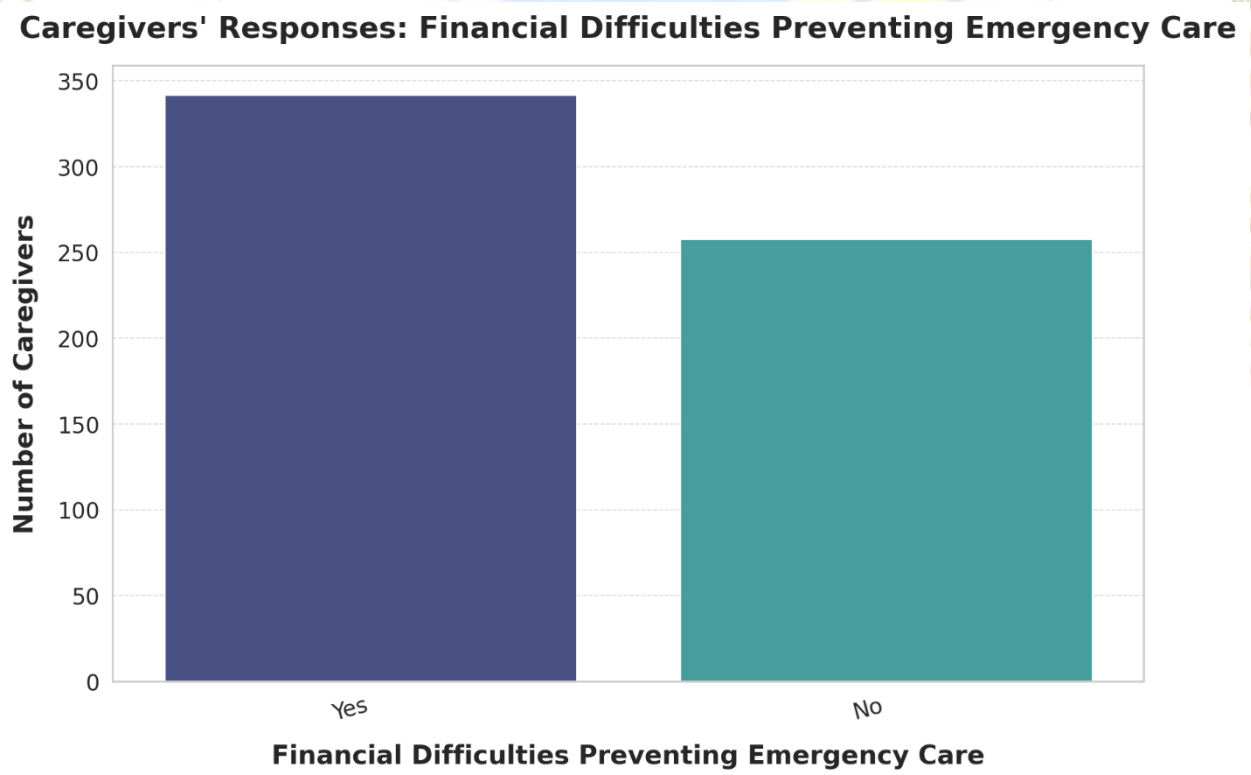

Table 27: Challenges in Accessing Emergency Care (Caregivers' Survey)

Challenge	Percentage
Lack of healthcare workers	22%
Limited resources in facilities	49%
Security concerns	21%
Lack of awareness about emergency services	44%
People using online resources instead of seeking care	14%
Community pressure	36%
Fear of infections in healthcare facilities	31%
Lack of trust in healthcare providers	39%
Poor communication between caregivers and doctors	36%
Paramedics reassuring caregivers the situation is not urgent	18%

Figure 27: Challenges in Accessing Emergency Care (Caregivers' Survey)

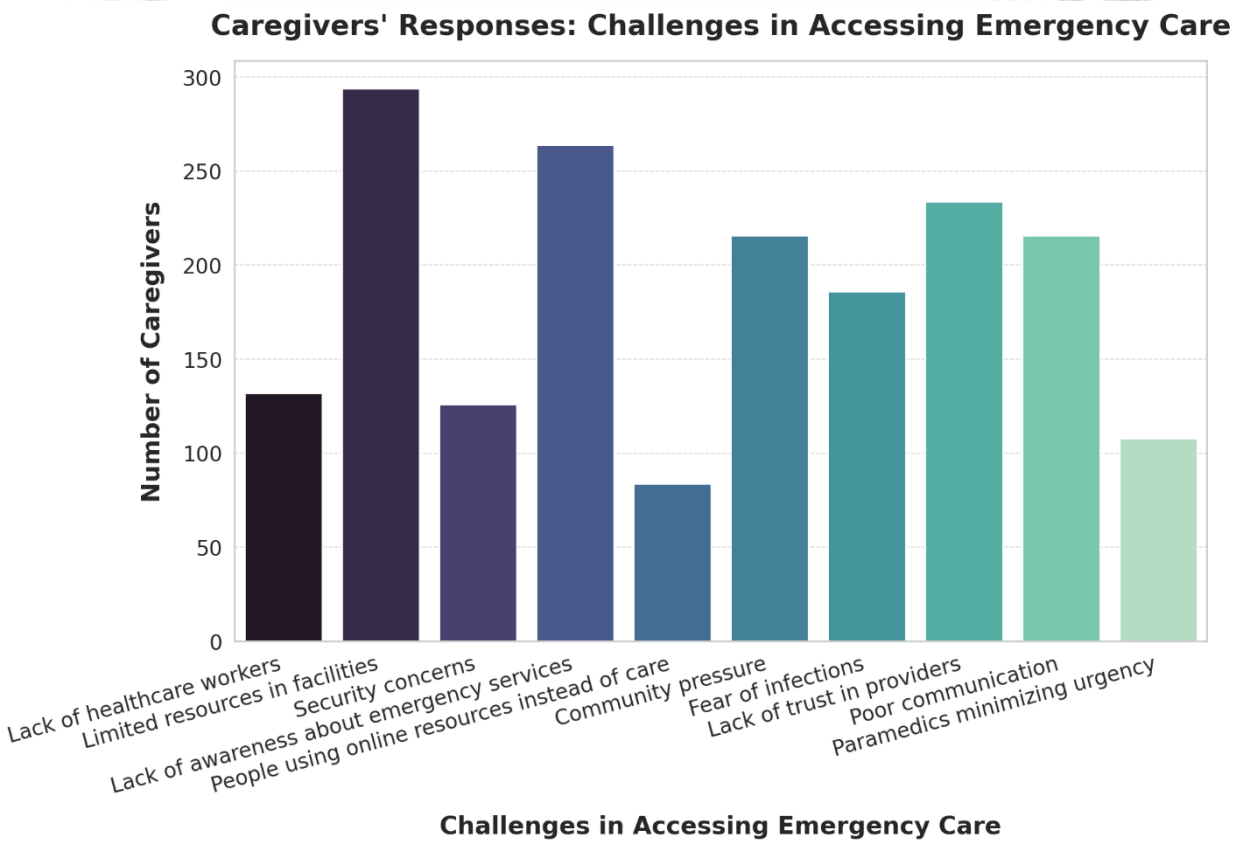

Table 28: Use of Traditional Remedies Before Seeking Care (Caregivers' Survey)

Response	Percentage
Yes	79%
No	21%

Figure 28: Use of Traditional Remedies Before Seeking Care (Caregivers' Survey)

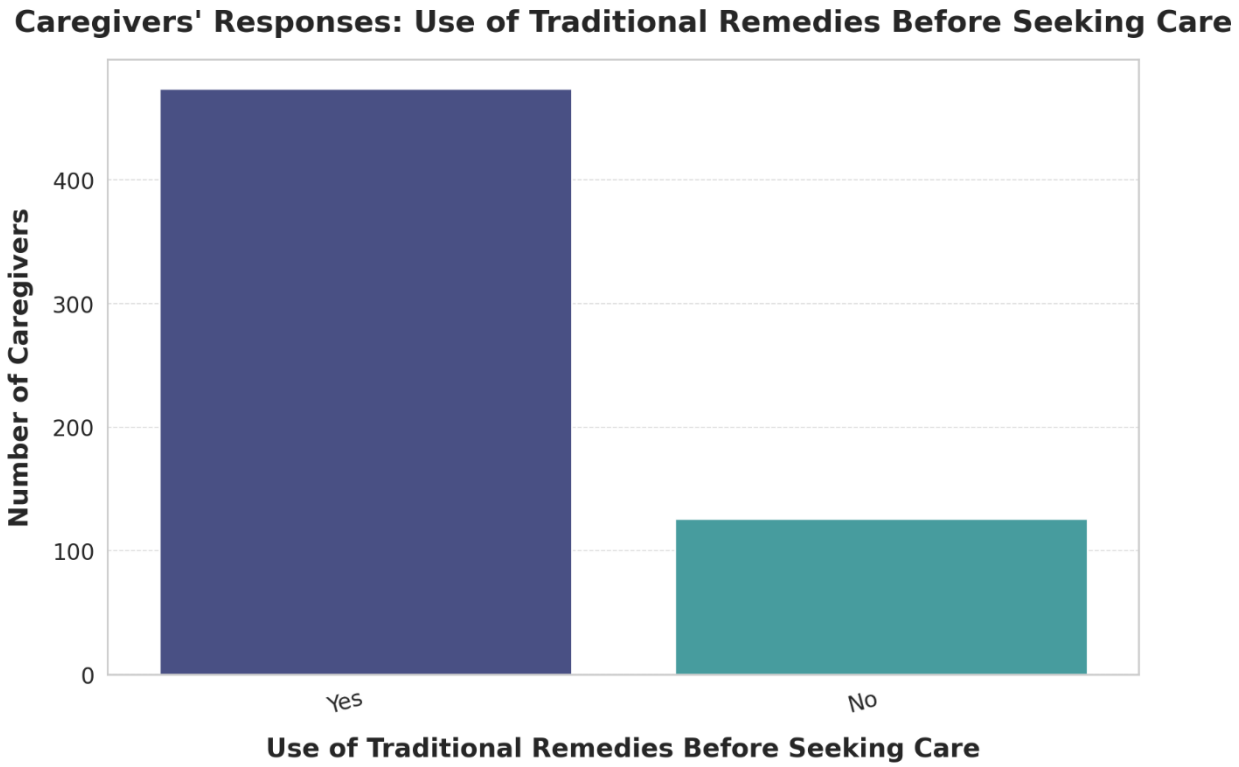

Table 29: Types of Traditional Remedies Used (Caregivers' Survey)

Traditional Remedy	Percentage
Herbal medicine	49%
Religious practices	49%
Home remedies (e.g., food-based treatments)	71%

Figure 29: Types of Traditional Remedies Used (Caregivers' Survey)

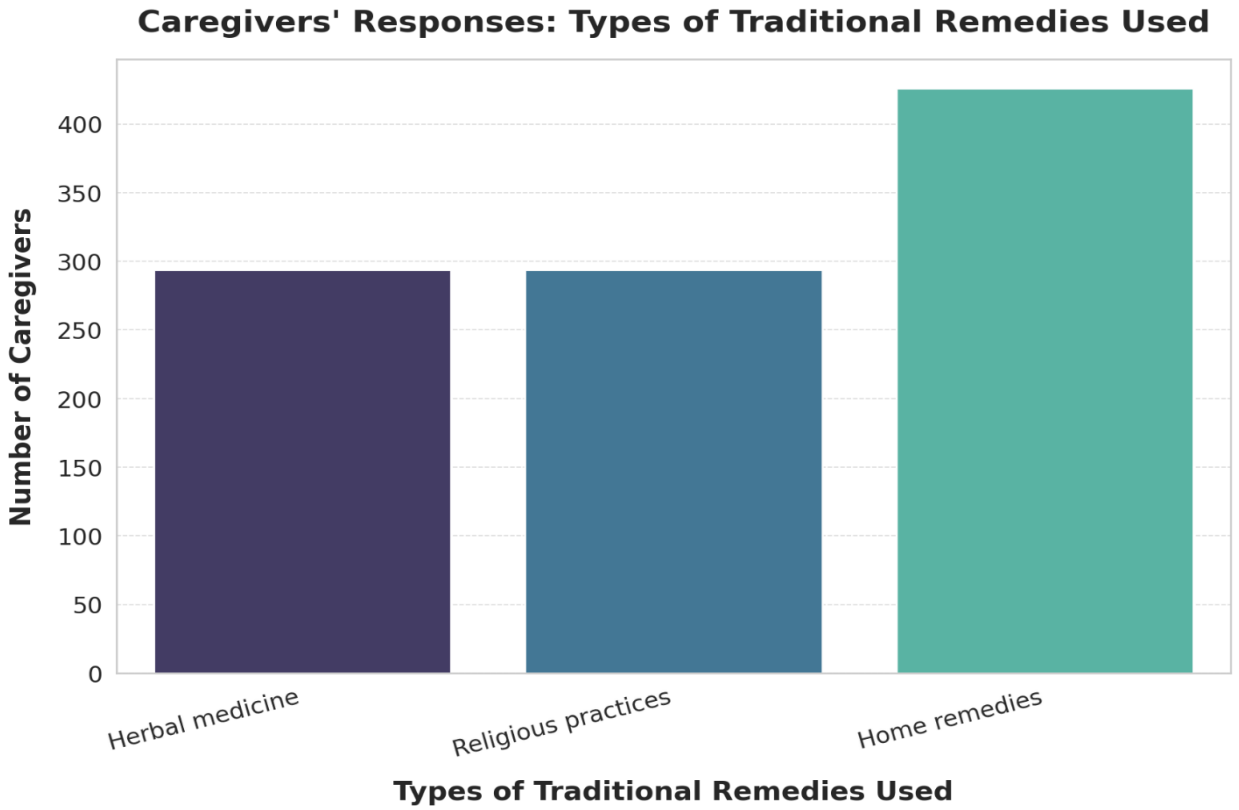

Table 30: Traditional Remedies Delaying Formal Healthcare (Caregivers' Survey)

Response	Percentage
Yes	68%
No	32%

Figure 30: Traditional Remedies Delaying Formal Healthcare (Caregivers' Survey)

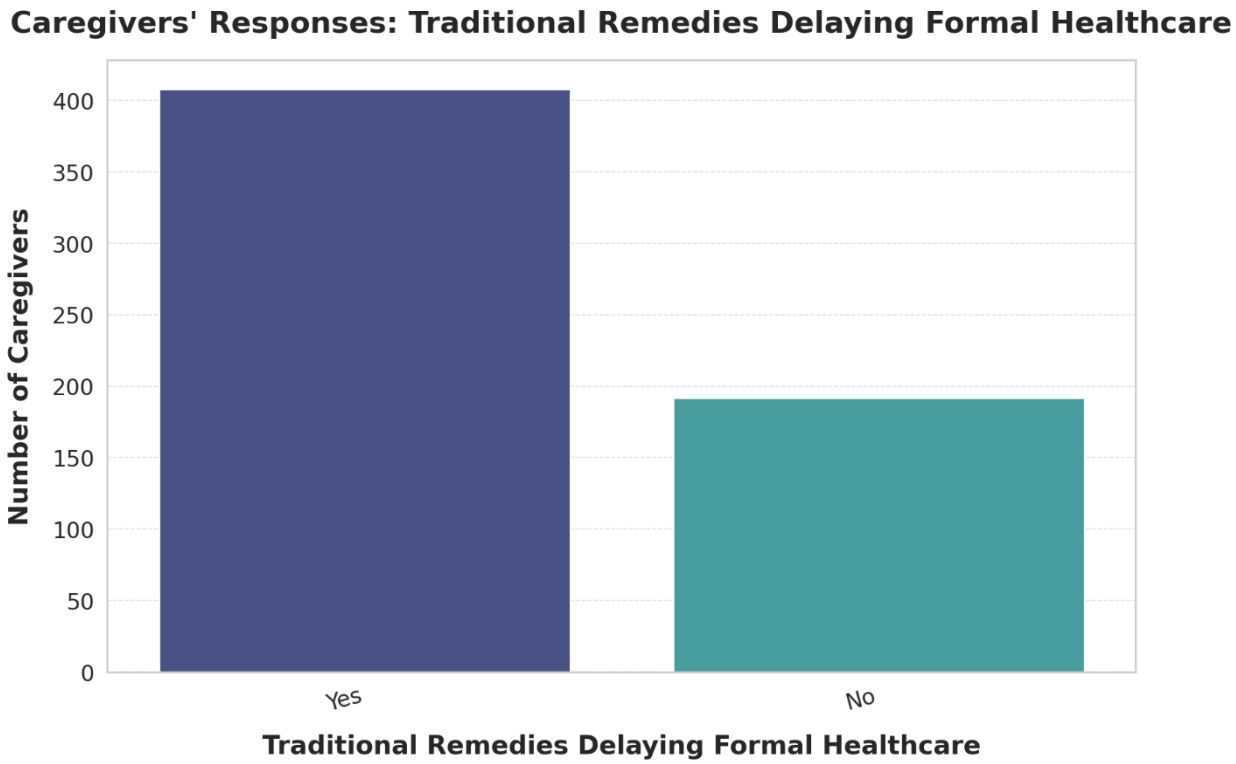

Table 31: Reasons Traditional Remedies Delay Care (Caregivers' Survey)

Reason	Percentage
Belief in their effectiveness	52%
Lack of trust in formal healthcare	47%
Financial constraints	52%
Cultural or familial pressure	30%

Figure 31: Reasons Traditional Remedies Delay Care (Caregivers' Survey)

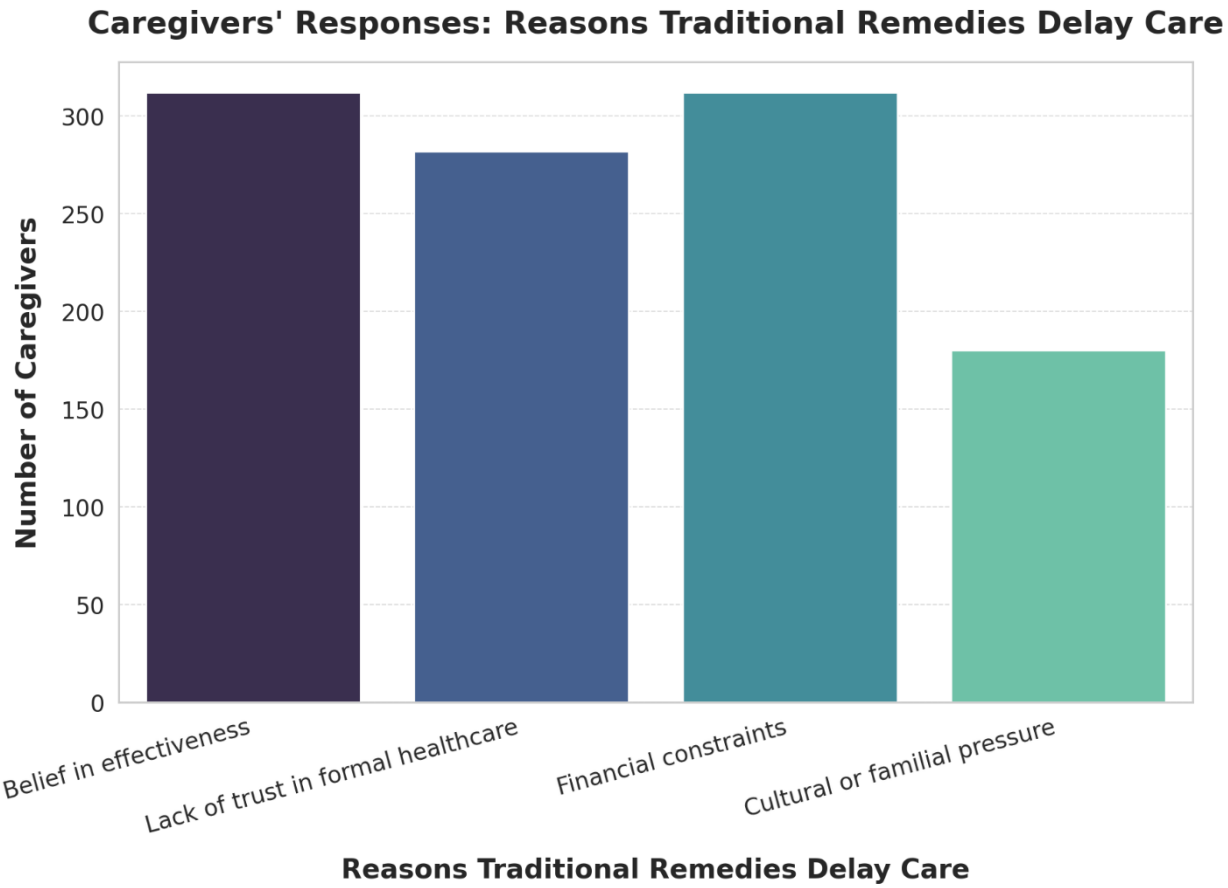

Table 32: Improvements for Emergency Care Accessibility (Caregivers' Survey)

Suggested Improvement	Percentage
More healthcare facilities	40%
Financial support/subsidies	58%
Improved transportation services	48%
Increased healthcare worker availability	33%
Awareness campaigns about emergency services	55%
Addressing cultural beliefs about healthcare	37%

Figure 32: Improvements for Emergency Care Accessibility (Caregivers' Survey)

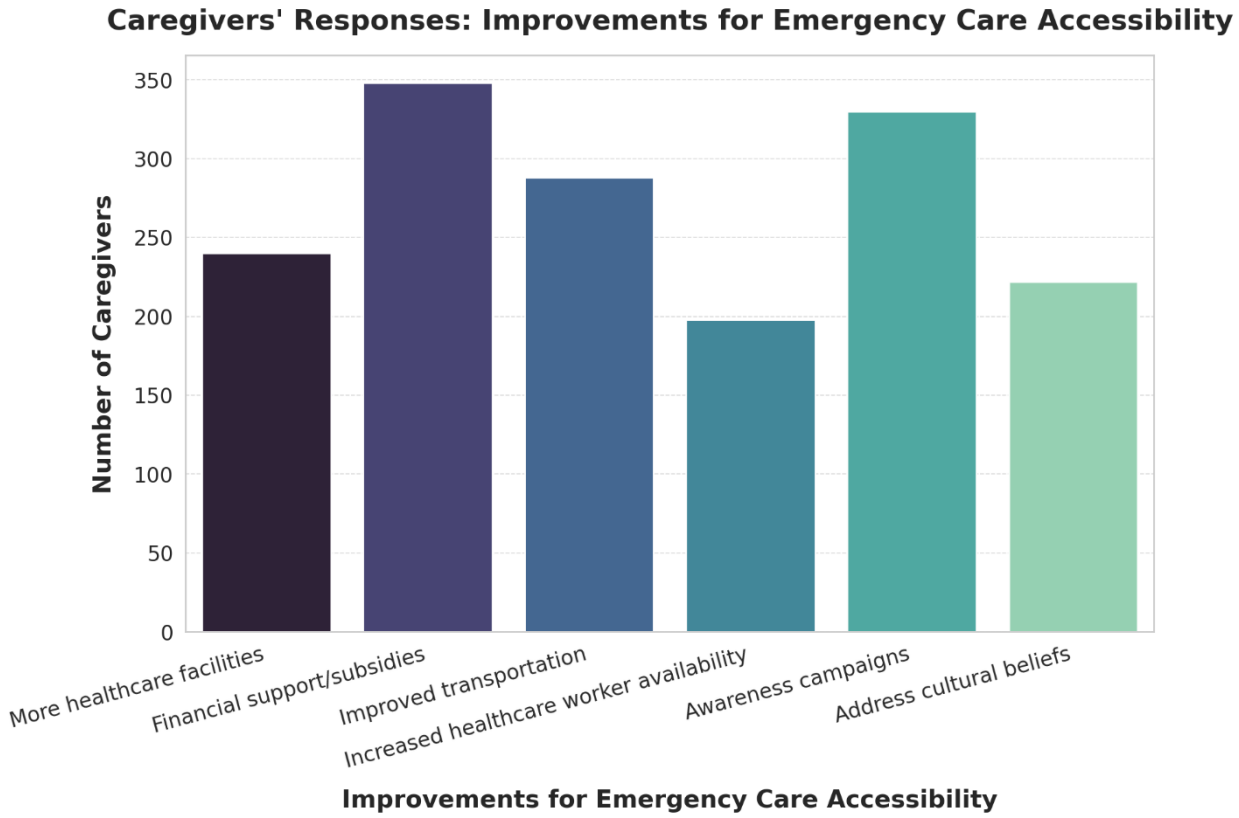

Table 33: How Healthcare Systems Can Address Traditional Remedies (Caregivers' Survey)

Strategy	Percentage
Educating communities on the benefits of formal healthcare	71%
Integrating traditional practices with modern medicine	50%
Providing affordable healthcare options	59%
Collaborating with local cultural leaders	25%

Figure 33: How Healthcare Systems Can Address Traditional Remedies (Caregivers' Survey)