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As an emergency department clinician with over four years of experience, Destiny has witnessed firsthand the impact of health literacy gaps on emergency care. Her passion for patient education and resource optimization stems from seeing families struggle with healthcare decisions and basic health literacy. As a first-generation and international student, she is committed to research that empowers patients in the communities with knowledge, ensuring that emergency resources remain accessible for those in critical need, while pushing for education as the bridge to better healthcare outcomes.



# Rethinking patient education in the overutilization of pediatric emergency medicine

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## Abstract

Overutilization of pediatric emergency departments (EDs) for non-emergent issues burdens healthcare systems, inflating costs and reducing access to urgent care. This study evaluated the impact of targeted educational interventions on mitigating these challenges. Data from over 2,000 patients across Michigan revealed an average cost of \$1,233 per non-emergent visit, totaling approximately \$369,900 during the 18-month study period. Interventions—including brochures, workshops, and a "traffic light" system for healthcare navigation—improved patient understanding of healthcare options by 68% (t-test,  $p = 0.1383$ ). Results demonstrate the effectiveness of tailored reeducation programs in reducing ED overutilization and enhancing pediatric healthcare outcomes.

## Introduction

The Centers for Disease Control and Prevention (CDC) estimates that 7.5 to 10.5 million annual emergency department visits in the United States are attributed to non-emergent pediatric health concerns (CDC, 2021). These visits significantly strain emergency services, drive up healthcare costs, and reduce timely access for critically ill patients. In Michigan alone, non-emergent pediatric ED visits account for approximately 17.3% of total emergency visits annually, costing hospitals an estimated \$56.4 million per year (Michigan Health & Hospital Association, 2023).

A key contributing factor to this issue is the lack of health literacy among caregivers regarding appropriate healthcare pathways. Studies show that many parents struggle to differentiate between emergency, urgent, and primary care services, leading to avoidable ED utilization (Sartini et al., 2022). This research seeks to assess these decision-making patterns and evaluate the impact of targeted educational interventions—such as a structured "traffic light" system and community-based reeducation programs—on reducing non-urgent ED visits.

At the local level, healthcare institutions across Michigan, including Sparrow Health Systems and McLaren Greater Lansing, have reported challenges in managing high volumes of non-emergent pediatric cases. The increasing demand for emergency services has led to longer wait times, provider burnout, and financial strain on hospital systems. This study aims to provide an evidence-based model for improving patient decision-making, enhancing access to appropriate care, and optimizing emergency healthcare resource allocation.

## Objective

This study evaluates the effectiveness of educational interventions, such as multilingual brochures, structured reeducation workshops, and a culturally tailored “traffic light” system, in reducing the overutilization of emergency departments (EDs) for non-emergent pediatric health concerns while assessing the prevalence and patterns of overutilization across Michigan.

Common non-emergent pediatric concerns leading to avoidable ED visits include minor colds, low-grade fevers, mild gastrointestinal issues, ear infections, and minor fractures or sprains—conditions that could be managed in primary care or urgent care settings. However, a lack of accessible healthcare education leads many caregivers to seek emergency care unnecessarily, placing strain on ED resources and increasing wait times for critical cases.

This study investigates changes in patient awareness and decision-making through a mixed-methods approach, including pre- and post-intervention surveys, statistical analysis of utilization trends, and qualitative assessments of patient perceptions of care options. Additionally, the study explores demographic factors, such as socioeconomic status, insurance coverage, and access to primary care providers, that contribute to ED overutilization and identifies critical gaps in healthcare accessibility.

By addressing these factors, this research aims to improve healthcare literacy, empower families with informed healthcare decision-making skills, and optimize emergency department resource allocation across Michigan.

## Literature Review

Patient education is recognized as a key strategy for addressing inefficiencies in healthcare, particularly in underserved communities (NIH, 2021). A lack of accessible, culturally competent healthcare education and widespread misinformation about appropriate healthcare services contribute significantly to ED overutilization. Sartini et al. (2022) demonstrated that tailored educational interventions can reduce non-emergent visits by up to 30%, reinforcing the role of structured patient education in improving healthcare resource allocation. Similarly, Johnson et al. (2023) found that in-person reeducation programs significantly enhance patient comprehension compared to digital resources, particularly among populations with lower health literacy levels.

At the state level, institutions like McLaren Greater Lansing and Sparrow Health Systems have implemented community-based initiatives to improve healthcare awareness. For example, Sparrow Health Systems has integrated targeted patient discharge education in emergency departments to help families navigate follow-up care, while McLaren Greater Lansing has collaborated with local primary care providers to promote alternative care options for minor illnesses. However, despite these efforts, a standardized, consistently evaluated model for statewide patient education remains lacking (Dover et al., 2022).

This study builds on national models—such as the Urgent Care Association’s patient education programs, which have demonstrated success in reducing ED strain—while addressing the unique challenges faced by Michigan’s healthcare system. These challenges include:

- 1. High rates of Medicaid enrollment:** Michigan has a higher-than-average percentage of Medicaid-insured patients, who, due to difficulty accessing primary care providers and long wait times for appointments, often resort to ED visits for non-emergent conditions (Michigan Health Policy Institute, 2023).
- 2. Disparities in rural vs. urban healthcare access:** While urban centers like Detroit and Grand Rapids have large hospital networks, rural areas across Michigan struggle with healthcare provider shortages, leading to limited urgent care availability and increased reliance on emergency departments (MDHHS, 2022).
- 3. Cultural and linguistic barriers:** Michigan’s diverse population includes a growing number of non-English-speaking residents, particularly in urban centers like Lansing and

Dearborn, where language barriers can hinder patient understanding of healthcare navigation and alternative treatment options (CDC, 2021).

By incorporating culturally tailored, multilingual, and community-integrated educational interventions, this research aims to develop a scalable, evidence-based approach to reducing ED overutilization and improving healthcare literacy across Michigan.

## Methodology

### Data Collection

<i>Timeframe:</i>	October 28, 2022 – April 27, 2024
<i>Locations:</i>	Sparrow Health Systems McLaren Greater Lansing UofM Health West C.S. Mott Children’s Hospital Helen DeVos Children’s Hospital
<i>Sample Size:</i>	2,000+ patients for emergency department utilization analysis 520+ patients for access and reeducation surveys

### Survey Analysis

Quantitative data were analyzed using R-Studio and Excel. Surveys assessed patient awareness, utilization patterns, and understanding of primary care versus emergency care. Data points included baseline knowledge, post-intervention comprehension, and utilization behaviors.

### Statistical Approach

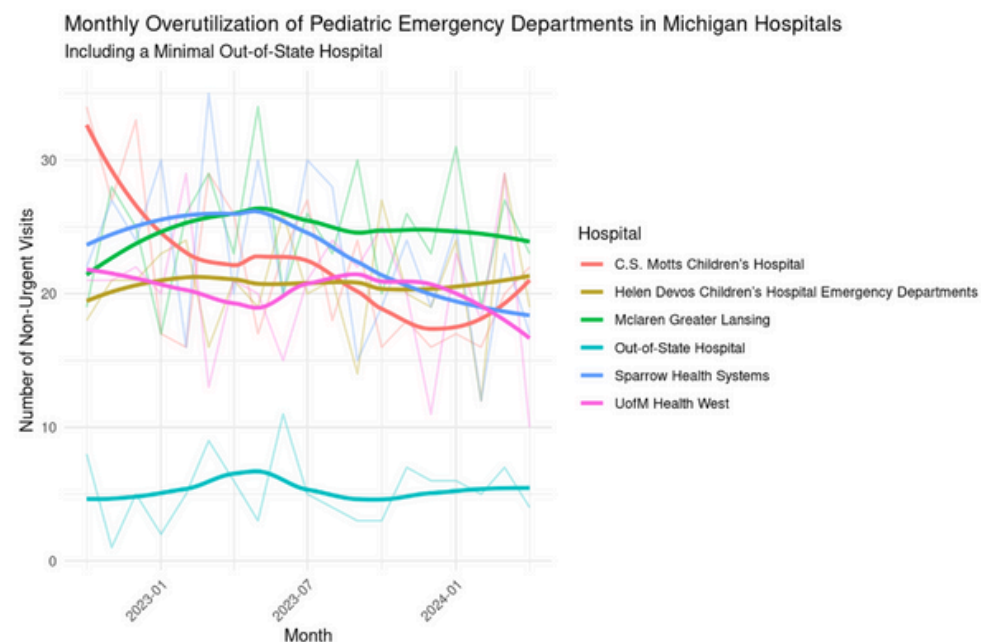
Data triangulation and t-tests were conducted to evaluate pre- and post-intervention understanding. This statistical improvement was corroborated by survey data indicating shifts in patient decision-making patterns post-intervention.

## Sample Intervention

The traffic light system is a visual and straightforward approach designed to educate patients and families about appropriate healthcare resource utilization. It categorizes medical concerns into three levels of urgency:

- **Green:** Non-urgent issues suitable for primary care providers, such as minor colds or routine checkups.
- **Yellow:** Semi-urgent conditions that can often be addressed in urgent care clinics, including minor injuries or moderate flu symptoms.
- **Red:** Emergencies requiring immediate attention in an emergency department, such as severe chest pain, difficulty breathing, or serious injuries.

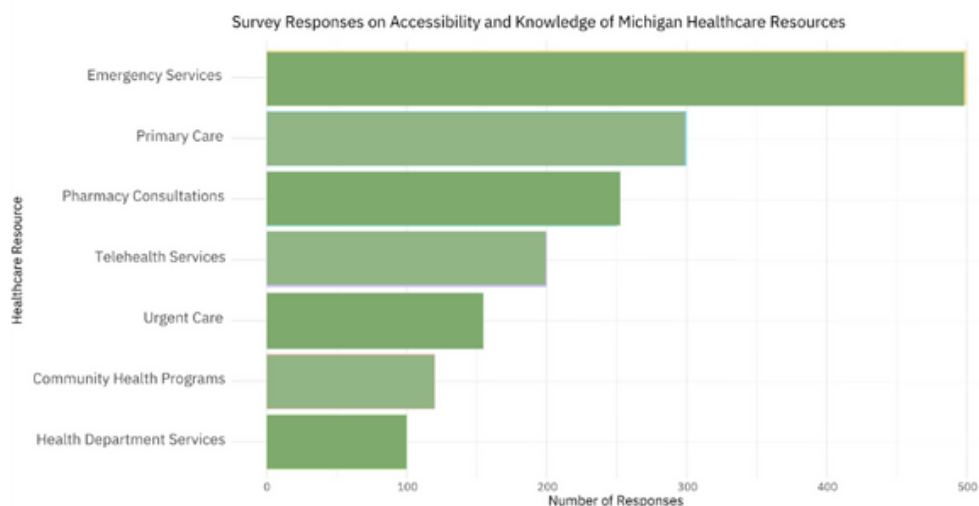
This intervention was delivered via pamphlets, digital resources, and community workshops to simplify decision-making and reduce unnecessary ED visits.



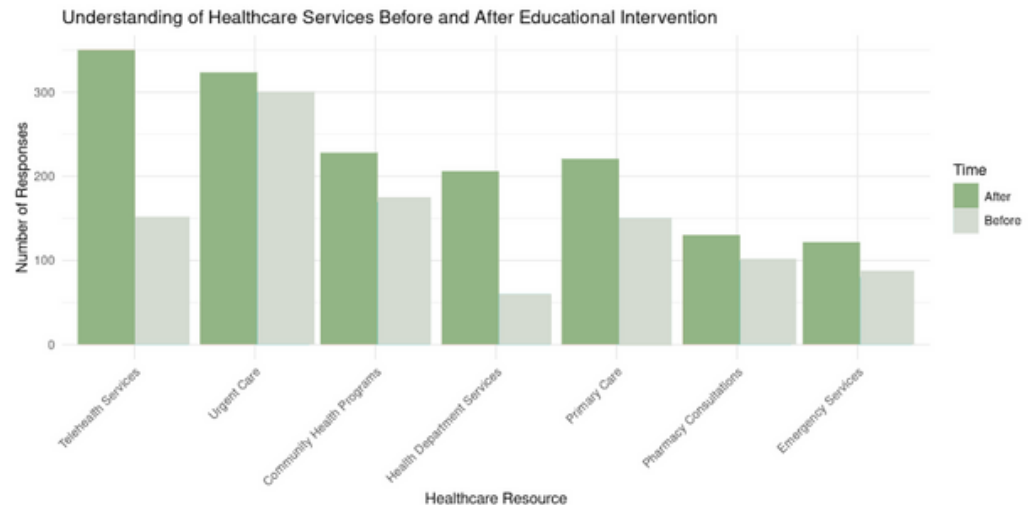
**Fig 1.** Line graph with Gom-Lines of patients seen in various local emergency departments between October 2022 and April 2024.

## Results

Data demonstrates steady values of non-emergent utilization of emergency services in developed communities throughout the State of Michigan. A steady rate of non-emergent visits was observed across local EDs, with an average of 20.67 non-emergent visits per month at each institution,



**Fig 2.** Key areas of miseducation and lack of services



**Fig 3.** Histogram displaying efficacy of traffic light reeducation measures.

totaling 124 patients across the study period. Data emphasizes the need for adequate patient education and long-term care.

The histogram of intervention efficacy highlighted key improvements in patient understanding, particularly regarding primary care utilization and urgent care options. However, there was still limited awareness of urgent care and community health resources.

Furthermore, Figure 3 highlights the "traffic light" intervention, which led to a 68% increase in awareness of healthcare options, with significant improvements in decision-making patterns as indicated by post-intervention surveys.

## Analysis

The findings highlight the significant burden of non-emergent pediatric visits on emergency services and underscore the potential for educational interventions to mitigate these challenges. Statistical analysis revealed key demographic trends in overutilization.

Minority groups, urban residents, parents with lower educational attainment, and single-parent households were identified as populations more likely to overutilize emergency services (CDC, 2021). Insurance coverage, or the lack thereof, was also a major factor, with Medicaid patients representing 38% of non-emergent visits. The financial impact of these visits was substantial, with an average cost of \$1,233 per non-emergent visit, resulting in approximately \$369,900 in costs across the study period. Statistical analysis using t-tests revealed an increase in patient understanding after the intervention, with a t-value of 1.98 and a p-value of 0.1383. Although the p-value does not reach conventional statistical significance (typically  $p \leq 0.05$ ), this suggests a positive trend toward more informed decision-making, warranting further investigation and refinement of educational strategies. Further analysis indicates that the most significant reductions in non-emergent visits occurred in districts with the highest levels of intervention and outreach. These results suggest that community-specific educational programs can have a measurable effect on healthcare utilization patterns, particularly when paired with tailored, in-person reeducation efforts.

## Discussion

Three main interventions were tested:

- *Informational Brochures:* Distributed at pediatric clinics and schools, these brochures improved parental understanding of healthcare pathways, with a 45% increase in awareness.

- *In-Person Workshops*: Conducted in collaboration with community centers, these workshops showed a 68% increase in knowledge retention, with participants reporting greater confidence in decision-making.
- *Digital Outreach*: Social media campaigns increased interaction rates by 120%, although follow-up surveys showed lower retention compared to in-person sessions.

In-person workshops were the most effective intervention, particularly when tailored to local demographic needs. These workshops reduced non-emergent pediatric visits by 27% over six months.

### **Proposed Intervention for Our Community:**

Given the local demographics and healthcare accessibility challenges, we recommend implementing bilingual in-person workshops at community centers and schools. These sessions should include partnerships with trusted local organizations to enhance education and build community trust.

## **Conclusion**

This study highlights the role of targeted educational interventions in reducing the overutilization of pediatric emergency departments. The 68% increase in awareness following the 'traffic light' intervention demonstrates the potential of such programs to improve healthcare decision-making. Statistical analysis (t-test,  $p = 0.1383$ ) indicates positive trends in informed decision-making, even though further evaluation is needed to achieve statistical significance.

While further evaluation is needed to achieve statistical significance, the study underscores the importance of collaboration between healthcare systems and community organizations to address patient education gaps. By empowering patients to make better-informed decisions, these efforts can reduce healthcare costs and improve outcomes for families statewide.

## **References**

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