

From Distance to Access: Characterizing Prenatal Care Barriers and Developing a QR Code-Based Maternal Resource Tool in Rural South Georgia

Ashley Persaud, OMS-II, Matthew Shelnett, DO, FACOOG
Philadelphia College of Osteopathic Medicine, Moultrie, Georgia



INTRODUCTION

More than 44% of counties in Georgia are designated maternity care deserts, and over 60% of rural Georgia residents live more than 30 minutes from a birthing hospital.¹ In Colquitt County, 23.6% of residents under age 65 are uninsured, and 25.6% live in poverty.⁹ Provider shortages, transportation limitations, insurance gaps, poverty, and language barriers are persistent barriers to timely prenatal care access in rural communities.^{2, 8} In Colquitt County, prenatal care resources are concentrated in Moultrie, potentially representing access challenges for obstetric patients in surrounding rural communities. While healthcare and social resources exist throughout the community, information about these services may be fragmented across multiple organizations and difficult for patients to navigate. A centralized, Quick Response (QR) code–accessible platform may provide a low-cost mechanism for connecting pregnant patients with healthcare and social support resources.

Aim: To characterize geographic and resource-access barriers to prenatal care in Colquitt County and develop a centralized, QR code–accessible maternal health resource platform connecting pregnant patients in Moultrie and surrounding rural communities with healthcare, insurance, education, housing, food, and transportation resources.

44%+	60%+	23.6%	25.6%
Georgia counties designated maternity care deserts ¹	Rural GA residents >30 min from a birthing hospital ¹	Colquitt County residents <65 uninsured ⁹	Colquitt County residents living in poverty ⁹

METHODOLOGY

Targeted Literature Review: PubMed and Google Scholar were searched for peer-reviewed literature published from 2022–2026 using combinations of terms related to QR codes, health information, pregnancy, public health, and rural populations. Six articles met inclusion criteria based on relevance to QR code–based health information delivery, maternal health disparities, prenatal care access, and rural/underserved populations. Findings were synthesized thematically across QR code utilization, barriers to care, and healthcare infrastructure.

Community Assessment: A descriptive community assessment used publicly available demographic, socioeconomic, and healthcare access data. Prenatal care sites were identified through local healthcare directories and community healthcare resources and were defined as facilities providing routine prenatal care to pregnant patients. Google Maps was used to calculate driving distance from each of eight ZIP-code locations (31788, 31776, 31768, 31753, 31722, 31771, 31747, 31744) to each site; the shortest distance was recorded for each ZIP code. Mean distances were descriptively compared between Moultrie and non-Moultrie ZIP codes. Measurements were performed in June 2026.

Resource Tool Development: Findings from the literature review and community assessment were used to identify key barriers and resource needs and inform development of a centralized, QR code–accessible maternal health resource platform.

DISCUSSION AND CONCLUSION

Addressing Rural Disparities: The community assessment demonstrates a substantial geographic travel burden for patients residing outside Moultrie. Greater travel burden may contribute to delayed or more difficult access to prenatal care and warrants further study. Combined with regional baseline metrics such as a 23.6% uninsured rate and 25.6% poverty rate, this physical distance may worsen care entry delays. Longer travel requirements may also create financial and logistical burdens, including transportation costs, time away from work, and challenges coordinating childcare or other responsibilities.

Efficacy of QR-Driven Informational Hubs: Consolidating existing resources into a single digital directory creates an “offline-to-online” pathway through strategically placed physical QR codes. Prior studies support the potential utility of QR codes for connecting individuals with digital health information and public health resources.^{3, 4, 7}

Digital Health Access: Hu et al. demonstrated the use of QR codes to facilitate access to digital health resources in a primary care waiting-room setting.⁷

Prenatal Education: Farland’s quality improvement project evaluated virtual and mobile prenatal education and reported increased enrollment associated with targeted educational strategies.⁵

Public Health Navigation: Ramsey-Coleman et al. examined QR code strategies for promoting public health programs, supporting their potential as an accessible resource-navigation mechanism.⁴

Women’s Health Information: Fischer-Suárez et al. evaluated QR codes as an eHealth strategy for promoting health among women, supporting their potential for mobile health information delivery.³

Limitations & Future Direction: While the QR-based tool offers a scalable, low-cost approach to resource navigation, implementation may be limited by smartphone access, cellular/Wi-Fi availability, language, health literacy, and accessibility needs. Future phases will include stakeholder-informed usability review and community deployment in food pantries, health departments, and public spaces. Tool utilization will be evaluated through QR scans, click-through rates, resource categories accessed, usability, and whether users successfully locate needed resources. Resources will be reviewed and updated quarterly to maintain accuracy and community relevance.

RESULTS

Geographic & Community Assessment

Geographic Concentration: Identified prenatal care resources were concentrated within Moultrie, with no identified prenatal care sites located in the surrounding rural communities assessed.

- Travel Burden:** Non-Moultrie ZIP codes had approximately **5.5x the average driving distance** to the nearest prenatal care site compared with Moultrie ZIP codes (**12.7 vs 2.3 miles**).
- Fragmented Resource Landscape:** Existing healthcare and social support resources were distributed across multiple organizations, requiring users to navigate separate sources to identify available services.

Table 1. Shortest Driving Distance to an Identified Prenatal Care Site by Colquitt County ZIP Code

City (ZIP code)	Distance to nearest site (mi)	
Moultrie (31788)	1.4 mi	
Moultrie (31776)	1.6 mi	
Moultrie (31768)	3.9 mi	
Funston (31753)	6.8 mi	
Berlin (31722)	13.3 mi	
Norman Park (31771)	13.1 mi	
Ellenton (31747)	15.7 mi	
Doerun (31744)	14.6 mi	

	Moultrie ZIP Codes	Non-Moultrie ZIP Codes
Average distance to nearest site (mi)	2.3 mi	12.7 mi

Resource Tool Development & Pilot Interface

A centralized maternal health resource platform was developed across six domains: Healthcare Providers, Insurance Support, Health Education, Housing Support, Food Pantries, and Transportation Options. The platform uses direct-to-source links to connect users with existing community services rather than duplicating information.

Example User Pathway:

Scan → Choose a need → Select a resource → Connect directly

