

Effectiveness of Mobile Health Units as an Adjunct to Primary Care Preventive Services in Rural America: A Systematic Review

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ABSTRACT

Traditional clinic-based models often fall short of meeting the needs of rural populations, leading to lower screening rates and delayed diagnoses. Mobile health units, customized vehicles equipped to deliver healthcare services, have emerged as a promising strategy to bridge this gap by bringing care directly to communities. This rapid literature review explores how mobile health units can augment primary care delivery and improve health outcomes in remote regions by examining their impact on screening rates, early disease detection, utilization of preventive services, cost-effectiveness, and ability to address rural-specific barriers. Findings indicate that mobile health units are a cost-effective and culturally responsive model associated with improved screening rates, increased early disease detection, and greater utilization of preventive services. Their success relies on policy support for equitable reimbursement, expanded scope of practice for advanced practice nurses, and continued investment in mobile infrastructure.

KEYWORDS

Mobile health unit, Mobile health clinic, Rural health, Underserved communities, Primary care, Preventative services, Health screenings, Healthcare access, Health disparities, Medically underserved areas.

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Introduction

Americans living in remote areas often suffer from a deficit in healthcare resources, making the achievement and maintenance

of health and wellness more difficult for this population [1]. Rural clinics can help alleviate care shortages; however, factors such as the lack of existing infrastructure and inadequate funding necessitate the need for more creative solutions to address care gaps [2]. The purpose of this review is to examine how the use of mobile health units can augment primary care services to improve patient outcomes in rural, underserved areas in the United States. Malone [2] defines a mobile health unit or mobile health clinic as a mobile unit that is designed to deliver basic healthcare services to rural communities.

Problem Statement

In underserved rural adults in the United States, how do mobile health units offering screenings and other preventative services compare to clinic-based outreach or no intervention in improving

screening rates, early disease detection, and use of preventive services?

Statistically, Americans living in rural areas are forced to travel significantly further than urban Americans to reach a healthcare facility, including primary care clinics [3]. This reality creates a significant barrier to receiving preventative healthcare services such as screenings and vaccines, and it is a major factor contributing to the health disparities affecting rural Americans [2]. Screening can include lab testing and other data collection methods for communicable diseases such as sexually transmitted diseases (STIs) or chronic diseases like diabetes mellitus (DM), hypertension, and hyperlipidemia [4]. It can also include imaging used to detect life-threatening conditions like breast cancer in the form of ultrasounds and mammograms [5].

While the need for increased density of healthcare clinics providing primary care services is well known, the expansion of healthcare organizations and private clinics has yet to match the ever-growing demand in remote areas within the United States (U.S.). The cost of opening a primary care practice, which often includes the need to create an infrastructure where none exists, can be a steep burden, and mobile health clinics demonstrate significantly lower costs per patient visit compared to fixed-site healthcare services. In a comparative analysis, the highest annual mean cost reported by mobile clinics was \$243 per patient, which is substantially lower than the mean annual costs per patient for private and public federally qualified health centers which ranged from \$1,090 to \$1,159 [6,7].



Nursing Theory

Long and Weinert [8] laid the groundwork for Rural Nursing Theory by identifying the unique environmental, cultural, and healthcare characteristics that shape rural nursing practice. They emphasized that the healthcare needs of rural populations often cannot be fully addressed by models developed for urban or suburban settings. Key themes of this theory include self-reliance, limited anonymity, role diffusion, and strong informal social networks, alongside significant challenges such as geographic isolation and restricted access to health services. These factors inform how care must be delivered in rural environments, where independence and community values are central to the patient's experience.

This concept highlights the need for innovative care delivery models that effectively address the distinct challenges of rural areas. Mobile health units (MHUs), for example, align with the theory's emphasis on adaptability, access, and community-centered care. Both Rural Nursing Theory and MHUs aim to address the

structural and cultural factors that impact healthcare delivery in underserved rural areas.



The SATL (Symptom-Action-Timeline) process reflects how rural individuals assess symptoms, choose a course of action such as self-care or formal care, and determine when to act, often delaying care until daily function is affected.

Lee and Winters' findings reinforced the importance of cultural competence, trust, and local context in rural care delivery. Their work supports the assertion of Rural Nursing Theory that conventional care models may be ill-suited for rural populations and must be adapted to meet their unique needs. Together, these studies provide a theoretical foundation for the use of MHUs as effective, population-responsive solutions that promote equity in access and outcomes.

Literature Review

Unlike fixed clinics, mobile health units quite literally meet the patients where they are to provide services that they would otherwise have difficulty or hesitancy accessing [2]. These units are staffed by healthcare workers such as nurses, advanced practice providers, physicians, and community health workers [5]. However, the nationwide primary care provider shortage contributes to the need for mobile health units while simultaneously adding to the difficulty of successful implementation, as there can be no accessible mobile health units without clinicians who are available and willing to staff them. Despite these barriers, exploring solutions to implement mobile health units remains essential, as they offer a lifeline to underserved rural populations and a pathway to more equitable healthcare access regardless of demographic or socioeconomic status [2].

Lack of access to care is deeply consequential for the rural U.S. populous [5]. Failure to identify disease processes in the early stages of illness may result in higher rates of disability and mortality and cause a financial strain on patients, as well as the U.S. economy. As nurses and nurse practitioners increasingly serve as essential providers in addressing rural healthcare disparities, this research offers critical insights to support their role, as well as the effectiveness of the evolving architecture of mobile healthcare delivery.

Mobile health units (MHUs) have emerged as a promising strategy to reduce health disparities in underserved and rural communities. This literature review synthesizes recent evidence on the impact of MHUs across five thematic areas: screening uptake, early disease detection, use of preventive services, cost-effectiveness, and

responsiveness to rural-specific characteristics. The goal is to assess whether MHUs represent a sustainable and culturally appropriate solution for improving healthcare access in rural America.

Improved Screening Rates

Mobile health units (MHUs) have been shown to significantly increase screening rates by removing barriers such as transportation, provider access, and patient awareness in rural communities. Houser and Wilson [9] demonstrated a 448% increase in breast cancer screening (BCS) rates within just three months of implementing a nurse practitioner-led mobile mammography unit (MMU) in a rural setting. This intervention combined electronic medical record (EMR)-based patient reminder campaigns, real-time provider scheduling, and community education to actively engage patients who were previously unaware of their eligibility for screenings. Similarly, Dineen et al. [5] reported the delivery of 5,500 breast cancer screenings over a two-year span in a medically underserved, rural region of eastern Long Island.

77% of MMU patients were racial or ethnic minorities, and 55% were uninsured, much higher than the 15% minorities and 10% uninsured seen in hospital-based mammography services in the same area. This demonstrates MHUs' effectiveness in reaching underserved groups. Leibowitz et al. [10] also showed mobile clinics administered 146 vaccines to 50 children during six events in Boston's underserved neighborhoods. While urban, this model offers clear implications for improving rural preventive care access.

Early Disease Detection

Early detection is a critical benefit of MHUs, particularly in rural regions where delayed diagnoses often result from geographic and economic barriers. In the MMU project by Dineen et al. [5], 30 cases of breast cancer were diagnosed that might not have been identified without the mobile outreach effort, underscoring the potentially life-saving nature of early detection services. Townsend et al. [4] piloted a nurse-led MHU in three rural counties in Alabama's Black Belt region to address sexually transmitted infection (STI) screening gaps. Over two years, six mobile clinics evaluated 115 patients, identifying two cases of HIV and a 4–13% positivity rate across sites for other STIs. Remarkably, 100% of individuals who tested positive returned for follow-up and treatment. The study also used Binx IO point-of-care testing machines, which enabled 2–8 tests per hour, streamlining diagnostic efficiency. These examples illustrate that MHUs can significantly enhance the detection and timely treatment of a variety of conditions that may otherwise go unnoticed in rural settings.

Utilization of Preventative Services

MHUs are particularly effective in increasing the use of comprehensive preventive services, including vaccinations, chronic disease screenings, and patient education. Malone et al. [2], in their analysis of 811 mobile clinics listed in the Mobile Health Map database during the 2007–2017-time range, found that 47% of all patient visits were preventive, covering services such as cancer screenings, diabetes and maternal health care, and mental health assessments. An additional 28% of visits were for dental care. The median number of patient visits per clinic was 3,491, and mobile clinics collectively served an estimated 5.2 to 7 million patients annually. In the pediatric context, Leibowitz et al. [10] highlighted how mobile vaccination units improved immunization rates during

the early months of the COVID-19 pandemic. Their mobile model, staffed by multidisciplinary teams and equipped with vaccine storage and electronic health record access, was strategically deployed in neighborhoods with low immunization coverage and high social vulnerability. This reduced caregiver burdens related to transportation and childcare.

Houser and Wilson [9] showed that MMUs can integrate bone density testing with mammography efficiently, streamlining preventive services without interrupting clinical workflows.

Cost Effectiveness and Sustainability

Several studies confirm that MHUs offer a cost-effective alternative to traditional healthcare delivery models, particularly in rural and underserved regions. Attipoe-Dorcoo et al. [7] conducted a cost analysis of 96 mobile clinics across four southern U.S. states (Texas, North Carolina, Georgia, and Florida) and found annual operating costs ranged from \$300,000 to \$2.5 million depending on service type, with cost per visit as low as \$65, substantially less than visits in fixed-site Medicare clinics. Dental services were the most expensive, while mammography and primary/preventive care services were among the least costly.

In rural Oregon, Higgins et al. [1] reported start-up costs for one MHU at \$275,625, with an annual operating cost of \$308,470, approximately 75% of which went toward 12 staff salaries. Despite these figures, the clinic achieved 1,981 total encounters with 812 unique patients in one year, delivering care ranging from vaccinations to COVID-19 testing. Dineen et al. [5] added further support for cost-effectiveness by documenting that their MMU helped prevent 1,167 emergency department visits, suggesting substantial savings in acute care costs.



Addressing Rural Barriers and Cultural Needs

MHUs are uniquely positioned to address both logistical and cultural barriers prevalent in rural healthcare. Golembiewski et al. [11], through a thematic synthesis of 62 qualitative studies involving 1,354 participants, found that rural patients frequently cited transportation difficulties, long travel times, provider shortages, and financial strain as significant barriers to care.

Furthermore, cultural values such as privacy, self-reliance, and a tendency to delay care unless critically necessary were shown to shape rural health-seeking behaviors. MHUs, by design, can directly confront these barriers by delivering care in familiar, trusted community settings.

The Wellness Wheel model, described by Pandey et al. [12], offers a culturally responsive example of this approach. Implemented in First Nation communities in rural Saskatchewan, Canada, the model used a “hub-and-spoke” system where teams of urban-based clinicians traveled monthly to rural sites, building trust through consistent presence, community leadership engagement, and culturally informed care. Though outside the U.S., this intervention provides valuable insights for rural American populations. Similarly, Houser and Wilson [9] emphasized that integrating stakeholder input from town chambers and local businesses into their rural MMU design helped drive trust and awareness. Their inclusion of walk-in appointments and education-based scheduling demonstrated responsiveness to rural populations’ limited flexibility and reinforced the importance of locally tailored interventions. Rhoads et al. [3] further addressed access by integrating telehealth capabilities into MHUs serving the Mississippi Delta. The mobile unit could support up to three concurrent telehealth sessions, providing virtual specialty care and facilitating workforce development by training 85 providers and students in telehealth. Of those trained, 90% reported that the experience met satisfactory standards.

Methodology

This literature review evaluated the effectiveness and feasibility of mobile health units as supplemental or alternative care models in rural and underserved populations. The goal is to inform healthcare providers and rural communities about their potential to improve access and reduce gaps in care where traditional healthcare infrastructure is limited.

Search Strategy

The search for articles was conducted through the Medline, Google Scholar, and PubMed databases. Keywords for the search included mobile health unit, mobile health clinic, rural health, underserved communities, primary care, preventative services, health screenings, healthcare access, health disparities, and medically underserved areas. Only North American or Canadian Journals were considered between the years 2020 to 2025 to improve relevance and reproducibility.

Eligibility Criteria

A focus was placed on studies that examined rural or underserved populations and that utilized mobile health units with or without telehealth involvement. The services offered by these mobile health units were narrowed down to focus on preventive and screening services. Patient encounters and services utilized had to be one of the measurable outcomes. Articles that were not in English or that did not have access to full text or that were part of incomplete or ongoing studies were excluded, as well as articles that did not include any of the keywords listed below or were not found on peer-reviewed databases.

Data Extraction and Synthesis

The process of article selection is demonstrated in the PRISMA diagram. The process of article selection is outlined in the PRISMA 2020 flow diagram. The PRISMA 2020 diagram illustrates the process for selecting articles. A total of 512 records were identified across three databases: 145 from CINAHL, 197 from PubMed, and 170 from Google Scholar. After removing 67 duplicates, 445 records

remained for title and abstract screening, resulting in the exclusion of 373. Seventy-two full-text articles were assessed for eligibility. Of these, 54 were excluded for reasons such as irrelevance to rural populations, lack of focus on mobile health units or preventive services, being outside the publication date range, not being published in English, emphasis on emergency rather than primary care, or no access to full text. Eighteen studies met all criteria and were included in the final review.

Assessment of Data Quality, Limitations, and Bias

Articles included in this rapid review were assessed using the American Association of Critical-Care Nurses [13] criteria for levels of evidence. Of the 19 articles reviewed, the majority (15) were categorized as Level C, representing descriptive, observational, qualitative, or pilot studies. While these studies did not include tightly controlled experimental designs, they provided valuable insights into real-world implementation, accessibility, and cost considerations in mobile health delivery. The relatively small number of high-quality, peer-reviewed studies meeting the search criteria on MHUs in rural American settings also limited the generalizability of our findings.

Two studies were rated Level E (expert opinion/practice-based knowledge), and one was Level M (manufacturer or technology recommendations). No Level A or B studies were found; however existing literature still contributes valuable insights into mobile health units in rural and underserved areas.

Selection bias was a notable concern, as individuals who accessed care through MHUs may already exhibit greater engagement in health-seeking behaviors compared to those who have not been reached by these services. This could potentially skew results toward more favorable outcomes. Furthermore, heterogeneity in outcome reporting across studies limited the ability to make direct comparisons or conduct meta-analyses. Despite these methodological limitations, the body of evidence consistently supports the effectiveness of MHUs in improving access to care and health outcomes in rural and underserved populations.

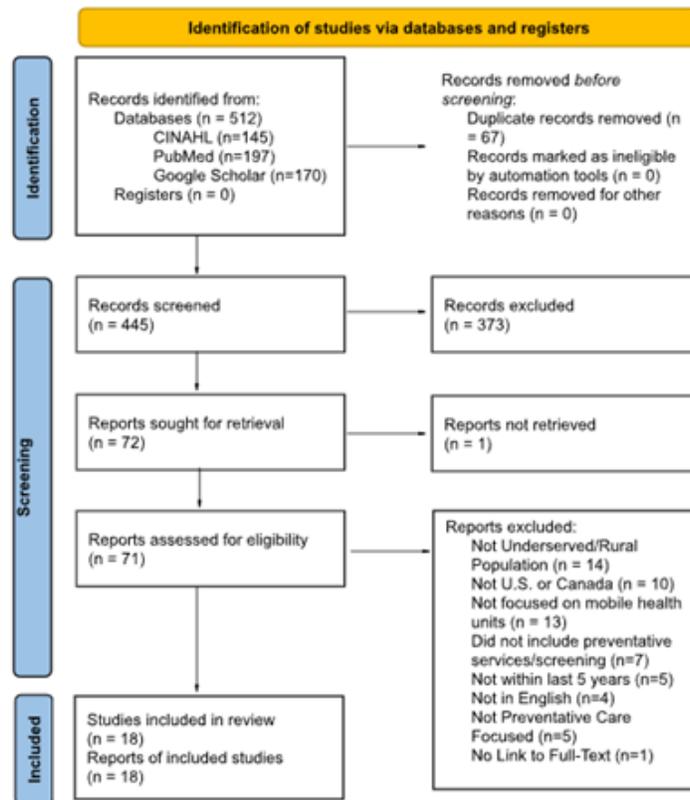
This review did not require IRB approval as it did not involve primary data collection.

Discussion

This rapid review identified mobile health units (MHUs) as a cost-effective and culturally responsive model to supplement rural primary care services. Across the eighteen studies reviewed, MHUs were associated with improved screening rates, increased early disease detection, greater utilization of preventive services, and measurable cost savings. These results affirm that MHUs are not only a feasible intervention for underserved rural communities but also offer strategic solutions aligned with the core principles of Rural Nursing Theory, particularly as it pertains to community trust, flexibility, and local accessibility.

Our findings are consistent with previous literature emphasizing the value of MHUs in delivering care to marginalized populations [2,7]. For example, studies like Houser and Wilson [9] and Dineen et al. [5] support earlier evidence showing that MHUs significantly increase mammography screening uptake, as well as

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only



other important health screenings, among high-risk and uninsured populations. This review further adds to the current evidence base by integrating post-pandemic data and highlighting the sustained benefits of MHUs beyond acute crisis response, which contributes to the understanding of their long-term feasibility and economic efficiency in rural settings.

Implications for Nursing Practice-Related Legislative Reform

Provider shortages are a longstanding and ongoing issue in the United States, with physician shortages contributing to the need for advanced practice providers to fill the existing, enduring gaps in care. Advanced practice nurses have been utilized as the primary or sole healthcare providers on MHUs across several of the models referenced in this review, placing advanced practice nurses and the nursing profession at the forefront of rural healthcare innovation. The role of advanced practice nurses in this evolving setting is, however, complicated by the variability that exists from state to state regarding scope of practice. States that heavily restrict the scope of nurse practitioners inhibit their ability to provide care on MHUs and impact service availability, staffing flexibility and cost. Enacting legislative reform to broaden nurse practitioners' practice authority and scope could enhance the long-term feasibility, scalability, and sustainability of MHUs.

Contributions to Nursing Education

In addition to legislative reform, the integration of MHUs into nursing education is a significant opportunity for workforce development. By involving nursing students and trainees in

mobile unit operations, educational programs can provide hands-on experience in culturally competent, community-based care, and innovative problem-solving. Exposure to the unique dynamics of rural and underserved populations not only enhances clinical skills but also fosters adaptability, empathy, and a deeper understanding of social determinants of health. Such immersive learning environments encourage interdisciplinary collaboration and prepare nurses to address the complex challenges inherent in rural healthcare delivery.



Furthermore, ongoing professional development within the MHU model equips nurses to serve as leaders and advocates for health equity. Encouraging research, mentorship, and reflective practice within mobile health settings can inspire future practitioners to pursue rural health roles and shape solutions tailored to the evolving needs of these communities. By embracing educational innovation and supporting the growth of advanced practice roles,

the nursing profession positions itself at the forefront of both practice and policy advancements in rural health.

Financial Considerations

In today's U.S. healthcare system, financial burden and reimbursement rates play a critical role in determining the perceptions and success of emerging care delivery models. Evaluating the cost difference between fixed clinics and MHUs was a key objective of this review. On average, MHUs save an estimated \$970 annually per patient compared to fixed-site federally qualified health centers (FQHCs), based on reported annual per-patient costs ranging from \$65 to \$243 for MHUs and \$1,090 to \$1,159 for FQHCs [7,6]. This substantial difference highlights the financial sustainability of MHUs, particularly in rural areas where infrastructure costs and lower patient volumes can make fixed facilities less pragmatic.

Despite this economic advantage, a major barrier to MHU expansion remains inconsistent reimbursement policies across states and federal programs. In many cases, MHUs are not reimbursed in the same way as traditional brick-and-mortar clinics or telehealth services, forcing current programs to rely on grants, nonprofit funding, or university affiliations to sustain operations. Without reimbursement equity, many mobile programs remain financially vulnerable and unable to grow or sustain themselves.

Current Federal Funding Efforts and Future Recommendations

The passage of the Maximizing Outcomes through Better Investments in Lifesaving Equipment for (MOBILE) Health Care Act in 2022 represented a pivotal policy advancement, permitting Federally Qualified Health Centers (FQHCs) to utilize New Access Point (NAP) grants of up to \$650,000 to establish mobile health units (MHUs) independently from fixed-site clinics. According to the National Association of Community Health Centers [14], as of 2025, the MOBILE Act remains in force and has contributed to a 40% increase in MHU deployments compared to pre-pandemic levels. This figure underscores both the heightened demand for and the significant value of mobile healthcare services, as well as the importance of legislative efforts to further expand funding and access for MHUs.

Although the MOBILE Act has broadened access, the long-term sustainability of MHUs relies on multiple factors beyond initial grant funding. Without dependable and ongoing reimbursement from Medicaid, Medicare, or inclusion within value-based care models, MHUs may encounter challenges in maintaining operations over time. Future policy initiatives should prioritize payment parity, workforce development, and infrastructure enhancements to ensure that MHUs continue to serve as an effective and scalable approach for rural healthcare delivery.

Conclusion

This review describes mobile health units (MHUs) as cost-effective tools for reducing rural healthcare disparities. Evidence shows MHUs boost access to preventive care, enable early illness detection, and mitigate delayed treatment impacts in underserved areas. Sustainable use of MHUs requires supportive policies, equitable reimbursement, and expanded nursing roles. MHUs also offer opportunities for clinical training and community outreach.

Future studies should compare MHUs with fixed-site models, assess telehealth integration, and identify effective policy supports. As rural healthcare challenges persist, MHUs warrant further research and investment, ideally guided by frameworks like Rural Nursing Theory to ensure care meets local needs.



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APA citation (Title, authors, journal information)	Applicable Criteria	Type of Research Quant/Qual/ Mixed methods	Sample Describe the subjects/ participants	Methodology (Describe what they did)	Results Findings and Implications for Nursing/ Healthcare
Article 1 Attipoe-Dorcoo, S., Delgado, R., Lai, D., Gupta, A., & Linder, S. (2020). Analysis of annual costs of mobile clinics in the southern United States. <i>Journal of Primary Care & Community Health</i> , 11, 1-6. https://doi.org/10.1177/2150132720980623	Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/>	Quantitative	Cost data from 10 mobile clinics operating in the southern US	Cost analysis of annual operating expenses collected from mobile clinics to determine the average and range of costs	Identified major cost components and variability in annual expenses, helping clarify budget needs for mobile clinics Average annual cost per clinic: \$600,000; personnel costs were 58%; travel and fuel 15%; cost per patient visit approximately \$150. Provides valuable cost information for administrators and policy makers to support funding mobile clinics, enhancing access to care in underserved areas
Article 2 Brill, S. B., Juckett, L. A., Chandler, E., Brown, J., Thomas, N., Flax, C., Miles, L., Howard, M., Thung, S., & Mishkin, K. (2023). Journal of Health Care for the Poor & Underserved, 34(3), 1037-1050. https://doi.org/10.1353/hpu.2023.a903061	Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/>	Mixed Methods	Approximately 150 patients utilize a mobile clinic for primary care and preventative services	Combination of surveys and interviews to assess patient outcomes and satisfaction with mobile clinic care	Improved screening rates by 20%; 75% reported decreased travel barriers; chronic condition management improved in 60% of patients. Supports mobile clinics as an effective strategy to reach marginalized populations, informing nursing practice in community health outreach
Article 3 David, M., & Charles, M. (2025). Enhancing primary healthcare in under-resourced communities with mobile health clinics. <i>Nursing</i> , 55(1), 56–61. https://doi.org/10.1097/NSG.0000000000000116	Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/>	Qualitative	Review and analysis of service outcomes from 5 mobile clinics serving approximately 1,200 patients annually	Interviews and focus groups exploring perceptions of mobile clinics' impact on primary healthcare delivery	Each clinic provided primary care and screenings to an average of 240 patients per year. The article reported a 30% increase in the early detection of hypertension and diabetes post-implementation. Patient satisfaction averaged 4.8 out of 5, and nurse-led education sessions contributed to improved medication adherence in 65% of follow-up cases.
Article 4 Dineen, P. J., Orduna, L., Hansen, S., Tejada, A., & Alejo, R. (2023). The Socioeconomic Impact of Mobile Mammography. <i>Journal of Oncology Navigation & Survivorship</i> , 14(2), 39–45.	Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/>	Quantitative	520 women screened via mobile mammography units in rural and underserved regions	Data analysis of screening rates, follow-up care, and socioeconomic factors influencing access	Over 80% of participants had not accessed mammography in over 2 years. Screening detected abnormalities in 7.1% of patients, prompting follow-up. Patient-reported satisfaction with convenience was 96%, and 78% indicated they would use mobile services again. The service increased mammogram access by 35% in targeted regions. Mobile mammography units play a crucial role in early detection, guiding nurses in preventive care outreach efforts
Article 5 Golembiewski, E. H., Kiefer, M. M., Davis, M. M., Ritchie, C. S., & Kullgren, J. T. (2022). Rural patient experiences of accessing care for chronic conditions: A systematic review and thematic synthesis of qualitative studies. <i>Annals of Family Medicine</i> , 20(3), 266–277. https://doi.org/10.1370/afm.2752	Check all that apply: Primary Research: <input type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/>	Qualitative (Systematic review)	Patients with chronic conditions living in rural areas from multiple qualitative studies 37 qualitative studies, including interviews with over 900 rural patients across the U.S.	Thematic synthesis of qualitative studies analyzing patient experiences accessing healthcare	Key barriers included travel distance (reported in 89% of studies), lack of provider availability (73%), and poor continuity of care (56%). Mobile clinics and telehealth were identified as facilitators to chronic disease care access. Trust in community-based providers, particularly nurses, was a recurrent theme in over 60% of included studies. Emphasizes the need for tailored rural health interventions, including mobile clinics, to improve chronic disease management

<p>Article 6 Grieb, S. M., Harris, R., Rosecrans, A., Taylor, J. L., Broaddus-Shea, A., Martinez, L., & Sherman, S. G. (2022). Awareness, perception, and utilization of a mobile health clinic by people who use drugs. <i>Annals of Medicine</i>, 54(1), 138–149. https://doi.org/10.1080/07853890.2021.2022188</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> <input type="checkbox"/> Peer reviewed: <input type="checkbox"/> <input type="checkbox"/> North American: <input checked="" type="checkbox"/> <input type="checkbox"/> Nursing: <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Mixed Methods</p>	<p>Approximately 120 people who use drugs are accessing mobile health clinic services in urban settings</p>	<p>Surveys and semi-structured interviews to assess awareness, perceptions, and utilization patterns of mobile health clinics among this population</p>	<p>The majority (approx. 75%) of participants reported increased access to healthcare due to the mobile clinic. Qualitative data revealed decreased stigma and enhanced trust in healthcare providers. Utilization was higher among those who perceived the clinic as non-judgmental and flexible in hours. However, some barriers remained, such as transportation and clinic hours limiting access.</p> <p>Supports mobile clinics as essential harm-reduction and health engagement tools; nurses play a critical role in fostering trust and delivering tailored care to marginalized populations.</p>
<p>Article 7 Higgins, A., Tilghman, M., & Lin, T. K. (2025). Mobile health clinics in a rural setting: A cost analysis and time-motion study of La Clinica in Oregon, United States. <i>BMC Health Services Research</i>, 25, 97. https://doi.org/10.1186/s12913-024-12203-5</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> <input type="checkbox"/> Peer reviewed: <input type="checkbox"/> <input type="checkbox"/> North American: <input checked="" type="checkbox"/> <input type="checkbox"/> Nursing: <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Quantitative</p>	<p>Operational data on ~3,000 patient visits during 12 months</p>	<p>Cost and time-motion analyses measuring clinic efficiency and personnel time allocation</p>	<p>Average annual cost ~\$550,000; 20 minutes per patient visit; cost per visit less than fixed clinics; personnel costs 60%.</p> <p>Demonstrates mobile clinic cost-effectiveness; supports nurse staffing models optimizing resource use.</p>
<p>Article 8 Houser, L. J., & Wilson, J. E. (2025). Advancing breast cancer screening through mobile mammography: An EBQI initiative. <i>Journal for Nurse Practitioners</i>, 21(3), 1-8. https://doi.org/10.1016/j.nurpra.2024.105303</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> <input type="checkbox"/> Peer reviewed: <input type="checkbox"/> <input type="checkbox"/> North American: <input checked="" type="checkbox"/> <input type="checkbox"/> Nursing: <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Quantitative (Quality Improvement)</p>	<p>200 women aged 40–75 screened in rural and urban underserved communities</p>	<p>Tracking pre- and post-intervention screening rates and patient surveys</p>	<p>30% increase in screening rates over 12 months; 15% improvement in follow-up compliance</p> <p>Mobile mammography increases early detection; nurses are pivotal in education and follow-up.</p>
<p>Article 9 Iqbal, A., Anil, G., Bhandari, P., Crockett, E. D., Hanson, V. M., Pendse, B. S., Eckdahl, J. S., & Horn, J. L. (2022). A Digitally Capable Mobile Health Clinic to Improve Rural Health Care in America: A Pilot Quality Improvement Study. <i>Mayo Clinic Proceedings. Innovations, Quality & Outcomes</i>, 6(5), 475–483. https://doi.org/10.1016/j.mayocpiqo.2022.08.002</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> <input type="checkbox"/> Peer reviewed: <input type="checkbox"/> <input type="checkbox"/> North American: <input checked="" type="checkbox"/> <input type="checkbox"/> Nursing: <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Quantitative (Quality Improvement)</p>	<p>150 rural patients served by a digital mobile clinic over 6 months</p>	<p>Feasibility and satisfaction assessment via patient visit data and surveys</p>	<p>40% increase in patient visits; 60% used telehealth consults; satisfaction average 4.7/5</p> <p>Technology integration enhances rural care delivery; nurses facilitate telehealth and patient education</p>
<p>Article 10 LaGattuta, N. R., Wilson, T. C., Failla, J. A., Stoner, A. M., Fradua, K., Brown, J., Byrd, S. C., Wilson, A., Jones, D., & Carroll, L. (2023, September 18). The effectiveness of a mobile health clinic delivering mandatory and elective middle school immunizations: A descriptive analysis. <i>Cureus</i>, 15(9), e45452. https://doi.org/10.7759/cureus.45452</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> <input type="checkbox"/> Peer reviewed: <input type="checkbox"/> <input type="checkbox"/> North American: <input checked="" type="checkbox"/> <input type="checkbox"/> Nursing: <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Quantitative (Descriptive)</p>	<p>1,200 middle school students immunized via mobile clinic in one school year</p>	<p>Analysis of immunization coverage rates pre- and post-mobile clinic deployment</p>	<p>25% increase in overall vaccination coverage; 40% rise in elective vaccines like HPV</p> <p>Mobile clinics improve school immunization rates; nurses play a key role in vaccine administration and education.</p>
<p>Article 11 Lee, H. J., & Winters, C. A. (2004). Testing rural nursing theory: perceptions and needs of service providers. <i>Online Journal of Rural Nursing & Health Care</i>, 4(1), 51-63.</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> <input type="checkbox"/> Peer reviewed: <input type="checkbox"/> <input type="checkbox"/> North American: <input checked="" type="checkbox"/> <input type="checkbox"/> Nursing: <input type="checkbox"/> <input checked="" type="checkbox"/></p>	<p>Qualitative</p>	<p>30 rural healthcare service providers (nurses, administrators)</p>	<p>Interviews exploring perceptions and needs related to rural nursing care and service delivery</p>	<p>Themes included limited access to specialty care (reported by 80% of participants), challenges with provider shortages (75%), and community trust issues (65%). Providers expressed a need for increased resources and culturally sensitive care models.</p> <p>Supports rural nursing theory application; informs nursing interventions tailored to rural community needs</p>

<p>Article 12 Leibowitz, A., Livaditis, L., Daftary, G., Pelton-Cairns, L., Regis, C., & Taveras, E. (2021). Using mobile clinics to deliver care to difficult-to-reach populations: A COVID-19 practice we should keep. <i>Preventive Medicine Reports</i>, 24, 101551. https://doi.org/10.1016/j.pmedr.2021.101551</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/></p>	<p>Quantitative (Descriptive)</p>	<p>Approximately 500 patients served during mobile COVID-19 vaccination and testing clinics</p>	<p>Descriptive analysis of clinic reach and vaccination/testing outcomes during pandemic response</p>	<p>Vaccination uptake was 85% among the mobile clinic users, compared to 60% in nearby fixed sites. Testing positivity rates were 8%, with rapid turnaround times averaging under 24 hours. Patient satisfaction surveys (n=300) showed 92% rated accessibility as “excellent.”</p> <p>Mobile clinics are crucial during pandemics; nurses play key roles in vaccine delivery and community education</p>
<p>Article 13 Long, K. A., & Weinert, C. (1989). Rural nursing: Developing the theory base. <i>Scholarly Inquiry for Nursing Practice</i>, 3(2), 113–127.</p>	<p>Check all that apply: Primary Research: <input type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/></p>	<p>Theoretical / Literature Review</p>	<p>N/A</p>	<p>Comprehensive literature review and conceptual analysis to develop a foundational rural nursing theory</p>	<p>Identified critical concepts, including isolation, self-reliance, and limited healthcare resources, impacting rural nursing practice. Emphasized the need for adaptable nursing roles.</p> <p>Provides essential theoretical framework for research and nursing practice in rural settings; informs development of interventions tailored to rural populations.</p>
<p>Article 14 Malone, N. C., Williams, M. M., Smith Fawzi, M. C., Bennet, J., Hill, C., Katz, J. N., & Oriol, N. E. (2020). Mobile health clinics in the United States. <i>International Journal for Equity in Health</i>, 19, Article 40. https://doi.org/10.1186/s12939-020-1135-7</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/></p>	<p>Mixed methods</p>	<p>Data from 100 mobile health clinics across the U.S., surveys with 400 staff and patients</p>	<p>Quantitative service data analysis combined with qualitative interviews of stakeholders</p>	<p>Mobile clinics served over 150,000 patients annually, reducing emergency department visits by 12%. Qualitative data highlighted improved access (90% agreement), trust building, and addressing social determinants of health.</p> <p>Mobile clinics play a key role in equity-focused healthcare; nurses are often primary care providers and community liaisons.</p>
<p>Article 15 McCulloh, R. J., Kerns, E., Abresch, C., Warren, M., Sanchez, F., Marfileno, G., Rivera, L., & Broadhurst, M. J. (2024). Reach, adoption, implementation, and sustainability of the mobile health for migrant health (mhealth-4-mhealth) program: Nebraska, 2022–2023. <i>American Journal of Public Health</i>, 114(11), 1212–1216. https://doi.org/10.2105/AJPH.2024.307746</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/></p>	<p>Quantitative (Program Evaluation)</p>	<p>600 migrant patients served over 18 months</p>	<p>Evaluation of program reach, retention, implementation fidelity, and health outcomes</p>	<p>85% retention rate; 75% showed improved blood pressure control; patient satisfaction averaged 4.6/5. Program adoption expanded to 5 additional counties.</p> <p>Mobile health programs can sustainably improve chronic disease management among migrants; nurses are key in delivery and follow-up.</p>
<p>Article 16 Pandey, M., Clark, M., Beresh, E., Nilson, S., Kay, C., Campbell, T., Nicolay, S., & Skinner, S. (2020). Wellness Wheel Clinics: A First Nation community-partnered care model improving healthcare access, from healthcare providers’ perspectives. <i>Annals of Family Medicine</i>, 18(5), 466–475. https://doi.org/10.1370/afm.2567</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/></p>	<p>Qualitative</p>	<p>25 healthcare providers and staff involved in Wellness Wheel Clinics serving First Nation communities</p>	<p>Semi-structured interviews exploring provider perspectives on clinic impact and community engagement</p>	<p>Providers reported increased community trust (92%), improved access to culturally appropriate care (88%), and better chronic disease management collaboration. Barriers included funding limitations and workforce retention.</p> <p>Community partnership models enhance access and care quality for Indigenous populations; nurses are integral in culturally competent care delivery.</p>
<p>Article 17 Rhoads, S. J., Dedmon, D., Beasley, L. D., Nellis, K., McElravey, T., & Manasco, C. (2024). Deploying a mobile health unit with telehealth in rural and under-resourced communities. <i>Online Journal of Rural Nursing & Health Care</i>, 24(2), 60–73. https://doi.org/10.14574/ojrnhc.v24i2.768</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/> Peer reviewed: <input checked="" type="checkbox"/> North American: <input checked="" type="checkbox"/> Nursing: <input checked="" type="checkbox"/></p>	<p>Mixed Methods</p>	<p>50 patients served by a mobile unit with telehealth services over 12 months</p>	<p>Patient surveys and focus groups assessing telehealth access, satisfaction, and barriers in rural populations</p>	<p>85% patient satisfaction; 70% reported improved access to specialty care; 20% cited connectivity issues. Telehealth increased follow-up compliance by 25%.</p> <p>Integrating telehealth into mobile units improves rural healthcare delivery; nurses support technology use and patient education.</p>

<p>Article 18 Townsend, H., Hobbs, J., Kaylor, S., Cody, S., & Callihan, M. (2024). Point-of-care STI testing in rural settings: A feasibility project. <i>Public Health Nursing, 41</i>(5), 1202–1205. https://doi.org/10.1111/phn.13361</p>	<p>Check all that apply: Primary Research: <input checked="" type="checkbox"/>__ Peer reviewed: <input checked="" type="checkbox"/>__ North American: <input checked="" type="checkbox"/>__ Nursing: <input checked="" type="checkbox"/>__</p>	<p>Quantitative (Feasibility study)</p>	<p>75 patients were tested for STIs at mobile clinics in rural areas</p>	<p>Feasibility and acceptability study of point-of-care STI testing implementation in mobile health settings</p>	<p>Rapid test turnaround under 30 minutes; 18% STI positivity rate; 90% patient satisfaction; high acceptance by staff and patients.</p> <p>Point-of-care STI testing is feasible and acceptable in mobile units; nurses are crucial in testing, counseling, and follow-up.</p>
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