A Conceptual Framework for Addressing Digital Health Literacy and Access Gaps in U.S. Underrepresented Communities

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Abstract
Digital health technologies are rapidly transforming healthcare delivery in the United States, yet significant disparities in digital health literacy and access persist, particularly among underrepresented communities. These gaps exacerbate existing health inequities, limit the effectiveness of digital health interventions, and hinder the achievement of national health goals. This paper proposes a conceptual framework to address digital health literacy and access gaps in underrepresented populations, including racial and ethnic minorities, low-income groups, rural residents, and individuals with limited English proficiency or disabilities. The framework is built on four interconnected pillars: 1) Digital Access Infrastructure, focusing on equitable internet connectivity and device availability; 2) Digital Health Literacy Development, encompassing culturally appropriate training, language accessibility, and inclusive learning methods; 3) Community-Based Engagement, promoting trust-building, peer-led education, and local partnerships to drive adoption; and 4) Policy and Systems Integration, ensuring that federal, state, and local health systems embed digital equity in their strategies and programs. The framework draws on insights from public health, education, information technology, and community development. It emphasizes a participatory approach, where community voices inform intervention design and implementation. Case examples from U.S. initiatives—such as mobile telehealth units in rural Appalachia, bilingual health portals in Hispanic communities, and digital skills training in urban public housing—illustrate how these pillars can be operationalized for measurable impact. Addressing digital health literacy and access is critical for advancing health equity, improving patient engagement, and ensuring that digital health innovations reach and benefit all populations. The framework provides actionable guidance for policymakers, healthcare providers, educators, and technology developers to collaboratively reduce barriers and enhance the usability, accessibility, and effectiveness of digital health solutions. This work advocates for embedding digital inclusion into national health strategies and calls for sustained investment in infrastructure, education, and inclusive design. By centering equity and community engagement, the proposed framework aims to build a digitally empowered population equipped to participate fully in the evolving landscape of U.S. healthcare.

Keywords: *Digital Health Literacy, Health Equity, Underrepresented Communities, Digital Divide, Telehealth Access, Digital Inclusion, Health Disparities, U.S. Healthcare, Community Engagement, Health Technology.*

1.0. Introduction

The digital transformation currently reshaping U.S. healthcare represents a pivotal shift towards patient-centered care, driven by technologies including telemedicine, electronic health records (EHRs), remote monitoring, and artificial intelligence (AI) systems. These innovations have significantly broadened access to healthcare services, improved operational efficiencies, and personalized health interventions, fostering a more tailored patient experience (Steinhauser, 2021: Bajwa et al., 2021). For instance, the COVID-19 pandemic has accelerated the adoption of digital technologies such as telemedicine, highlighting the readiness of stakeholders to engage with digital innovations when they recognize potential benefits (Steinhauser, 2021). The integration of AI further enhances patient care by supporting clinical decision-making and operational processes (Mohammed et al., 2022). However, despite these advancements, the realization of equal benefits from digital healthcare transformations remains elusive, particularly for marginalized communities—including racial and ethnic minorities, low-income groups, older adults, rural populations, and those with limited English proficiency (Ferreira et al., 2025: Novelli et al., 2021).

The persistent disparities in health outcomes and access to digital health resources can be traced to systemic inequities encompassing education, income, and social determinants of health. These inequities create barriers that hinder the effective use of digital health tools, exacerbating existing health disparities. For example, limited broadband access and digital literacy inhibit the ability of underrepresented groups to utilize healthcare technology, resulting in delayed care and poorer health outcomes (Novelli et al., 2021; Ferreira et al., 2025). The phenomenon of digital health literacy, defined as the ability to seek, understand, and utilize digital health information, is crucial in this context. There is a significant segment of the population lacking the necessary skills and resources for navigating digital platforms, which further impairs their ability to access preventive care and manage chronic conditions (Nazeha et al., 2020; Konopik, 2023). It is essential to address these barriers to ensure that the benefits of digital health are equitably distributed, avoiding the risk of reinforcing existing health inequities.

To tackle these issues, a conceptual framework is proposed, aimed at understanding and mitigating the gaps in digital health literacy and access in underrepresented communities. This framework draws insights from various disciplines, including public health, digital equity, behavioral science, and community engagement, to inform intervention design and policy development. It emphasizes the need for a holistic approach that considers individual capabilities, community infrastructures, healthcare system responsiveness, and sociocultural contexts (Olivera et al., 2022; Gleiß et al., 2021). By linking digital health literacy to health equity, the framework proposes actionable strategies that can expand access to digital health tools while ensuring they are accessible, trusted, and effective for all demographics. Ultimately, this approach seeks to create a more inclusive healthcare system where digital transformation serves to enhance, rather than impede, the well-being of historically underserved communities (Nazeha et al., 2020; Ferreira et al., 2025).

2.1. Methodology

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method was employed to structure and streamline the methodology for developing a conceptual framework to address digital health literacy and access gaps in underrepresented U.S. communities. A comprehensive search and review of 252 published articles, policy documents, and technical papers was conducted across reputable databases, journals, and institutional repositories. This search aimed to identify patterns, strategies, interventions, and technological innovations related to digital health literacy, healthcare access equity, and the deployment of AI-driven tools in underserved regions.

Following the identification phase, duplicate records were excluded, resulting in 210 unique articles eligible for screening. Titles and abstracts were assessed for relevance to digital health interventions, community-based outreach models, and the socio-technological factors affecting marginalized populations. During this screening stage, emphasis was placed on publications that explicitly discussed health communication, public-private partnerships, CRM systems in healthcare, policy development, and innovative delivery mechanisms for digital health solutions.

In the eligibility phase, 85 full-text articles were critically reviewed based on predefined inclusion criteria, including geographical relevance (U.S. context), research quality, focus on underrepresented groups, and empirical or conceptual contributions to digital health literacy and access. Articles that lacked methodological rigor, context-specific relevance, or actionable frameworks were excluded.

The final selection included 34 studies that provided substantial qualitative insights and/or conceptual advancements. These studies, including those by Abass et al. (2024) and Alemede et al. (2024), were instrumental in the development of the proposed framework. The synthesis incorporated models on patient engagement through CRM systems, AI applications in public health, community-centered interventions, and integration of mobile health platforms to bridge access disparities.

The outcome of this methodology is a data-informed conceptual model integrating technology-enhanced learning, localized outreach, AI-driven diagnostics, and public policy alignment to strengthen digital health literacy and ensure equitable access to healthcare services. This approach supports evidence-based policymaking and enables targeted interventions tailored to the unique barriers faced by underserved U.S. populations.

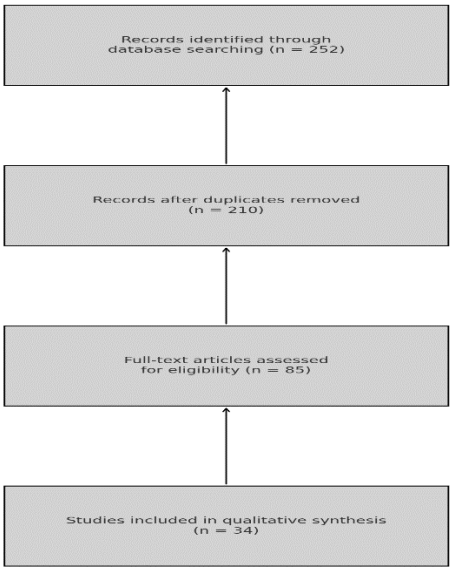

Figure 1: PRISMA Flow chart of the study methodology

2.2. Background and Context

Digital health literacy and digital access have become pivotal components of modern healthcare engagement in the United States. As healthcare systems increasingly rely on digital technologies for service delivery, patient education, monitoring, and communication, the ability to navigate and utilize these tools has become essential for patients to receive timely and appropriate care (Tomassoni, et al., 2012, Tomassoni, et al., 2013, Ugwu, et al., 2024, Zouo & Olamijuwon, 2024). Digital health literacy refers to an individual's capacity to seek, understand, evaluate, and apply health information from electronic sources to make informed

health decisions. It encompasses both technical proficiency with digital platforms and the cognitive skills required to interpret health-related data. Digital access, on the other hand, refers to the availability and usability of internet-connected devices, broadband connectivity, and supportive digital infrastructure that enable participation in online health services. The interplay between digital literacy and access determines the extent to which individuals and communities can benefit from innovations such as telehealth, mobile health applications, electronic health records, patient portals, and remote monitoring tools (Adelodun & Anyanwu, 2024, Chigboh, Zouo & Olamijuwon, 2024, Nwankwo, et al., 2024). Figure 2: Conceptual framework for use of digital health tools presentedby Hernandez, et al., 2024.

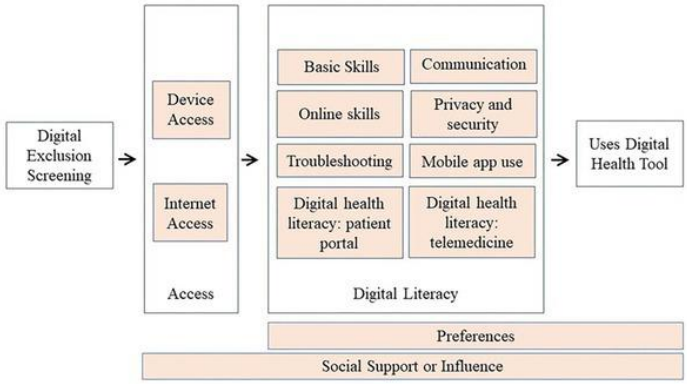

Figure 2: Conceptual framework for use of digital health tools (Hernandez, et al., 2024).

Underrepresented communities in the U.S. face significant challenges in both digital health literacy and access. These communities include racial and ethnic minorities, such as African Americans, Hispanic/Latino populations, Native Americans, and Pacific Islanders, who often experience structural inequities in education, income, and health. Low-income households, which may lack the financial resources to afford smartphones, tablets, computers, or broadband subscriptions, also fall disproportionately behind in digital participation (Ayo-Farai, et al., 2023, Chianumba, et al., 2023, Nnagha, et al., 2023). Rural residents face additional hurdles due to limited broadband infrastructure, geographic isolation, and lower density of healthcare providers offering telehealth services. People with disabilities encounter physical, sensory, or cognitive barriers that impede their ability to interact with digital interfaces, particularly when technologies are not designed with accessibility in mind. Non-English speakers, including immigrants and refugees, often encounter language-related barriers when navigating digital health content, which is predominantly available in English and often fails to reflect culturally relevant information or user-friendly design.

The persistence of the digital divide in the United States is reflected in national statistics. According to the Pew Research Center, as of 2021, approximately 25% of adults in households earning less than $30,000 annually do not own a smartphone, and 40% lack a desktop or laptop computer. More than one-third of low-income households do not have broadband internet access (Akerele, et al., 2024, Edoh, et al., 2024, Ikese, et al., 2024, Olowe, et al., 2024). Among older adults, only about 60% report being confident in using digital technology, and digital adoption remains lower in communities of color. The Federal Communications Commission (FCC) has reported that rural communities continue to lag significantly behind urban areas in broadband coverage, with some areas lacking even basic internet connectivity. These disparities extend directly into the realm of health. A 2020 report from the National Digital Inclusion Alliance showed that counties with lower rates of broadband access also had higher rates of preventable hospitalizations, delayed diagnoses, and poor chronic disease management

outcomes. Conceptual framework for health literacy: The interaction of individual and systems domains presented by Gilder, et al., 2019, is shown in figure 3.

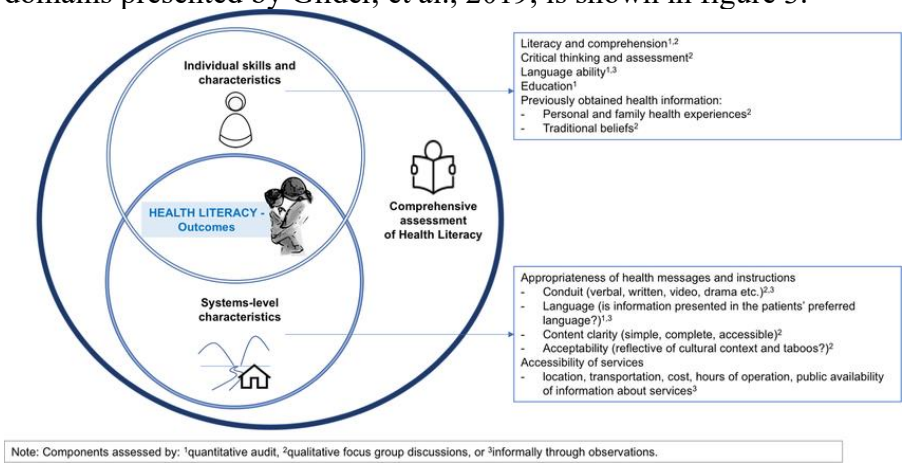

Figure 3: Conceptual framework for health literacy: The interaction of individual and systems domains (Gilder, et al., 2019).

Moreover, the COVID-19 pandemic further exposed and widened digital health disparities. As health systems pivoted to telehealth and digital communication tools to limit in-person contact, many patients in underrepresented communities were left behind. A study published in *JAMA Network Open* found that Black and Hispanic patients were significantly less likely to complete telemedicine visits than white patients, even after adjusting for socioeconomic factors. Similar disparities were observed among older adults, individuals with limited English proficiency, and those with Medicaid insurance (Nwankwo, Tomassoni & Tayebati, 2012, Olamijuwon, 2020, Tayebati, et al., 2010). These patterns highlight the compounding effects of digital exclusion on already vulnerable populations, amplifying existing health disparities and undermining public health efforts to deliver equitable care.

The barriers to digital health engagement are multifaceted and deeply rooted in broader structural inequalities. One of the most immediate barriers is limited access to technology and internet connectivity. For many households, the cost of broadband or cellular data plans is prohibitive, and public access points such as libraries or community centers may not be available or sufficiently equipped to support private health consultations (Abass, et al., 2024, Chianumba, et al., 2024, Matthew, et al., 2024). In rural areas, even when residents can afford internet services, infrastructure limitations may prevent reliable connectivity, limiting their ability to engage with telehealth or download essential applications. For individuals with disabilities, poorly designed interfaces, lack of compatibility with assistive technologies, and failure to follow accessibility standards often render digital health tools unusable or frustrating. Another major barrier is low digital literacy, particularly among older adults, individuals with lower educational attainment, and non-native English speakers. Many patients report difficulty using telemedicine platforms, patient portals, and mobile health apps due to confusing navigation, lack of guidance, or unfamiliar terminology. Without adequate support or training, these users are likely to abandon digital health tools or rely on intermediaries, such as family members, which may compromise privacy or autonomy. Even when digital literacy programs exist, they may not be tailored to the specific health contexts or cultural backgrounds of the users they aim to support (Alemede, et al., 2024, Chigboh, Zouo & Olamijuwon, 2024, Nwankwo, et al., 2024). Nkansah & Oldac, 2024, presented in figure 4, conceptual framework explaining the sources of digital literacy gap among students.

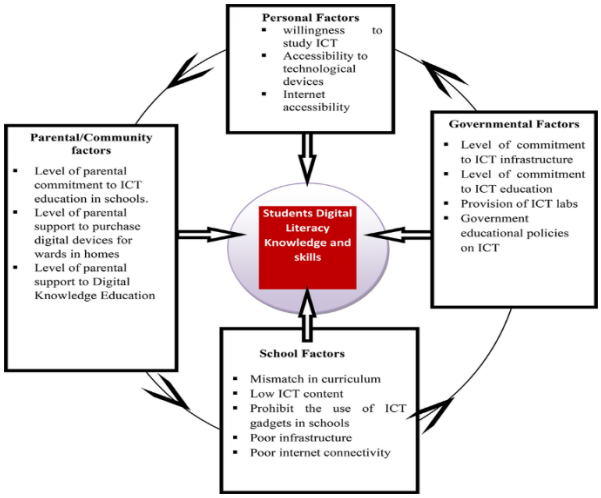

Figure 4: Conceptual framework explaining the sources of digital literacy gap among students (Nkansah & Oldac, 2024).

Trust also plays a crucial role in digital health engagement. Underrepresented communities, particularly Black and Native American populations, have a long history of experiencing systemic racism and exploitation in healthcare and research. This history contributes to skepticism toward new technologies, particularly those that collect personal data or appear to replace human interaction with automated systems. Data privacy concerns, fear of surveillance, and confusion about how digital information is used or shared further discourage participation. When digital health platforms fail to demonstrate transparency, security, and respect for user preferences, trust is eroded, and users disengage (Madu, et al., 2019, Matthew, et al., 2021, Nwankwo, et al., 2011, Tomassoni, et al., 2013).

Language and cultural barriers further inhibit meaningful digital health engagement. The dominance of English-language content and lack of cultural tailoring in digital health tools alienate users from diverse linguistic and ethnic backgrounds. For instance, a Hispanic patient navigating a telehealth platform may encounter difficulty if the system lacks Spanish translation or culturally relevant health information. Similarly, an immigrant from Southeast Asia may find it difficult to interpret digital diagnostic tools that do not consider traditional health beliefs or practices (Aderinwale, et al., 2025, Edwards, et al., 2025, Opia, et al., 2025). This lack of cultural competence in digital design and communication creates a disconnect between the tools and the people they are intended to serve.

Finally, healthcare system readiness and responsiveness also affect digital health engagement. In many cases, healthcare providers are not adequately trained or resourced to support patients in using digital tools. Clinics may lack staff to assist patients with portal registration, troubleshoot technology issues, or provide follow-up support for digital appointments. Some systems may not have integrated platforms that allow for seamless communication across digital and in-person care settings, leading to fragmentation and confusion (Balogun, et al., 2024, Edoh, et al., 2024, Ikese, et al., 2024, Olowe, et al., 2024). Providers may also unintentionally exclude patients with lower digital literacy by failing to offer alternative appointment types or assuming that all patients can engage with technology in the same way.

In sum, the background and context for developing a conceptual framework to address digital health literacy and access gaps in U.S. underrepresented communities is characterized by both immense opportunity and significant inequity. While digital health innovations have the potential to revolutionize care delivery and improve outcomes, persistent digital divides threaten to leave behind those who are already most marginalized. The barriers to engagement are complex, spanning technological, educational, cultural, and systemic domains (Gabrielli,

et al., 2010, Imran, et al., 2019, Nwankwo, et al., 2012). A responsive and equity-focused framework must account for these intersecting challenges and guide the development of strategies that promote inclusion, build trust, and ensure that the digital transformation of healthcare truly benefits all individuals, regardless of their background or circumstances.

2.3. Review of Existing Literature and Models

The growing digitalization of healthcare in the United States has prompted the emergence of various frameworks and policies aimed at promoting digital health inclusion. These efforts recognize that equitable access to and use of digital health tools is essential for achieving health equity and improving outcomes for all populations. Numerous initiatives—both governmental and academic—have sought to define the principles, components, and implementation strategies necessary to enhance digital engagement across diverse communities (Adelodun & Anyanwu, 2025, Edwards, et al., 2025, Udegbe, et al., 2023). However, while progress has been made in laying foundational policies and highlighting the importance of digital health literacy, there remain significant gaps in the existing frameworks, especially in their ability to comprehensively address the unique challenges faced by underrepresented communities.

Several existing models provide a useful starting point for understanding digital health equity. For example, the *Office of the National Coordinator for Health Information Technology (ONC)* has developed a "Health IT Strategic Plan" which includes objectives to advance access, user-centered design, and digital literacy across the healthcare ecosystem. Similarly, the *National Digital Inclusion Alliance (NDIA)* advocates for equitable broadband access and digital literacy training through its digital inclusion frameworks (Edwards & Smallwood, 2023, Ekpechi, et al., 2023, Obianyo & Eremeeva, 2023). These efforts emphasize the importance of infrastructure, affordability, skills development, and device access as pillars of digital inclusion. The *Health Literacy Online* guide from the U.S. Department of Health and Human Services offers practical design strategies to make digital content more accessible and user-friendly, especially for people with limited health literacy.

In academic literature, the concept of eHealth literacy, as originally conceptualized by Norman and Skinner, has been widely used to define the multifaceted skills required for individuals to find, understand, evaluate, and apply health information from electronic sources. This model, known as the eHealth Literacy Lily Model, highlights six core literacies—traditional literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy—as foundational to effective digital health engagement (Adegoke, et al., 2022, Chianumba, et al., 2022, Patel, et al., 2022). More recently, researchers have expanded the scope of eHealth literacy to incorporate social determinants of health and digital access barriers, particularly in underserved populations.

Furthermore, some community health models have begun to incorporate digital equity considerations into their interventions. The Digital Health Equity Framework (DHEF), proposed by Crawford and Serhal (2020), outlines how health system infrastructure, digital determinants of health, and individual digital health literacy interact to influence outcomes. The model emphasizes equity-oriented design and the role of systemic power dynamics in shaping access. Likewise, the Technology Acceptance Model (TAM) and its subsequent adaptations, such as TAM2 and the Unified Theory of Acceptance and Use of Technology (UTAUT), have been widely used to predict user adoption of technology, including in healthcare contexts (Kuo, et al., 2019, Matthew, et al., 2021, Nwankwo, et al., 2011, Tomassoni, et al., 2013). These models focus on perceived usefulness, ease of use, and user attitudes as predictors of digital engagement.

Despite the usefulness of these frameworks, several critical gaps persist in their applicability to underrepresented communities in the U.S. First, many existing models adopt a generalized, population-level approach to digital inclusion without sufficiently accounting for the

intersecting forms of disadvantage experienced by racial/ethnic minorities, low-income individuals, rural residents, non-English speakers, immigrants, and people with disabilities. These groups often face layered barriers that compound and interact—such as linguistic exclusion, cultural dissonance, systemic distrust, and historical marginalization—that are not adequately addressed by broad-stroke strategies (Ayo-Farai, et al., 2024, Edwards, et al., 2024, Nwankwo, et al., 2024).

Second, most frameworks focus primarily on the individual's digital competencies or on technological access without fully considering the sociocultural and systemic context in which digital health behaviors occur. For instance, while digital literacy training is vital, it is insufficient on its own if healthcare systems are not equipped to support patients with low literacy or provide culturally relevant, linguistically accessible, and trust-building communication (Akerele, et al., 2024, Edwards, et al., 2024, Ikhalea, et al., 2024, Zouo & Olamijuwon, 2024). Similarly, while improving broadband access is essential, this must be accompanied by community engagement and provider-side interventions to ensure digital tools are designed and delivered in a way that resonates with the lived experiences of underrepresented populations.

Another gap in current strategies is the limited integration of behavioral science and health equity principles into digital health frameworks. While the Technology Acceptance Model and similar approaches offer valuable insights into adoption behavior, they often lack an equity lens. They do not fully capture how social determinants—such as housing insecurity, unemployment, racial discrimination, or immigration status—shape an individual's readiness, motivation, or ability to engage with digital health tools (Babarinde, et al., 2023, Chianumba, et al., 2023, Ogundairo, et al., 2023). Moreover, current models rarely incorporate structural racism and historical exclusion as driving forces behind mistrust in digital platforms and health institutions. Without acknowledging these realities, digital health strategies risk reinforcing existing inequities and failing to reach those most in need.

Additionally, the current literature is limited in its guidance on how to operationalize digital health equity at the community level. While high-level policy goals are often articulated, there is little consensus or clarity on how to implement these strategies in diverse local contexts, particularly in under-resourced settings. Community health centers, local health departments, and grassroots organizations are often left without practical, adaptable models to guide their work in addressing digital health literacy and access disparities in their unique populations (Ariyibi, et al., 2024, Edwards, et al., 2024, Nwankwo, et al., 2024).

In light of these limitations, there is a strong rationale for developing a new conceptual framework tailored specifically to underrepresented communities in the U.S. Such a framework must move beyond a one-size-fits-all approach and instead embrace a multidimensional understanding of the barriers and facilitators to digital health engagement. It must be informed by equity principles, grounded in community realities, and designed to address the specific sociocultural, structural, and economic factors that influence health behaviors and access (Govender, et al., 2022, Matthew, Akinwale & Opia, 2022, Udegbe, et al., 2022).

A tailored framework should integrate key components such as structural determinants (e.g., broadband access, device affordability), healthcare system responsiveness (e.g., cultural competence, language accessibility, provider training), individual-level competencies (e.g., digital literacy, trust, user preferences), and community engagement strategies (e.g., co-design, local leadership, peer navigators). It must also recognize the importance of intersectoral collaboration between health, education, technology, and social service sectors to address the root causes of digital exclusion (Afolabi, Ajayi & Olulaja, 2024, Edwards, et al., 2024, Obianyo, Das & Adebile, 2024).

Moreover, the framework should be adaptive and iterative, allowing for continuous evaluation and refinement based on community feedback, emerging evidence, and technological changes.

It should include actionable steps for implementation, such as policy recommendations, programmatic interventions, workforce development initiatives, and evaluation metrics aligned with health equity outcomes. By grounding the framework in the realities of marginalized communities and centering their voices in its development, it can serve not only as a guide for intervention design but also as a tool for advocacy, funding allocation, and cross-sector collaboration (Nwankwo, Tomassoni & Tayebati, 2012, Tayebati, Nwankwo & Amenta, 2013, Tomassoni, et al., 2013).

In conclusion, while existing literature and models provide a valuable foundation for advancing digital health literacy and access, they fall short of fully addressing the needs of underrepresented communities in the U.S. A new, equity-driven conceptual framework is needed—one that reflects the complexities of digital exclusion, acknowledges historical and structural barriers, and provides clear, context-sensitive pathways for meaningful engagement. This framework must bridge theory and practice, centering inclusion, trust, and justice as core principles in the pursuit of digitally equitable healthcare for all (Adewuyi, et al., 2024, Edwards, Mallhi & Zhang, 2024, Ohalete, et al., 2024).

2.4. The Conceptual Framework

The conceptual framework for addressing digital health literacy and access gaps in U.S. underrepresented communities is grounded in a holistic and equity-centered approach that acknowledges the multifaceted barriers these populations face. It organizes the pathway to inclusive digital health transformation around four interdependent pillars: digital access infrastructure, digital health literacy development, community-based engagement, and policy and systems integration (Ayo-Farai, et al., 2023, Chianumba, et al., 2023, Katas, et al., 2023). Together, these pillars form a roadmap that not only addresses immediate technological deficits but also challenges systemic inequities, fosters trust, and builds sustainable, community-informed solutions that align with broader health equity goals.

The first pillar, digital access infrastructure, recognizes that without the foundational tools and connectivity to participate in digital healthcare, no amount of training or outreach can bridge the gap. Many underrepresented communities, particularly low-income households and rural residents, continue to face chronic deficits in internet access and device availability. Ensuring universal broadband coverage—both fixed and mobile—is essential. This includes expanding internet service to remote areas and subsidizing broadband costs for households that cannot afford monthly fees (Anyanwu, et al., 2024, Ekwebene, et al., 2024, Obianyo, et al., 2024). Device affordability and availability are equally critical. Smartphones, tablets, and computers must be accessible to every household, not just in terms of price, but also through programs that provide low-cost or free devices, particularly to seniors, persons with disabilities, and marginalized youth. Additionally, digital access must be designed inclusively. This means integrating accessibility tools for individuals with disabilities—such as screen readers, voice commands, alternative input devices, and adjustable visual settings—into all digital health platforms. Ensuring compliance with the Web Content Accessibility Guidelines (WCAG) is not optional but foundational to equitable digital health design.

The second pillar focuses on digital health literacy development, which addresses the knowledge and skills required to effectively use digital health technologies. Digital literacy is not merely about navigating a website or downloading an app—it is about understanding how to evaluate health information, manage personal health data, and engage confidently with telehealth, patient portals, or mobile apps (Ajayi, et al., 2024, Emeihe, et al., 2024, Johnson, et al., 2024, Olowe, et al., 2024). For underrepresented communities, effective literacy programs must be rooted in culturally and linguistically appropriate approaches. Educational content should be delivered in multiple languages, reflect diverse health beliefs and practices, and be created with sensitivity to the lived experiences of the target population. This includes using

trusted messengers and tailoring materials to community-specific norms. Content should also be presented using plain language, avoiding medical jargon or complex technical terminology. Visual aids, videos, infographics, and interactive learning tools can enhance understanding for users with limited reading proficiency or cognitive impairments. Public libraries, schools, health centers, and community hubs can serve as venues for delivering in-person and virtual training sessions focused on basic digital skills, privacy and security, and navigating specific digital health services. These efforts should be sustained and adaptive, recognizing that digital tools evolve, and continuous learning must be supported.

The third pillar of the framework, community-based engagement, emphasizes the role of trust, local leadership, and grassroots participation in closing digital health equity gaps. Many underrepresented communities harbor justified skepticism toward healthcare systems and government technologies, rooted in historical neglect, systemic discrimination, and previous exploitative practices. Building trust requires meeting people where they are, both literally and figuratively (Fuko, et al., 2025, Matthew, Nwaogelenya & Opia, 2025, Usuemerai, et al., 2024). One of the most effective strategies is the deployment of peer educators and digital navigators—community members trained to help others use digital health tools. These individuals not only offer technical assistance but also serve as cultural brokers who can translate unfamiliar systems into familiar contexts. Community health workers, promotores de salud, and members of faith-based organizations are especially effective in this role, as they often maintain close relationships with residents and have credibility that institutions lack.

Faith-based institutions, local nonprofits, schools, and neighborhood associations can act as trusted intermediaries for digital health initiatives. These organizations can host digital health literacy workshops, facilitate access to devices, or serve as distribution points for educational materials. Importantly, the framework calls for participatory design approaches in developing digital health tools and programs (Adelodun & Anyanwu, 2024, Emeihe, et al., 2024, Majebi, Adelodun & Anyanwu, 2024). This means involving community members from the outset—during needs assessments, program planning, and solution development—so that interventions reflect real-life challenges and preferences. Community feedback loops, user testing with target populations, and collaborative design sessions are essential to ensure that tools are intuitive, relevant, and empowering.

The fourth pillar is policy and systems integration, which focuses on institutionalizing digital equity within the healthcare system and broader policy environment. Embedding digital health equity into healthcare policies requires commitment at every level—from federal guidelines to local clinic protocols. Health systems must adopt policies that require digital health platforms to be inclusive, accessible, and available in multiple formats and languages (Akerele, et al., 2024, Emeihe, et al., 2024, Kelvin-Agwu, et al., 2024). Reimbursement models should incentivize healthcare providers to offer digital services equitably, including telehealth for Medicaid populations, services in multiple languages, and accommodations for patients with disabilities. Healthcare organizations should be required to collect and report digital access and usage data disaggregated by race, ethnicity, income, geography, and disability status to identify disparities and guide targeted interventions.

Incentivizing technology developers to design with equity in mind is also critical. Federal and state agencies can establish grants, procurement preferences, or certification programs that reward developers who meet accessibility and cultural responsiveness benchmarks. Health IT vendors should be encouraged to collaborate with communities during design and implementation, and to build platforms that are adaptable to the specific needs of safety-net providers and underserved populations (Abisoye & Olamijuwon, 2022, Chianumba, et al., 2022, Udegbe, et al., 2023). Moreover, public sector agencies—particularly the Department of Health and Human Services (HHS), Federal Communications Commission (FCC), and Centers for Medicare & Medicaid Services (CMS)—must coordinate on national digital equity

initiatives that address both health and infrastructure needs. These include expanding programs like the Affordable Connectivity Program, integrating digital literacy into Medicaid managed care contracts, and requiring digital health tools funded with public dollars to adhere to inclusive design principles.

State and local governments also play a crucial role in implementing digital health equity policies. They can lead statewide digital inclusion plans, fund community-based digital navigators, and integrate digital literacy support into public health campaigns and emergency preparedness plans. Health departments, especially those serving rural or underserved counties, can collaborate with schools, libraries, and local businesses to create digital health access points, similar to telehealth kiosks or digital health hubs, in accessible community spaces (Ayo-Farai, et al., 2024, Emeihe, et al., 2024, Kelvin-Agwu, et al., 2024). Importantly, all policies and systems-level interventions must be accompanied by accountability mechanisms. This includes periodic equity audits, community advisory councils, and public reporting of progress toward digital inclusion benchmarks.

Taken together, the four pillars of this conceptual framework offer a comprehensive and actionable model for addressing digital health literacy and access gaps in underrepresented U.S. communities. By ensuring foundational digital access, building user capabilities, engaging trusted local actors, and institutionalizing equity in policy and system design, this framework aims to close the digital divide not just technologically, but socially and structurally. The intersectionality of race, class, disability, geography, language, and history must inform every aspect of digital health planning and implementation (Adhikari, et al., 2024, Eze, et al., 2024, Johnson, et al., 2024). Only then can digital health tools truly serve as instruments of inclusion, rather than amplifiers of inequality. Through the coordinated action of community organizations, health systems, policymakers, and technology innovators, this framework envisions a future in which every person—regardless of background—can equitably access, understand, and benefit from the digital transformation of healthcare.

2.5. Operationalization of the Framework

Operationalizing a conceptual framework for addressing digital health literacy and access gaps in underrepresented communities in the United States requires translating abstract pillars into practical, context-sensitive actions. It entails embedding the framework into the daily operations of health systems, community organizations, and public institutions. This process demands a clear strategy for implementation, robust mechanisms for monitoring progress, and collaboration among a wide array of stakeholders (Elujide, et al., 2021, Khosrow Tayebati, et al., 2011, Nwankwo, et al., 2012). The success of operationalizing this framework hinges on real-world applications, meaningful metrics, and partnerships that bridge gaps between healthcare, technology, policy, and community leadership.

Across the country, a growing number of real-world initiatives exemplify how components of this framework are being effectively implemented. These initiatives provide concrete models for how digital access infrastructure, literacy development, community engagement, and policy alignment can come together to serve underrepresented populations. One such example is the use of rural telehealth vans in states like West Virginia, Arkansas, and Mississippi (Adelodun & Anyanwu, 2025, Ekpechi, et al., 2025, Usuemerai, et al., 2024). These mobile health units bring internet-enabled services directly to remote and medically underserved communities, eliminating travel barriers and providing both in-person and virtual care access. Outfitted with high-speed connectivity, diagnostic equipment, and trained staff, telehealth vans not only deliver immediate healthcare services but also serve as training hubs for digital health literacy. Patients are assisted in downloading and using health apps, setting up patient portal accounts, and learning how to navigate telehealth platforms. This direct, hands-on engagement in a

trusted environment helps reduce fear, increase confidence, and build digital familiarity among rural residents.

Another notable implementation occurs through digital health programs embedded in community centers and libraries. In cities such as Chicago, Detroit, and Baltimore, public libraries have transformed into digital equity hubs, offering free Wi-Fi, loanable devices, and personalized tech support. These facilities often host digital health literacy workshops co-facilitated by community health workers or digital navigators. Participants receive instruction on using telemedicine platforms, interpreting lab results online, accessing educational content, and safeguarding personal health data (Okoro, et al., 2024, Olamijuwon & Zouo, 2024, Olorunsogo, et al., 2024). Libraries serve as safe, trusted, and stigma-free spaces, which is crucial for reaching older adults, low-income individuals, and non-English speakers who may hesitate to engage with clinical institutions. Furthermore, some public libraries have partnered with local health departments to offer virtual provider consultations in private rooms, making digital health more accessible for people without home connectivity.

Public housing programs also offer valuable examples of operationalizing the framework. In cities like San Francisco and New York, housing authorities have implemented pilot programs that provide residents with subsidized internet, tablets, and ongoing tech support. Health-focused components of these programs include training residents to schedule virtual medical visits, refill prescriptions online, and monitor chronic conditions using mobile apps or Bluetooth-enabled devices (Maduka, et al., 2023, Majebi, et al., 2023, Ogundairo, et al., 2023). Importantly, these initiatives are co-designed with tenant associations, ensuring that the content and services are relevant, accessible, and culturally appropriate. This approach exemplifies participatory design and community-based engagement, two vital components of the framework. Residents not only receive services but also contribute to shaping how these services are delivered, increasing trust and uptake.

Measurement and evaluation are central to the operationalization process, providing evidence of impact, identifying areas for improvement, and justifying continued investment. Evaluation strategies must be both quantitative and qualitative, combining data-driven metrics with community-informed insights. Key performance indicators (KPIs) may include the number of individuals who gain internet access, complete digital literacy training, create patient portal accounts, or engage in telehealth visits (Alemede, et al., 2024, Eze, et al., 2024, Katas, et al., 2024, Obianyo, et al., 2024). Evaluators should disaggregate data by race, ethnicity, age, income level, disability status, and language to detect disparities and tailor interventions accordingly. For example, a telehealth program reporting high usage overall might still be failing to reach Spanish-speaking residents or older adults with cognitive impairments unless these details are surfaced through disaggregated analysis.

In addition to utilization metrics, evaluation should capture outcomes related to patient empowerment, care continuity, and health improvement. Surveys, focus groups, and interviews can be used to assess user satisfaction, confidence in using digital tools, perceived barriers, and trust in the healthcare system. Outcome-based indicators might include improvements in blood pressure control among patients using remote monitoring, reduced missed appointments due to increased telehealth adoption, or enhanced medication adherence following digital reminders (Abass, et al., 2024, Eze, et al., 2024, Johnson, et al., 2024, Olowe, et al., 2024). Longitudinal tracking is valuable for understanding the sustained impact of interventions and the extent to which digital health tools are integrated into patients' daily routines.

A rigorous feedback loop is essential. Insights from evaluation must be fed back into the design and implementation processes, allowing for continuous refinement. For example, if evaluations show low usage of a particular platform among individuals with disabilities, developers and program managers must work with accessibility advocates to redesign the interface, improve user instructions, or add compatibility with assistive technologies. In this way, evaluation

becomes not just a reporting tool, but a driver of innovation and inclusion (Chukwuma, et al., 2022, Gbadegesin, et al., 2022, Udegbe, et al., 2023).

Effective operationalization also depends heavily on coordinated stakeholder roles and cross-sector partnerships. Healthcare providers must be central actors, not only offering digital health services but also training their staff to identify and address digital literacy challenges among patients. Clinics should routinely assess patients' digital readiness and offer tailored support, just as they screen for social determinants of health. Providers can also partner with community organizations to offer outreach and support in non-clinical settings, expanding their reach and building trust with hard-to-engage populations (Kuo, et al., 2019, Madu, et al., 2020, Nwankwo, et al., 2012, Tayebati, et al., 2011).

Technology companies and developers play a crucial role in ensuring that digital health platforms are user-friendly, accessible, and inclusive. These companies must work closely with community representatives and health equity experts to incorporate universal design principles, language options, culturally relevant content, and privacy safeguards that reflect the concerns of marginalized users (Balogun, et al., 2023, Eyeghre, et al., 2023, Mgbecheta, et al., 2023). Moreover, funders—whether governmental, philanthropic, or corporate—should align their grant-making and investment strategies with the framework's pillars. They should prioritize multi-year funding that allows for program development, community input, evaluation, and scaling.

Government agencies at the federal, state, and local levels have a critical role in policy alignment and resource mobilization. Agencies like the Department of Health and Human Services (HHS), the Federal Communications Commission (FCC), and Centers for Medicare and Medicaid Services (CMS) must ensure that digital inclusion is embedded into health policy, broadband policy, and Medicaid and Medicare reimbursement schemes. This includes expanding support for telehealth in underserved areas, funding digital literacy initiatives, and mandating accessible design for federally funded digital health tools (Nwankwo, Tomassoni & Tayebati, 2012, Ogbonna, et al., 2012, Tayebati, et al., 2013). State health departments can support regional collaboratives, develop workforce training programs, and facilitate data sharing to monitor digital inclusion progress.

Lastly, community-based organizations, including faith-based institutions, advocacy groups, and neighborhood associations, must be recognized not as peripheral actors but as equal partners. Their intimate knowledge of local needs, histories, and networks enables culturally sensitive and contextually appropriate implementation. These organizations should be included in decision-making bodies, evaluation processes, and funding pipelines to ensure sustained community ownership (Adelodun & Anyanwu, 2024, Ezeamii, et al., 2024, Majebi, Adelodun & Anyanwu, 2024).

In sum, operationalizing the conceptual framework for addressing digital health literacy and access gaps requires a dynamic, multi-level approach grounded in equity, collaboration, and adaptability. It must bridge policy vision with ground-level action, marrying infrastructure expansion with human-centered design and community empowerment. Real-world initiatives offer promising blueprints, but scaling their success depends on rigorous evaluation, inclusive partnerships, and sustained political and financial commitment (Akerele, et al., 2024, Ezeamii, et al., 2024, Kelvin-Agwu, et al., 2024). With intentional effort and coordinated leadership, this framework can serve as a transformative guide for ensuring that digital health innovation benefits all communities—not just those already well-connected.

2.6. Challenges and Considerations

Implementing a conceptual framework for addressing digital health literacy and access gaps in underrepresented communities in the United States presents a promising vision for inclusive and equitable healthcare. However, translating this vision into practice is not without its

challenges. Despite compelling evidence supporting the potential of digital health innovations, several key considerations—namely sustainability and funding, privacy and trust concerns, and interoperability and technological adaptability—pose significant obstacles that must be addressed to ensure the effectiveness and longevity of these effort (Adaramola, et al., 2024, Ezeamii, et al., 2024, Ohalete, et al., 2024)s.

Sustainability remains one of the most persistent challenges facing digital health equity initiatives. Many programs targeting underserved populations are initially funded through time-limited grants, pilot projects, or philanthropic investments. While these resources often provide the necessary capital to launch digital literacy programs, purchase devices, or deploy telehealth platforms, they do not guarantee continuity. When external funding ends, programs risk scaling down or halting entirely, leaving communities with fragmented services and unfulfilled expectations (Adelodun & Anyanwu, 2025, Ekpechi, et al., 2025, Usuemerai, et al., 2024). This disruption not only wastes prior investments but can also erode community trust in future digital health efforts.

Ensuring long-term sustainability requires integrated funding strategies that move beyond temporary or project-based models. Federal and state governments must prioritize digital health equity in healthcare budgets, embedding these efforts into Medicaid and Medicare programs, public health initiatives, and broadband infrastructure investments. Additionally, reimbursement models must evolve to recognize and support digital inclusion activities (Okoro, et al., 2024, Olamijuwon, et al., 2024, Olorunsogo, et al., 2024). For instance, Medicaid could reimburse community health workers for digital navigation services, or Medicare Advantage plans could cover technology training for older adults. At the same time, public-private partnerships can play a vital role in sustaining programs, but these collaborations must be carefully designed to align with equity goals rather than commercial interests. The risk is that in the absence of strong regulatory guardrails, private sector involvement may prioritize profit over accessibility or contribute to widening the digital divide.

Another challenge is the complexity of evaluating return on investment (ROI) for digital inclusion programs. While clinical benefits such as improved chronic disease management or reduced hospitalizations may be evident, quantifying the economic and social returns of digital literacy training or broadband expansion can be difficult, especially in the short term. Policymakers and funders must adopt broader definitions of value—ones that incorporate empowerment, health autonomy, and community resilience as key outcomes worthy of sustained investment (Ayo-Farai, et al., 2024, Ezeamii, et al., 2024, Oboh, et al., 2024, Oshodi, et al., 2024).

In addition to funding concerns, privacy and trust present formidable barriers to engagement, particularly among historically marginalized populations. Underrepresented communities—especially Black, Latino, Indigenous, and immigrant populations—have experienced a long history of systemic discrimination, medical exploitation, and surveillance. These experiences contribute to deep-seated skepticism toward digital health tools, particularly those that collect sensitive health data. For example, undocumented immigrants may fear that their information could be shared with immigration enforcement agencies, while others may worry that digital platforms could be used to deny services or discriminate against them based on race, income, or health status (Adhikari, et al., 2024, Ezeamii, et al., 2024, Ogundairo, et al., 2024).

The challenge is compounded by a general lack of transparency in how health data is collected, stored, and shared. Many patients are unaware of what information is being tracked through patient portals, telehealth apps, or wearable devices. Even when privacy policies are provided, they are often written in technical or legal language that is difficult for laypersons to understand. This confusion undermines informed consent and reinforces mistrust, especially when coupled with reports of data breaches or unauthorized data sharing (Madu & Nwankwo, 2018, Nasuti, et al., 2008, Nwankwo, et al., 2011, Tayebati, et al., 2013).

To address these concerns, developers and healthcare organizations must prioritize transparency and user agency in all aspects of digital health design. Privacy notices should be written in plain language and offered in multiple languages. Platforms should allow users to opt in or out of specific types of data collection, and these preferences should be honored and easily revisited. Community health workers and digital navigators can also play a crucial role in building trust by explaining privacy protections, demonstrating how to use digital tools safely, and serving as intermediaries between patients and institutions (Babarinde, et al., 2023, Eyeghre, et al., 2023, Nwaonumah, et al., 2023).

Moreover, policies must be updated to reflect the unique risks and needs of underserved populations. Federal regulations such as HIPAA (Health Insurance Portability and Accountability Act) provide a baseline for data protection, but they do not cover all health-related apps or devices, especially those outside of traditional healthcare systems. Additional safeguards are needed to ensure that third-party vendors, technology companies, and insurers do not misuse health data. Policymakers must also invest in public education campaigns that inform people of their digital rights and how to protect their health information (Adelodun, et al., 2018, Chianumba, et al., 2021, Tayebati, et al., 2012, Tomassoni, et al., 2013).

Interoperability and technological adaptability present further complications in implementing a unified framework for digital health equity. Interoperability refers to the ability of different digital health systems, applications, and devices to exchange, interpret, and use data seamlessly. For underrepresented communities, this issue is critical because fragmented or siloed systems can lead to inconsistent care, data duplication, or complete exclusion from digital health services. For example, a patient who accesses telehealth through a community health center may not have their records integrated with hospital systems, leading to redundant tests or overlooked medical history (Akerele, et al., 2024, Fagbenro, et al., 2024, Kelvin-Agwu, et al., 2024).

The U.S. healthcare system is notoriously fragmented, with varying levels of digital maturity across providers, payers, and regions. While some systems boast integrated electronic health records and robust telehealth platforms, others struggle with outdated software, limited bandwidth, or incompatible databases. These disparities affect the ability to deliver cohesive care and make it difficult for public health agencies to monitor digital health equity outcomes across populations (Ajibola, et al., 2024, Folorunso, et al., 2024, Majebi, Adelodun & Anyanwu, 2024). Furthermore, non-standardized platforms may exclude community clinics or safety-net providers from accessing funding or participating in broader digital health networks.

To address interoperability, national standards and regulatory mandates must be enforced, requiring all vendors and healthcare systems to use common protocols and data-sharing frameworks. The 21st Century Cures Act and related rules from the Office of the National Coordinator for Health Information Technology (ONC) have made strides in promoting open APIs and data portability, but full implementation remains uneven. Equity considerations must be central in interoperability planning to ensure that smaller, underfunded clinics serving marginalized populations are not left behind in the digital transformation (Madu & Nwankwo, 2018, Nwankwo, et al., 2012, Nwankwo, Tomassoni & Tayebati, 2012).

Technological adaptability is also a concern as digital health tools continue to evolve rapidly. New platforms, devices, and features emerge constantly, often requiring frequent updates, new training, or additional hardware. For populations with limited resources or digital literacy, keeping up with technological changes is a significant burden. Systems must therefore be designed with flexibility, backward compatibility, and low-bandwidth functionality in mind. Moreover, providers and patients alike must have ongoing access to support—not just during initial implementation but as technologies advance (Noah, et al., 2025, Opia & Matthew, 2025, Udegbe, et al., 2023, Usuemerai, et al., 2024).

The lack of culturally competent tech development also hinders adaptability. Many platforms are developed without user input from underrepresented communities, resulting in designs that are not intuitive, relevant, or accessible. This problem can be mitigated through participatory design processes, in which community members are directly involved in prototyping, testing, and evaluating tools intended for their use (Olowe, et al., 2024, Olulaja, Afolabi & Ajayi, 2024, Shittu, et al., 2024). By embedding adaptability into both technology and process, digital health interventions can remain relevant and useful over time, particularly for communities that have historically been excluded from the digital mainstream.

In conclusion, while the conceptual framework for addressing digital health literacy and access gaps provides a robust foundation for equitable digital healthcare, its implementation is fraught with complex challenges. Sustainability and funding remain precarious, requiring coordinated public investment and long-term planning. Privacy and trust concerns must be addressed through transparent communication, regulatory protections, and culturally sensitive engagement (Okon, Zouo & Sobowale, 2024, Olamijuwon, et al., 2024, Olorunsogo, et al., 2024). Interoperability and adaptability are technical and organizational hurdles that demand both standardization and inclusive innovation. Addressing these challenges will require not only technical solutions but also a firm commitment to equity, justice, and the lived experiences of the communities most affected by the digital divide. Only by doing so can we ensure that digital transformation enhances, rather than hinders, access to health for all.

2.7. Policy Recommendations

Addressing digital health literacy and access gaps in underrepresented communities in the United States requires a coordinated and sustained policy response that integrates public health, technology, education, and social equity. The conceptual framework for achieving digital inclusion in healthcare identifies the core pillars needed to advance equitable access, but for the framework to succeed, it must be operationalized through concrete policy measures across all levels of governance and within the private sector (Adigun, et al., 2024, Folorunso, et al., 2024, Kelvin-Agwu, et al., 2024). The development and implementation of inclusive digital health ecosystems must be a shared responsibility, and policy recommendations targeting government agencies, healthcare providers, and technology developers are essential to realizing this vision.

Government agencies at the federal, state, and local levels play a critical role in shaping the digital health landscape and have the authority to create enabling environments for equitable access. One of the most urgent policy actions is to formally embed digital health literacy and access objectives into national and state health agendas. This includes incorporating digital inclusion metrics into Healthy People 2030 objectives, as well as Medicaid and Medicare modernization plans (Uwumiro, et al., 2024, Wada, et al., 2025, Zouo & Olamijuwon, 2024). Federal agencies such as the Department of Health and Human Services (HHS), the Federal Communications Commission (FCC), and the Centers for Medicare and Medicaid Services (CMS) should align policies to ensure broadband access, affordable devices, and culturally appropriate digital health services are treated as foundational components of public health infrastructure.

Policy mandates must also ensure that digital health access is treated as a social determinant of health. This redefinition would enable the integration of digital inclusion assessments into community health needs assessments, electronic health records, and patient intake processes. It would also allow healthcare systems and insurers to use public funds to provide digital support services—such as training, navigation, and devices—to patients most in need (Balogun, et al., 2023, Ezeamii, et al., 2023, Katas, et al., 2023, Usuemerai, et al., 2024). Government funding mechanisms, including Section 1115 waivers, HRSA grants, and public health block grants, should be explicitly directed to support initiatives that close digital health

literacy gaps among Medicaid populations, residents of public housing, rural communities, and people with disabilities.

Healthcare providers and health systems must be incentivized through policy to proactively address digital inclusion. Reimbursement structures should recognize and support the role of healthcare workers, including community health workers and digital navigators, in educating patients about digital tools and supporting their use. Current reimbursement models for telehealth services often fail to account for the time and resources required to assist patients with low digital literacy or limited English proficiency in navigating digital platforms (Adelodun & Anyanwu, 2024, Ibikunle, et al., 2024, Ogugua, et al., 2024). Updating these models to cover digital literacy screening, technical support, and interpreter services for digital care encounters would reduce inequities and promote more meaningful digital engagement.

In parallel, accreditation and licensing bodies should update provider education and continuing professional development requirements to include digital health equity competencies. Providers should be trained to assess digital literacy as part of routine care, recognize the signs of digital exclusion, and deliver information in formats that meet patients' literacy levels. Cultural humility, trauma-informed communication, and technology-demystifying practices should be incorporated into clinical training programs, ensuring providers can deliver patient-centered care in an increasingly digital environment (Ayo-Farai, et al., 2024, Ibikunle, et al., 2024, Oddie-Okeke, et al., 2024).

Technology developers, including electronic health record vendors, app creators, and telehealth platform providers, must be held accountable through policy and incentives to create inclusive, accessible, and user-friendly tools. Policymakers should establish clear design standards and certification requirements for digital health platforms that are funded through public dollars or used in federally qualified health centers and safety-net institutions (Anyanwu, et al., 2024, Idoko, et al., 2024, Kelvin-Agwu, et al., 2024). These standards must include multilingual support, accessibility for users with disabilities, offline functionality, low-bandwidth optimization, and compliance with plain language guidelines. The Office of the National Coordinator for Health Information Technology (ONC) could lead this effort by expanding its certification program to prioritize equity-driven benchmarks in addition to technical interoperability (Bello, et al., 2024, Igwama, et al., 2024, Katas, et al., 2024, Okobi, et al., 2024).

Incentivizing inclusive design and innovation will require both carrots and sticks. On the incentive side, the federal government and philanthropic foundations should increase investment in equity-centered technology development through challenge grants, innovation funds, and public-private partnerships. Programs such as the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) should dedicate funding tracks for technologies specifically designed to close digital health disparities (Elujide, et al., 2021, Khosrow Tayebati, Ejike Nwankwo & Amenta, 2013), Tomassoni, et al., 2013). Tax credits and preferential contracting can be offered to companies that demonstrate a commitment to universal design principles and co-creation with underrepresented communities. Conversely, digital health tools that fail to meet accessibility standards or demonstrate disproportionate negative impacts on vulnerable populations should be ineligible for use in publicly funded healthcare settings (Gabrielli, et al., 2010, Khosrow Tayebati, et al., 2013, Nwankwo, et al., 2011).

Policies must also promote transparency and accountability. Federal and state health agencies should require health systems and vendors to collect and publicly report data on digital access, usage, and satisfaction disaggregated by race, ethnicity, income, disability status, and geography. This data will help identify gaps, drive targeted interventions, and ensure that digital transformation efforts are benefiting all communities equitably. Patient-reported outcome measures should be expanded to include digital engagement and confidence, and these metrics

should inform both quality improvement and value-based payment models (Abass, et al., 2024, Igwama, et al., 2024, Kelvin-Agwu, et al., 2024, Olowe, et al., 2024).

Integration into national and state agendas also requires interagency and cross-sector collaboration. Digital health equity must be coordinated with efforts in education, housing, workforce development, and broadband infrastructure. For instance, public housing authorities can partner with health systems to provide residents with connectivity and telehealth kiosks. Workforce development agencies can fund training programs for digital navigators and community health workers. School districts and libraries can serve as access points for digital literacy training and health education (Attah, et al., 2022, Chianumba, et al., 2022, Opia, Matthew & Matthew, 2022). A digital health equity task force, established at the federal level and mirrored by state-level counterparts, could help coordinate these efforts, monitor implementation, and elevate best practices.

Another critical policy recommendation is to develop and implement a national digital health equity strategy. This strategy should be shaped by community voices and guided by an equity framework that centers on historically marginalized populations. The strategy must articulate clear goals, timelines, funding commitments, and evaluation mechanisms. Importantly, it must include mechanisms for meaningful community participation at all levels of decision-making, from program design to evaluation. The strategy should be accompanied by a dedicated office or agency charged with implementation oversight, community engagement, and coordination across health and technology sectors (Adelodun & Anyanwu, 2024, Igwama, et al., 2024, Majebi, Adelodun & Anyanwu, 2024).

Finally, state and local governments must be empowered and resourced to adapt and implement these recommendations in a manner that is responsive to their unique demographic, geographic, and cultural contexts. States should be encouraged to develop their own digital health equity plans, aligned with national priorities but tailored to local realities. Local health departments, in particular, are well-positioned to implement community-based digital inclusion initiatives, assess local needs, and coordinate multisector partnerships (Ayo-Farai, et al., 2023, Ezeamii, et al., 2023, Katas, et al., 2023).

In conclusion, the successful implementation of the conceptual framework for addressing digital health literacy and access gaps depends on an ambitious and coordinated policy agenda. Government agencies must institutionalize digital health equity as a public health imperative, healthcare providers must be equipped and incentivized to support digital inclusion, and technology developers must be held to standards that prioritize accessibility and cultural relevance (Afolabi, Ajayi & Olulaja, 2024, Igwama, et al., 2024, Ohalete, et al., 2024). Integration into national and state health agendas ensures that digital equity is not an afterthought, but a fundamental component of 21st-century healthcare delivery. By aligning incentives with inclusive design and community empowerment, the digital divide can be closed—not only in terms of access, but in terms of trust, usability, and health outcomes for all (Al Hasan, Matthew & Toriola, 2024, Igwama, et al., 2024, Okhawere, et al., 2024).

2.8. Conclusion

The conceptual framework for addressing digital health literacy and access gaps in underrepresented U.S. communities presents a comprehensive, equity-centered approach to one of the most pressing challenges in modern healthcare. By articulating four interconnected pillars—digital access infrastructure, digital health literacy development, community-based engagement, and policy and systems integration—the framework provides a roadmap for transforming how healthcare is delivered and accessed in the digital age. It underscores the importance of not only providing internet and devices but also ensuring that individuals have the skills, support, and culturally relevant tools to engage meaningfully with digital health systems. It recognizes the indispensable role of communities, healthcare providers,

policymakers, and technology developers in creating inclusive solutions that reflect the lived experiences of those most often excluded.

The urgency of closing digital health equity gaps cannot be overstated. As healthcare becomes increasingly digitized, individuals without access to or fluency in digital tools are at risk of being further marginalized—exacerbating long-standing disparities in care, outcomes, and trust. The COVID-19 pandemic highlighted both the potential of digital health innovations and the cost of digital exclusion, particularly for low-income families, rural populations, older adults, people with disabilities, and communities of color. If left unaddressed, these gaps will deepen structural inequities and undermine national efforts toward health equity, population health improvement, and universal access to care. The moment demands decisive action, long-term investment, and a commitment to equity that extends beyond rhetoric.

This is a call to action for multi-sector collaboration. Government agencies must lead with bold policies that prioritize digital equity as a core public health goal. Healthcare systems must integrate digital inclusion into their models of care, treating it as essential to quality and patient-centered service. Technology companies must design with and for the people most at risk of exclusion, embedding accessibility and cultural relevance into every layer of innovation. And communities must be empowered—not merely engaged—to shape the solutions that affect their health and lives. Only through sustained, coordinated, and inclusive efforts can we ensure that digital health advancements reach and uplift every community, leaving no one behind in the digital transformation of care.

Reference

Abass, L. A., Usuemerai, P. A., Ibikunle, O. E., Alemede, V., Nwankwo, E. I., & Mbata, A. O. (2024). Enhancing patient engagement through CRM systems: A pathway to improved healthcare delivery. *International Medical Science Research Journal*, *4*(10).

Abass, L. A., Usuemerai, P. A., Ibikunle, O. E., Alemede, V., Nwankwo, E. I., & Mbata, A. O. (2024). Public-private partnerships to enhance healthcare access and affordability. *Int J Multidiscip Res Growth Eval*, *5*, 1327-44.

Abass, L.A., Usuemerai, P.A., Ibikunle, O.E., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. Enhancing patient engagement through CRM systems: A pathway to improved healthcare delivery. *International Medical Science Research Journal*, 4(10), pp.928-960. Available at: https://doi.org/10.51594/imsrj.v4i10.1648.

Abisoye, A., & Olamijuwon, J. I. (2022). A Practical Framework for Advancing Cybersecurity, Artificial Intelligence and Technological Ecosystems to Support Regional Economic Development and Innovation.

Adaramola, T. S., Omole, O. M., Wada, I., Nwariaku, H., Arowolo, M. E., & Adigun, O. A. (2024). Internet of thing integration in green fintech for enhanced resource management in smart cities. *World Journal of Advanced Research and Reviews*, *23*(2), 1317-1327.

Adegoke, S. A., Oladimeji, O. I., Akinlosotu, M. A., Akinwumi, A. I., & Matthew, K. A. (2022). HemoTypeSC point-of-care testing shows high sensitivity with alkaline cellulose acetate hemoglobin electrophoresis for screening hemoglobin SS and SC genotypes. *Hematology, Transfusion and Cell Therapy*, *44*(3), 341-345.

Adelodun, A. M., Adekanmi, A. J., Roberts, A., & Adeyinka, A. O. (2018). Effect of asymptomatic malaria parasitemia on the uterine and umbilical artery blood flow impedance in third-trimester singleton Southwestern Nigerian pregnant women. *Tropical Journal of Obstetrics and Gynaecology*, *35*(3), 333-341.

Adelodun, M. O., & Anyanwu, E. C. (2024). A critical review of public health policies for radiation protection and safety.

Adelodun, M. O., & Anyanwu, E. C. (2024). Environmental and patient safety: Advances in radiological techniques to reduce radiation exposure.

Adelodun, M. O., & Anyanwu, E. C. (2024). Evaluating the Environmental Impact of Innovative Radiation Therapy Techniques in Cancer Treatment.

Adelodun, M. O., & Anyanwu, E. C. (2024). Global Standards in Radiation Safety: A Comparative Analysis of Healthcare Regulations.

Adelodun, M. O., & Anyanwu, E. C. (2024). Health Effects of Radiation: An Epidemiological Study on Populations near Nuclear Medicine Facilities. *Health*, *13*(9), 228-239.

Adelodun, M. O., & Anyanwu, E. C. (2024). Integrating radiological technology in environmental health surveillance to enhance public safety.

Adelodun, M. O., & Anyanwu, E. C. (2025). Public Health Risks Associated with Environmental Radiation from Improper Medical Waste Disposal.

Adelodun, M. O., & Anyanwu, E. C. (2025). Recent Advances in Diagnostic Radiation and Proposals for Future Public Health Studies.

Adelodun, M., & Anyanwu, E. (2024). Comprehensive risk management and safety strategies in radiation use in medical imaging. *Int J Front Med Surg Res*, *6*.

Adeloduna, M. O., & Anyanwub, E. C. (2025). Telehealth implementation: a review of project management practices and outcomes.

Aderinwale, O. A., Sanni, T. A., Lemboye-Bello, R. T., Awonuga, D. O., Ogunfunmilayo, T. A., Raji, M. M., ... & Ugbeyo, N. G. (2025): Prevalence and Risk Factors for Obesity among Pregnant Women Managed at a Public Tertiary Health Facility, Southwest, Nigeria.

Adewuyi, A. Y., Anyibama, B., Adebayo, K. B., Kalinzi, J. M., Adeniyi, S. A., & Wada, I. (2024). Precision agriculture: Leveraging data science for sustainable farming. *International Journal of Scientific Research Archive*, *12*(2), 1122-1129.

Adhikari, A., Ezeamii, V., Ayo Farai, O., Savarese, M., & Gupta, J. (2024, August). Assessing Mold-Specific Volatile Organic Compounds and Molds Using Sorbent Tubes and a CDC/NIOSH developed tool in Hurricane Ian affected Homes. In *ISEE Conference Abstracts* (Vol. 2024, No. 1).

Adhikari, A., Smallwood, S., Ezeamii, V., Biswas, P., Tasby, A., Nwaonumah, E., ... & Yin, J. (2024, August). Investigating Volatile Organic Compounds in Older Municipal Buildings and Testing a Green and Sustainable Method to Reduce Employee Workplace Exposures. In ISEE Conference Abstracts (Vol. 2024, No. 1).

Adigun, O. A., Falola, B. O., Esebre, S. D., Wada, I., & Tunde, A. (2024). Enhancing carbon markets with fintech innovations: The role of artificial intelligence and blockchain. *World Journal of Advanced Research and Reviews*, *23*(2).

Afolabi, O., Ajayi, S., & Olulaja, O. (2024, October 23). *Barriers to healthcare among undocumented immigrants*. In *2024 Illinois Minority Health Conference*. Illinois Department of Public Health.

Afolabi, O., Ajayi, S., & Olulaja, O. (2024, October 23). *Digital health interventions among ethnic minorities: Barriers and facilitators*. Paper presented at the *2024 Illinois Minority Health Conference*.

Ajayi, A. M., Omokanye, A. O., Olowu, O., Adeleye, A. O., Omole, O. M., & Wada, I. U. (2024). Detecting insider threats in banking using AI-driven anomaly detection with a data science approach to cybersecurity.

Ajibola, F. O., Onyeyili, I. N., Adabra, M. S., Obianyo, C. M., Ebubechukwu, D. J., Auwal, A. M., & Justina, E. C. (2024). Adverse health effects of heavy metal pollution in the Enugu Area, Southeastern Nigeria. World Journal of Biology Pharmacy and Health Sciences, 20(3), 10-30574.

Akerele, J. I., Uzoka, A., Ojukwu, P. U., & Olamijuwon, O. J. (2024). Improving healthcare application scalability through microservices architecture in the cloud. International Journal of Scientific Research Updates, 8(02), 100-109.

Akerele, J.I., Uzoka, A., Ojukwu, P.U. and Olamijuwon, O.J. (2024). Optimizing traffic management for public services during high-demand periods using cloud load balancers. Computer Science & IT Research Journal. P-ISSN: 2709-0043, E-ISSN: 2709-0051 Volume 5, Issue 11, P.2594-2608, November 2024. DOI: 10.51594/csitrj.v5i11.1710: http://www.fepbl.com/index.php/csitrj

Akerele, J.I., Uzoka, A., Ojukwu, P.U. and Olamijuwon, O.J. (2024). Minimizing downtime in E-Commerce platforms through containerization and orchestration. International Journal of Multidisciplinary Research Updates, 2024, 08(02), 079–086. https://doi.org/10.53430/ijmru.2024.8.2.0056

Akerele, J.I., Uzoka, A., Ojukwu, P.U. and Olamijuwon, O.J. (2024). Data management solutions for real-time analytics in retail cloud environments. Engineering Science & Technology Journal. P-ISSN: 2708-8944, E-ISSN: 2708-8952 Volume 5, Issue 11, P.3180-3192, November 2024. DOI: 10.51594/estj.v5i11.1706: http://www.fepbl.com/index.php/estj

Akerele, J.I., Uzoka, A., Ojukwu, P.U. and Olamijuwon, O.J. (2024). Increasing software deployment speed in agile environments through automated configuration management. International Journal of Engineering Research Updates, 2024, 07(02), 028–035. https://doi.org/10.53430/ijeru.2024.7.2.0047

Al Hasan, S. M., Matthew, K. A., & Toriola, A. T. (2024). Education and mammographic breast density. *Breast Cancer Research and Treatment*, 1-8.

Alemede, V., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2024). Pharmacists as educators: Enhancing patient understanding and access to specialty medications through community workshops. *Magna Scientia Advanced Biology and Pharmacy*, 13(01), 001–009. https://doi.org/10.30574/msabp.2024.13.1.0053

Alemede, V., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2024). Impact of 340B drug pricing program on specialty medication access: A policy analysis and future directions. Magna Scientia Advanced Biology and Pharmacy, 13(1), 10–18.

Alemede, V., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2024). Designing state-level policies to support independent pharmacies in providing specialty care services in rural regions. Magna Scientia Advanced Biology and Pharmacy, 13(1), 19–29.

Anyanwu, E. C., Maduka, C. P., Ayo-Farai, O., Okongwu, C. C., & Daraojimba, A. I. (2024). Maternal and child health policy: A global review of current practices and future directions. *World Journal of Advanced Research and Reviews*, *21*(2), 1770-1781.

Anyanwu, E. C., Okongwu, C. C., Olorunsogo, T. O., Ayo-Farai, O., Osasona, F., & Daraojimba, O. D. (2024). Artificial Intelligence In Healthcare: A Review Of Ethical Dilemmas And Practical Applications. *International Medical Science Research Journal*, *4*(2), 126-140.

Ariyibi, K. O., Bello, O. F., Ekundayo, T. F., Wada, I. & Ishola, O. (2024). Leveraging Artificial Intelligence for enhanced tax fraud detection in modern fiscal systems.

Attah, J. O., Mbakuuv, S. H., Ayange, C. D., Achive, G. W., Onoja, V. S., Kaya, P. B., ... & Adekalu, O. A. (2022). Comparative Recovery of Cellulose Pulp from Selected Agricultural Wastes in Nigeria to Mitigate Deforestation for Paper. *European Journal of Material Science*, *10*(1), 23-36.

Ayo-Farai, O., Gupta, J., Ezeamii, V., Savarese, M., & Adhikari, A. (2024). Surface Microbial Activity in Hurricane Ian Affected Homes in Relation To Environmental Factors.

Ayo-Farai, O., Jingjing, Y., Ezeamii, V., Obianyo, C., & Tasby, A. (2024). Impacts on Indoor Plants on Surface Microbial Activity in Public Office Buildings in Statesboro Georgia.

Ayo-Farai, O., Momodu, P. A., Okoye, I. C., Ekarika, E., Okafor, I. T., & Okobi, O. E. (2024). Analyzing Knowledge Status and HIV Linkage to Care: Insights From America's HIV Epidemic Analysis Dashboard (AHEAD) National Database. *Cureus*, *16*(10).

Ayo-Farai, O., Obianyo, C., Ezeamii, V., & Jordan, K. (2023). Spatial Distributions of Environmental Air Pollutants Around Dumpsters at Residential Apartment Buildings.

Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2023). Telemedicine in Health Care: A Review of Progress and Challenges in Africa. *Matrix Science Pharma*, *7*(4), 124-132.

Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2024). Digital Health Technologies in Chronic Disease Management: A Global Perspective. *International Journal of Research and Scientific Innovation*, *10*(12), 533-551.

Ayo-Farai, O., Olaide, B. A., Maduka, C. P., & Okongwu, C. C. (2023). Engineering innovations in healthcare: a review of developments in the USA. *Engineering Science & Technology Journal*, *4*(6), 381-400.

Babarinde, A. O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., & Sodamade, O. (2023). Data analytics in public health, A USA perspective: A review. *World Journal of Advanced Research and Reviews*, *20*(3), 211-224.

Babarinde, A. O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., Ogundairo, O., & Sodamade, O. (2023). Review of AI applications in Healthcare: Comparative insights from the USA and Africa. *International Medical Science Research Journal*, *3*(3), 92-107.

Bajwa, J., Munir, U., Nori, A., & Williams, B. (2021). Artificial intelligence in healthcare: transforming the practice of medicine. Future Healthcare Journal, 8(2), e188-e194. https://doi.org/10.7861/fhj.2021-0095

Balogun, O. D., Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2024). The Role of pharmacists in personalised medicine: a review of integrating pharmacogenomics into clinical practice. *International Medical Science Research Journal*, *4*(1), 19-36.

Balogun, O. D., Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2023). Innovations in drug delivery systems: A review of the pharmacist's role in enhancing efficacy and patient compliance.

Balogun, O. D., Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2023). Integrating AI into health informatics for enhanced public health in Africa: a comprehensive review. *International Medical Science Research Journal*, *3*(3), 127-144.

Bello, S., Wada, I., Ige, O., Chianumba, E., & Adebayo, S. (2024). AI-driven predictive maintenance and optimization of renewable energy systems for enhanced operational efficiency and longevity. *International Journal of Science and Research Archive*, *13*(1).

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., & Forkuo, A. Y. (2022). Developing a framework for using AI in personalized medicine to optimize treatment plans. Journal of Frontiers in Multidisciplinary Research, 3(1), 57–71. https://doi.org/10.54660/.IJFMR.2022.3.1.57-71

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2022). Integrating AI, blockchain, and big data to strengthen healthcare data security, privacy, and patient outcomes. Journal of Frontiers in Multidisciplinary Research, 3(1), 124–129. https://doi.org/10.54660/.IJFMR.2022.3.1.124-129

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2023). Exploring the role of AI and machine learning in improving healthcare diagnostics and personalized medicine. Journal of Frontiers in Multidisciplinary Research, 4(1), 177–182. https://doi.org/10.54660/.IJFMR.2023.4.1.177-182

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2022). Developing a predictive model for healthcare compliance, risk management, and fraud detection using data analytics. International Journal of Social Science Exceptional Research, 1(1), 232–238. https://doi.org/10.54660/IJSSER.2022.1.1.232-238

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2023). A conceptual framework for leveraging big data and AI in enhancing healthcare delivery and public health policy. IRE Journals, 5(6), 303–310. https://doi.org/10.36548/ijrte.2023.6.051

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2024). Evaluating the impact of telemedicine, AI, and data sharing on public health outcomes and healthcare access. International Journal of Advanced Multidisciplinary Research and Studies, 4(6), 1620–1625. https://doi.org/10.54871/ijamrs.2024.4.6.1620-1625

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2023). Framework for using behavioral science and public health data to address healthcare inequality and vaccine hesitancy. Journal of Frontiers in Multidisciplinary Research, 4(1), 183–187. https://doi.org/10.54660/.IJFMR.2023.4.1.183-187

Chianumba, E. C., Ikhalea, N., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2021). A conceptual framework for leveraging big data and AI in enhancing healthcare delivery and public health policy. IRE Journals, 5(6), 303–310. https://doi.org/10.54660/IJMOR.2023.2.1.281-287

Chigboh, V. M., Zouo, S. J. C., & Olamijuwon, J. (2024). Health data analytics for precision medicine: A review of current practices and future directions. *International Medical Science Research Journal, 4*(11), 973–984. https://www.fepbl.com/index.php/imsrj/article/view/1732

Chigboh, V. M., Zouo, S. J. C., & Olamijuwon, J. (2024). Predictive analytics in emergency healthcare systems: A conceptual framework for reducing response times and improving patient care. *World Journal of Advanced Pharmaceutical and Medical Research, 7*(2), 119–127. https://zealjournals.com/wjapmr/content/predictive-analytics-emergency-healthcare-systems-conceptual-framework-reducing-response

Chukwuma, C. C., Nwobodo, E. O., Eyeghre, O. A., Obianyo, C. M., Chukwuma, C. G., Tobechukwu, U. F., & Nwobodo, N. (2022): Evaluation of Noise Pollution on Audio-Acuity Among Sawmill Workers In Nnewi Metropolis, Anambra State, Nigeria. changes, 6, 8.

Edoh, N. L., Chigboh, V. M., Zouo, S. J. C., & Olamijuwon, J. (2024). Improving healthcare decision-making with predictive analytics: A conceptual approach to patient risk assessment and care optimization. *International Journal of Scholarly Research in Medicine and Dentistry, 3*(2), 1–10. https://srrjournals.com/ijsrmd/sites/default/files/IJSRMD-2024-0034.pdf

Edoh, N. L., Chigboh, V. M., Zouo, S. J. C., & Olamijuwon, J. (2024). The role of data analytics in reducing healthcare disparities: A review of predictive models for health equity. *International Journal of Management & Entrepreneurship Research, 6*(11), 3819–3829. https://www.fepbl.com/index.php/ijmer/article/view/1721

Edwards, Q. C., & Smallwood, S. (2023). Accessibility and Comprehension of United States Health Insurance Among International Students: A Gray Area.

Edwards, Q., Ayo-Farai, O., Sejoro, S., Chatterjee, A., & Adhikari, A. (2024, October). Associations between climate changes, airborne pollen, selected air pollutants, and asthma-related emergency department visits in Charleston, South Carolina, during 2017-2021. In *APHA 2024 Annual Meeting and Expo*. APHA.

Edwards, Q., Ayo-Farai, O., Uwumiro, F. E., Komolafe, B., Chibuzor, O. E., Agu, I., ... & NWUKE, H. O. (2025). Decade-Long Trends in Hospitalization, Outcomes, and Emergency Department Visits for Inflammatory Bowel Diseases in the United States, 2010 to 2020. *Cureus*, *17*(1).

Edwards, Q., Ayo-Farai, O., Uwumiro, F. E., Komolafe, B., Chibuzor, O. E., Agu, I., ... & Nwuke, H. O. (2025). Decade-Long Trends in Hospitalization, Outcomes, and Emergency Department Visits for Inflammatory Bowel Diseases in the United States, 2010 to 2020. *Cureus*, *17*(1).

Edwards, Q., Idoko, B., Idoko, J. E., Ejembi, E. V., & Onuh, E. P. (2024). Remote monitoring of social behavior in children with autism: The role of digital phenotyping in public programs.

Edwards, Q., Mallhi, A. K., & Zhang, J. (2024, October). The association between advanced maternal age at delivery and childhood obesity. In *APHA 2024 Annual Meeting and Expo*. APHA.

Edwards, Q., Qotineh, A., Okeke, C., & Zhang, J. (2024, September). The National Trend of Using Prescription Immunosuppressives. In *Arthritis & Rheumatology* (Vol. 76, pp. 3969-3970). 111 River St, Hoboken 07030-5774, NJ USA: Wiley.

Edwards, Q., Qotineh, A., Spurgeon, R., & Zhang, J. (2024, October). The association between h. pylori infection and risk of alzheimer's disease. In *APHA 2024 Annual Meeting and Expo*. APHA.

Ekpechi, D. A., Obiukwu, O. O., Nwankwo, E. I., & Okpalaku-Nath, V. C. (2023). Experimental study of the thermal and mechanical properties of epoxy-reinforced composites. *Journal of Applied Physical Science International*, *15*(1), 6-16.

Ekpechi, D. A., Obiukwu, O. O., Opara, U. V., Emeziem, V. C., Nwankwo, E. I., Ezeaku, N. I., ... & Opkalaku-nath, V. C. (2025). Evaluation of Key Performance Factors and Recommendation of Optimization Strategies of a Power Generation Company. *Engineering Science & Technology*, 52-68.

Ekpechi, D. A., Opkalaku-nath, V. C., Opara, U. V., Ezeaku, N. I., Nwankwo, E. I., Nwankwo, C. A., ... & Jackson, D. O. (2025). Modeling and Comparative Analysis of the Compressive Strength of Concretes of Varying Sand Zones Using Scheffe's Theory. *Engineering Science & Technology*, 177-201.

Ekwebene, O. C., Umeanowai, N. V., Edeh, G. C., Noah, G. U., Folasole, A., Olagunju, O. J., & Abazu, S. (2024). The burden of diabetes in America: A data-driven analysis using power BI. *Int. J. Res. Med. Sci*, *12*, 392-396.

Elujide, I., Fashoto, S. G., Fashoto, B., Mbunge, E., Folorunso, S. O., & Olamijuwon, J. O. (2021). Informatics in Medicine Unlocked.

Elujide, I., Fashoto, S. G., Fashoto, B., Mbunge, E., Folorunso, S. O., & Olamijuwon, J. O. (2021). Application of deep and machine learning techniques for multi-label classification performance on psychotic disorder diseases. Informatics in Medicine Unlocked, 23, 100545.

Emeihe, E. V., Nwankwo, E. I., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). Revolutionizing drug delivery systems: Nanotechnology-based approaches for targeted therapy. International Journal of Life Science Research Archive, 7(1), 40–58.

Emeihe, E. V., Nwankwo, E. I., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). The impact of artificial intelligence on regulatory compliance in the oil and gas industry. International Journal of Life Science Research Archive, 7(1), 28-39.

Emeihe, E. V., Nwankwo, E. I., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). Mobile health applications for disease management in rural areas: A systematic review. International Journal of Applied Research in Social Sciences, 6(8), 1725-1746.

Emeihe, E. V., Nwankwo, E. I., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). The impact of artificial intelligence on early diagnosis of chronic diseases in rural areas. International Journal of Biology and Pharmacy Research Updates, 5(8), 1828-1854.

Eyeghre, O. A., Dike, C. C., Ezeokafor, E. N., Oparaji, K. C., Amadi, C. S., Chukwuma, C. C., ... & Igbokwe, V. U. (2023). The impact of Annona muricata and metformin on semen quality and hormonal profile in Arsenic trioxide-induced testicular dysfunction in male Wistar rats. Magna Scientia Advanced Research and Reviews, 8(01), 001-018.

Eyeghre, O. A., Ezeokafor, E. N., Dike, C. C., Oparaji, K. C., Amadi, C. S., Chukwuma, C. C., ... & Muorah, C. O. (2023). The Impact of Annona Muricata on Semen Quality and Antioxidants Levels in Alcohol-Induced Testicular Dysfunction in Male Wistar Rats.

Eze, C. E., Igwama, G. T., Nwankwo, E. I., & Emeihe, E. V. The role of big data in transforming financial management in US healthcare: A conceptual framework.

Eze, C. E., Igwama, G. T., Nwankwo, E. I., & Victor, E. (2024). AI-driven health data analytics for early detection of infectious diseases: A conceptual exploration of US public health strategies.

Eze, C. E., Igwama, G. T., Nwankwo, E. I., & Victor, E. (2024). Predictive modeling for healthcare needs in the aging US population: A conceptual exploration. *Global Journal of Research in Science and Technology*, *2*(02), 094-102.

Ezeamii, J. C., Edwards, Q., Omale, J., Ezeamii, P. C., Idoko, B., & Ejembi, E. V. (2024). Risk beyond the pap: A review of key epidemiological studies on cervical cancer risk factors and populations at highest risk.

Ezeamii, J. C., Edwards, Q., Omale, J., Ezeamii, P. C., Idoko, B., & Ejembi, E. V. (2024). Risk beyond the pap: A review of key epidemiological studies on cervical cancer risk factors and populations at highest risk.

Ezeamii, V. C., Gupta, J., Ayo-Farai, O., Savarese, M., & Adhikari, A. (2024). Assessment of VOCs and Molds Using CDC/NIOSH developed tools in Hurricane Ian affected Homes.

Ezeamii, V. C., Ofochukwu, V. C., Iheagwara, C., Asibu, T., Ayo-Farai, O., Gebeyehu, Y. H., ... & Okobi, O. E. (2024). COVID-19 Vaccination Rates and Predictors of Uptake Among Adults with Coronary Heart Disease: Insight From the 2022 National Health Interview Survey. *Cureus*, *16*(1).

Ezeamii, V., Adhikari, A., Caldwell, K. E., Ayo-Farai, O., Obiyano, C., & Kalu, K. A. (2023, November). Skin itching, eye irritations, and respiratory symptoms among swimming pool users and nearby residents in relation to stationary airborne chlorine gas exposure levels. In *APHA 2023 Annual Meeting and Expo*. APHA.

Ezeamii, V., Ayo-Farai, O., Obianyo, C., Tasby, A., & Yin, J. (2024). A Preliminary Study on the Impact of Temperature and Other Environmental Factors on VOCs in Office Environment.

Ezeamii, V., Jordan, K., Ayo-Farai, O., Obiyano, C., Kalu, K., & Soo, J. C. (2023). Dirunal and seasonal variations of atmospheric chlorine near swimming pools and overall surface microbial activity in surroundings.

Fagbenro, A., Amadi, E. S., Uwumiro, F. E., Nwebonyi, S. O., Edwards, Q. C., Okere, M. O., ... & Ekpunobi, C. (2024). Rates, Diagnoses, and Predictors of Unplanned 30-Day Readmissions of Critical Care Survivors Hospitalized for Lung Involvement in Systemic Lupus Erythematosus: An Analysis of National Representative US Readmissions Data. *Cureus*, *16*(11).

Ferreira, J., Elvas, L., Correia, R., & Mascarenhas, M. (2025). Empowering health professionals with digital skills to improve patient care and daily workflows. Healthcare, 13(3), 329. https://doi.org/10.3390/healthcare13030329

Folorunso, A., Mohammed, V., Wada, I., & Samuel, B. (2024). The impact of ISO security standards on enhancing cybersecurity posture in organizations. *World Journal of Advanced Research and Reviews*, *24*(1), 2582-2595.

Folorunso, A., Wada, I., Samuel, B., & Mohammed, V. (2024). Security compliance and its implication for cybersecurity. *World Journal of Advanced Research and Reviews*, *24*(01), 2105-2121.

Fuko, C. D., Magacha, H. M., Noah, G., & Ikwuka, O. V. (2025). Ethnic/Racial Disparities in Pancreatic Cancer Mortality Across the United States: A National Inpatient Sample Database Analysis. *Cureus*, *17*(1).

Gabrielli, M. G., Tomassoni, D., Accili, D., Nwankwo, I. E., & Panarello, S. (2010). Sialoglycoconjugate expression in the intestinal mucosa of obese Zucker rats. *IJAE: Italian Journal of Anatomy and Embryology: 115, 1/2 Supplement, 2010*, 73-73.

Gabrielli, M. G., Tomassoni, D., Panarello, S., Nwankwo, I. E., Acoli, D., Tayebati, S. K., Lokhandwala, M. F., & Amenta, F. (2010). Sialoglycoconjugate in the intestinal mucosa of obese Zucker rats. Italian Journal of Anatomy and Embryology, 115(1-2 Suppl.).

Gbadegesin, J. O., Adekanmi, A. J., Akinmoladun, J. A., & Adelodun, A. M. (2022). Determination of Fetal gestational age in singleton pregnancies: Accuracy of ultrasonographic placenta thickness and volume at a Nigerian tertiary Hospital. *African Journal of Biomedical Research*, *25*(2), 113-119.

Gilder, M. E., Moo, P., Hashmi, A., Praisaengdet, N., Wai, K., Pimanpanarak, M., ... & McGready, R. (2019). “I can’t read and don’t understand”: Health literacy and health

messaging about folic acid for neural tube defect prevention in a migrant population on the Myanmar-Thailand border. PloS one, 14(6), e0218138.

Gleiß, A., Kohlhagen, M., & Pousttchi, K. (2021). An apple a day – how the platform economy impacts value creation in the healthcare market. Electronic Markets, 31(4), 849-876. https://doi.org/10.1007/s12525-021-00467-2

Govender, P., Fashoto, S. G., Maharaj, L., Adeleke, M. A., Mbunge, E., Olamijuwon, J., ... & Okpeku, M. (2022). The application of machine learning to predict genetic relatedness using human mtDNA hypervariable region I sequences. Plos one, 17(2), e0263790.

Hernandez, A. M., Khoong, E. C., Kanwar, N., Lopez-Solano, N., Rodriguez, J. A., De Marchis, E., ... & Casillas, A. (2024). Lessons learned from a multi-site collaborative working toward a digital health use screening tool. Frontiers in Public Health, 12, 1421129.

Ibikunle, O.E., Usuemerai, P.A., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. Artificial intelligence in healthcare forecasting: Enhancing market strategy with predictive analytics. *International Journal of Applied Research in Social Sciences*, 6(10), pp.2409–2446. Available at: https://doi.org/10.51594/ijarss.v6i10.1640.

Ibikunle, O.E., Usuemerai, P.A., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. AI and digital health innovation in pharmaceutical development. *Computer Science & IT Research Journal*, 5(10), pp.2301-2340. Available at: https://doi.org/10.51594/csitrj.v5i10.1649

Idoko, J., David, O. S., Antwi, V., & Edwards, Q. (2024). Enhancing Information Literacy and User Engagement through Biomimicry in Social Media Design Using Adaptive and Personalized Product Approaches.

Igwama, G. T., Nwankwo, E. I., Emeihe, E. V., & Ajegbile, M. D. (2024). AI-enhanced remote monitoring for chronic disease management in rural areas. International Journal of Applied Research in Social Sciences, 6(8), 1824-1847.

Igwama, G. T., Nwankwo, E. I., Emeihe, E. V., & Ajegbile, M. D. (2024). AI and big data analytics for enhancing public health surveillance in rural communities. International Journal of Applied Research in Social Sciences, 6(8), 1797-1823.

Igwama, G. T., Nwankwo, E. I., Emeihe, E. V., & Ajegbile, M. D. (2024). The role of community health workers in implementing AI-based health solutions in rural areas. International Journal of Biology and Pharmacy Research Updates, 4(1), 1-17.

Igwama, G. T., Nwankwo, E. I., Emeihe, E. V., & Ajegbile, M. D. (2024). The role of AI in optimizing drug dosage and reducing medication errors. International Journal of Biology and Pharmacy Research Updates, 4(1), 18-34.

Igwama, G. T., Nwankwo, E. I., Emeihe, E. V., & Ajegbile, M. D. (2024). Enhancing maternal and child health in rural areas through AI and mobile health solutions. International Journal of Biology and Pharmacy Research Updates, 4(1), 35-50.

Igwama, G. T., Nwankwo, E. I., Emeihe, E. V., & Ajegbile, M. D. (2024). Artificial intelligence in predictive analytics for epidemic outbreaks in rural populations. International Journal of Biology and Pharmacy Research Updates, 4(8), 859-881.

Ikese, C. O., Adie, P. A., Onogwu, P. O., Buluku, G. T., Kaya, P. B., Inalegwu, J. E., ... & Awodi, G. O. (2024): Assessment of Selected Pesticides Levels in Some Rivers in Benue State-Nigeria and the Cat Fishes Found in Them.

Ikese, C. O., Ubwa, S. T., Okopi, S. O., Akaasah, Y. N., Onah, G. A., Targba, S. H., ... & Adekalu, O. A. (2024): Assessment of Ground Water Quality in Flooded and Non-Flooded Areas.

Ikhalea, N., Chianumba, E. C., Mustapha, A. Y., Forkuo, A. Y., & Osamika, D. (2024). A model for strengthening health systems in low-resource settings using AI and telemedicine.

International Journal of Future Engineering Innovations, 1(1), 86–92. https://doi.org/10.54660/IJFEI.2024.1.1.86-92

Imran, S., Patel, R. S., Onyeaka, H. K., Tahir, M., Madireddy, S., Mainali, P., ... & Ahmad, N. (2019). Comorbid depression and psychosis in Parkinson's disease: a report of 62,783 hospitalizations in the United States. *Cureus*, *11*(7).

Johnson, O. B., Olamijuwon, J., Cadet, E., Osundare, O. S., & Ekpobimi, H. O. (2024). Optimizing predictive trade models through advanced algorithm development for cost-efficient infrastructure. International Journal of Engineering Research and Development, 20(11), 1305–1313.

Johnson, O. B., Olamijuwon, J., Cadet, E., Samira, Z., & Ekpobimi, H. O. (2024). Developing an integrated DevOps and serverless architecture model for transforming the software development lifecycle. International Journal of Engineering Research and Development, 20(11), 1314–1323.

Johnson, O. B., Olamijuwon, J., Cadet, E., Weldegeorgise, Y. W., & Ekpobimi, H. O. (2024). Developing a leadership and investment prioritization model for managing high-impact global cloud solutions. Engineering Science & Technology Journal, 5(12), 3232–3247.

Katas, K. U., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2023). The role of peer counseling in addressing substance abuse and addiction in high school students. International Journal of Management & Entrepreneurship Research, 5(12), December.

Katas, K. U., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2024). The intersection of mental health and substance abuse: Exploring dual diagnosis and treatment strategies for young people. International Journal of Scholarly Research in Medicine and Dentistry, 3(1), 15–30.

Katas, K. U., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2023). Evaluating the impact of early intervention programs on substance abuse prevention in adolescents: A comprehensive review. IJARS, 5(10), December.

Katas, K. U., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2024). Public health campaigns and their influence on substance abuse awareness and prevention among youth: An analysis of media strategies. International Journal of Scholarly Research in Medicine and Dentistry, 3(1), 31–47.

Katas, K. U., Nwankwo, E. I., Igwama, G. T., Olaboye, J. A., & Anyanwu, E. C. (2023). Community-based approaches to combatting substance abuse among youth: A case study of urban and rural programs. International Journal of Applied Research in Social Sciences, 5(10), December.

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024): Enhancing Biomedical Engineering Education: Incorporating Practical Training in Equipment Installation and Maintenance.

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024): The Impact of Regular Maintenance on the Longevity and Performance of Radiology Equipment.

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024). Strategies for optimizing the management of medical equipment in large healthcare institutions. *Strategies*, *20*(9), 162-170.

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024). Advancements in biomedical device implants: A comprehensive review of current technologies. *Int. J. Front. Med. Surg. Res*, *6*, 19-28.

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024). Integrating biomedical engineering with open-source telehealth platforms: enhancing remote patient monitoring in global healthcare systems. *International Medical Science Research Journal*, *4*(9).

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024). The role of biomedical engineers in enhancing patient care through efficient equipment management. *International Journal Of Frontiers in Medicine and Surgery Research*, *6*(1), 11-18.

Kelvin-Agwu, M. C., Adelodun, M. O., Igwama, G. T., & Anyanwu, E. C. (2024). Innovative approaches to the maintenance and repair of biomedical devices in resource-limited settings.

Khosrow Tayebati, S., Ejike Nwankwo, I., & Amenta, F. (2013). Intranasal drug delivery to the central nervous system: present status and future outlook. *Current pharmaceutical design*, *19*(3), 510-526.

Khosrow Tayebati, S., Nwankwo, I. E., Amenta, F., Traini, E., & Borsa, M. (2011). New route for Tizanidine administration: a pharmacokinetics and light microscope autoradiography study. *IJAE: Italian Journal of Anatomy and Embryology: 116, 1 Supplement, 2011*, 183-183.

Khosrow Tayebati, S., Tomassoni, D., Ejike Nwankwo, I., Di Stefano, A., Sozio, P., Serafina Cerasa, L., & Amenta, F. (2013). Modulation of monoaminergic transporters by choline-containing phospholipids in rat brain. *CNS & Neurological Disorders-Drug Targets (Formerly Current Drug Targets-CNS & Neurological Disorders)*, *12*(1), 94-103.

Konopik, J. (2023). The impact of digital platforms and ecosystems in healthcare on value creation—a integrative review and research agenda. Ieee Access, 11, 135811-135819. https://doi.org/10.1109/access.2023.3336983

Kuo, Y. M., Nwankwo, E. I., Nussbaum, R. L., Rogers, J., & Maccecchini, M. L. (2019). Translational inhibition of α-synuclein by Posiphen normalizes distal colon motility in transgenic Parkinson mice. *American journal of neurodegenerative disease*, *8*(1), 1.

Kuo, Y. M., Nwankwo, E. I., Nussbaum, R., Rogers, J., & Maccechini, M. L. (2019). Translational inhibition of α-synuclein by Posiphen normalizes distal colon motility in transgenic Parkinson mice. American Journal of Neurodegenerative Diseases, 8(1), 1–15.

Madu, K. E., & Nwankwo, E. I. (2018). Effects of Friction on Critical Pressure Ratio of A Nozzle. *Journal of Industrial Technology*, *3*(1), 47-55.

Madu, K. E., Nwankwo, E. I., Okoronkwo, G. O., & Onyewudiala, J. I. (2019). Micro-Mechanics Mercerization Analysis on the Tensile Strength and Interphase Quality of Stipa Stem Fibre-Reinforced Polypropylene Composite Materials. *Iconic Research and Engineering Journals*, *3*(5), 73.

Madu, K. E., Nwankwo, E. I., Okoronkwo, G. O., & Onyewudiala, J. I. (2020). Investigative analysis of the tensile and impact strengths of hybridized aluminum metal matrix composite materials. *Journal of Scientific Research and Reports*, *26*(3), 72.

Madu, K., & Nwankwo, E. (2018). Evaluation of pump losses: An energy principle-A review. *Equatorial Journal of Engineering*, 85-91.

Maduka, C. P., Okongwu, C. C., Enahoro, A., Osunlaja, O., & Ajogwu, A. E. (2023). Integration of public health policy and laboratory science in Nigeria: a review of responses to Covid-19. *Int Med Sci Res J*, *3*(1), 24-46.

Majebi, N. L., Adelodun, M. O., & Anyanwu, E. C. (2024). *Community-based interventions to prevent child abuse and neglect: A policy perspective*. *International Journal of Engineering Inventions, 13*(9), 367–374.

Majebi, N. L., Adelodun, M. O., & Anyanwu, E. C. (2024). *Early childhood trauma and behavioral disorders: The role of healthcare access in breaking the cycle*. *Comprehensive Research and Reviews in Science and Technology, 2*(1), 080–090.

Majebi, N. L., Adelodun, M. O., & Anyanwu, E. C. (2024). *Integrating trauma-informed practices in US educational systems: Addressing behavioral challenges in underserved communities*. *Comprehensive Research and Reviews in Science and Technology, 2*(1), 070–079.

Majebi, N. L., Adelodun, M. O., & Anyanwu, E. C. (2024). *Maternal mortality and healthcare disparities: Addressing systemic inequities in underserved communities*. *International Journal of Engineering Inventions, 13*(9), 375–385.

Majebi, N. L., Drakeford, O. M., Adelodun, M. O., & Anyanwu, E. C. (2023). *Leveraging digital health tools to improve early detection and management of developmental disorders in children*. *World Journal of Advanced Science and Technology, 4*(1), 025–032.

Matthew, A., Opia, F. N., Matthew, K. A., Kumolu, A. F., & Matthew, T. F. (2021). Cancer Care Management in the COVID-19 Era: Challenges and adaptations in the global south. *Cancer*, *2*(6).

Matthew, K. A., Akinwale, F. M., & Opia, F. N. (2022). The impact of telehealth on cancer care access in minority populations during the pandemic era. *International Journal of Multidisciplinary Comprehensive Research*, 1(6), 18–24.

Matthew, K. A., Akinwale, F. M., Opia, F. N., & Adenike, A. (2021). The Relationship between oral Contraceptive Use, Mammographic Breast Density, and Breast Cancer Risk.

Matthew, K. A., Getz, K. R., Jeon, M. S., Luo, C., Luo, J., & Toriola, A. T. (2024). Associations of Vitamins and Related Cofactor Metabolites with Mammographic Breast Density in Premenopausal Women. *The Journal of Nutrition*, *154*(2), 424-434.

Matthew, K. A., Nwaogelenya, F., & Opia, M. (2024). Conceptual review on the importance of data visualization tools for effective research communication. *International Journal Of Engineering Research and Development*, *20*(11), 1259-1268. https://ijerd.com/paper/vol20-issue11/201112591268.pdf

Matthew, K. A., Nwaogelenya, F., & Opia, M. (2025). Culturally sensitive interventions for mental health in vulnerable populations: Bridging gaps in care. *International Journal of Research Publication and Reviews*, *6*(1), 2984-2997.

Mgbecheta, J., Onyenemezu, K., Okeke, C., Ubah, J., Ezike, T., & Edwards, Q. (2023): Comparative Assessment of Job Satisfaction among Frontline Health Care Workers in a Tertiary Hospital in South East Nigeria. *AGE (years)*, *28*, 6-83.

Mohammed, M., Mohammed, M., & Mohammed, V. (2022). Impact of artificial intelligence on the automation of digital health system. International Journal of Software Engineering & Applications, 13(6), 23-29. https://doi.org/10.5121/ijsea.2022.13602

Nasuti, C., Falcioni, M. L., Nwankwo, I. E., Cantalamessa, F., & Gabbianelli, R. (2008). Effect of permethrin plus antioxidants on locomotor activity and striatum in adolescent rats. Toxicology, 251(1-3), 45–50.

Nazeha, N., Pavagadhi, D., Kyaw, B., Car, J., Jiménez, G., & Car, L. (2020). A digitally competent health workforce: scoping review of educational frameworks. Journal of Medical Internet Research, 22(11), e22706. https://doi.org/10.2196/22706

Nkansah, J. O., & Oldac, Y. I. (2024). Unraveling the attributions of digital literacy skills and knowledge gap in Ghana's higher education: Undergraduate students voices in a phenomenological study. Education and Information Technologies, 29(12), 15249-15268.

Nnagha, E. M., Ademola Matthew, K., Izevbizua, E. A., Uwishema, O., Nazir, A., & Wellington, J. (2023). Tackling sickle cell crisis in Nigeria: the need for newer therapeutic solutions in sickle cell crisis management–short communication. *Annals of Medicine and Surgery*, *85*(5), 2282-2286.

Noah, G. U., Omohoro, M. U., Magacha, H. M., Fuko, C. D., Ezike, T., & Ezike, T. C. (2025). Racial Disparities in Hypertension-Related Hospital Mortality Among Adults in the United States. *Cureus*, *17*(3).

Novelli, A., Schüttig, W., Spallek, J., Wachtler, B., Diehl, K., Moor, I., … & Sundmacher, L. (2021). Correlation of mesolevel characteristics of the healthcare system and socioeconomic inequality in healthcare use: a scoping review protocol. BMJ Open, 11(2), e044301. https://doi.org/10.1136/bmjopen-2020-044301

Nwankwo, E. I., Amenta, F., DI CESARE MANNELLI, L., Pacini, A., Bonaccini, L., Ghelardini, C., ... & Tomassoni, D. (2011). Central nervous system changes in a model of compressive neuropathy: thioctic acid enantiomers activity.

Nwankwo, E. I., Emeihe, E. V., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). Innovative drug delivery methods for combating antimicrobial resistance. Volume 4, Issue 8, 834–858.

Nwankwo, E. I., Emeihe, E. V., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). Integrating telemedicine and AI to improve healthcare access in rural settings. International Journal of Life Science Research Archive, 7(1), 59–77.

Nwankwo, E. I., Emeihe, E. V., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). AI in personalized medicine: Enhancing drug efficacy and reducing adverse effects. International Journal of Biology and Pharmacy Research Updates, 4(8), 806-833.

Nwankwo, E. I., Emeihe, E. V., Ajegbile, M. D., Olaboye, J. A., & Maha, C. C. (2024). Artificial Intelligence in predictive analytics for epidemic outbreaks in rural populations. *International Journal of Life Science Research Archive*, *7*(1), 078-094.

Nwankwo, E., Amenta, F., Tomassoni, D., & Tayebati, K. S. (2012). Central Nervous System Changes in a Model of Compressive Neuropathy: Thioctic Acid Enantiomers Activity: PP356. *Pain Practice*, *12*, 95.

Nwankwo, I., Tomassoni, D., & Tayebati, K. (2012). P1-205 The Cholinergic Approach In Treatment Of Vascular Dementia: Evidence From Preclinical Studies. *Alzheimer's & Dementia*, *8*(4S_Part_5), P179-P179.

Nwankwo, I., Tomassoni, D., & Tayebati, K. (2012). The cholinergic approach in the treatment of vascular dementia: Evidence from preclinical studies. Journal of the Alzheimer's Association, 8(4), P179.

Nwankwo, I., Tomassoni, D., & Tayebati, K. (2012). The cholinergic approach in treatment of vascular dementia: Evidence from preclinical studies. *Alzheimer's & Dementia*, *8*(4), P179.

Nwankwo, I., Tomassoni, D., & Tayebati, S. K. (2012). The cholinergic approach in treatment of vascular dementia: Evidence from preclinical studies. Alzheimer's & Dementia, 8(4S_Part_5), P179–P179. (Poster presentation Abstract)

Nwankwo, I., Tomassoni, D., Amenta, F., Tayebati, S., & Traini, E. (2011). Pathogenesis of vascular dementia. Alzheimer's & Dementia, 7(suppl.), S705–S706. (Poster presentation Abstract)

Nwankwo, I., Tomassoni, D., Amenta, F., Tayebati, S., & Traini, E. (2011). P4-023: Pathogenesis of vascular dementia. *Alzheimer's & Dementia*, *7*, S705-S706.

Nwankwo, I., Tomassoni, D., Amenta, F., Tayebati, S., & Traini, E. (2011). Pathogenesis of vascular dementia. *Alzheimer's & Dementia*, *7*(4), S705-S706.

Nwankwo, I., Tomassoni, D., Tayebati, S., Di Cesare Manelli, L., & Amenta, F. (2012). Central nervous system activity of thioctic acid enantiomers in an animal model of cerebrovascular disease. Alzheimer's & Dementia, 8(4S_Part_5). (Poster presentation Abstract)

Nwankwo, I., Tomassoni, D., Tayebati, S., Di Cesare Manelli, L., & Amenta, F. (2012). P1-206: Central nervous system activity of thioctic acid enantiomers in an animal model of cerebrovascular disease. *Alzheimer's & Dementia*, *8*(4S_Part_5), P179-P179.

Nwankwo, I., Tomassoni, D., Tayebati, S., Manelli, L. D. C., & Amenta, F. (2012). Central nervous system activity of thioctic acid enantiomers in an animal model of cerebrovascular disease. *Alzheimer's & Dementia*, *8*(4), P179.

Nwaonumah, E., Riggins, A., Azu, E., Ayo-Farai, O., Chopak-Foss, J., Cowan, L., & Adhikari, A. (2023). A Refreshing Change: Safeguarding Mothers and Children from PFAS Exposure.

Obianyo, C., & Eremeeva, M. (2023). Alpha-Gal Syndrome: The End of Red Meat Consumption?.

Obianyo, C., Das, S., & Adebile, T. (2024). Tick Surveillance on the Georgia Southern University Statesboro Campus.

Obianyo, C., Ezeamii, V. C., Idoko, B., Adeyinka, T., Ejembi, E. V., Idoko, J. E., ... & Ugwu, O. J. (2024). The future of wearable health technology: from monitoring to preventive healthcare. World J Biol Pharm Heal Sci, 20, 36-55.

Obianyo, C., Tasby, A., Ayo-Farai, O., Ezeamii, V., & Yin, J. (2024). Impact of Indoor Plants on Particulate Matter in Office Environments.

Oboh, A., Uwaifo, F., Gabriel, O. J., Uwaifo, A. O., Ajayi, S. A. O., & Ukoba, J. U. (2024). Multi-Organ toxicity of organophosphate compounds: hepatotoxic, nephrotoxic, and cardiotoxic effects. *International Medical Science Research Journal*, *4*(8), 797-805.

Oddie-Okeke, C. C., Ayo-Farai, O., Iheagwara, C., Bolaji, O. O., Iyun, O. B., Zaynieva, S., & Okobi, O. E. (2024). Analyzing HIV Pre-exposure Prophylaxis and Viral Suppression Disparities: Insights From America's HIV Epidemic Analysis Dashboard (AHEAD) National Database. *Cureus*, *16*(8).

Ogbonna, C. C., Dori, G. U., Nweze, E. I., Muoneke, G., Nwankwo, I. E., & Akputa, N. (2012). Comparative analysis of urinary schistosomiasis among primary school children and rural farmers in Obollo-Eke, Enugu State, Nigeria: Implications for control. Asian Pacific Journal of Tropical Medicine, 5(4), 796–802.

Ogugua, J. O., Anyanwu, E. C., Olorunsogo, T., Maduka, C. P., & Ayo-Farai, O. (2024). Ethics and strategy in vaccination: A review of public health policies and practices. *International Journal of Science and Research Archive*, *11*(1), 883-895.

Ogundairo, O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2023). Review on MALDI mass spectrometry and its application in clinical research. *International Medical Science Research Journal*, *3*(3), 108-126.

Ogundairo, O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. T. (2024). Review on MALDI Imaging for Direct Tissue Imaging and its Application in Pharmaceutical Research. *International Journal of Research and Scientific Innovation*, *10*(12), 130-141.

Ogundairo, O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., Babarinde, A. O., & Sodamade, O. (2023). Review On Protein Footprinting As A Tool In Structural Biology. *Science Heritage Journal (GWS)*, *7*(2), 83-90.

Ohalete, N. C., Ayo-Farai, O., Olorunsogo, T. O., Maduka, P., & Olorunsogo, T. (2024). AI-Driven Environmental Health Disease Modeling: A Review of Techniques and Their Impact on Public Health in the USA And African Contexts. *International Medical Science Research Journal*, *4*(1), 51-73.

Ohalete, N. C., Ayo-Farai, O., Onwumere, C., & Paschal, C. (2024). Navier-stokes equations in biomedical engineering: A critical review of their use in medical device development in the USA and Africa.

Ohalete, N. C., Ayo-Farai, O., Onwumere, C., Maduka, C. P., & Olorunsogo, T. O. (2024). Functional data analysis in health informatics: A comparative review of developments and applications in the USA and Africa.

Okhawere, K. E., Grauer, R., Saini, I., Joel, I. T., Beksac, A. T., Ayo-Farai, O., ... & Badani, K. K. (2024). Factors associated with surgical refusal and non-surgical candidacy in stage 1 kidney cancer: a National Cancer Database (NCDB) analysis. *The Canadian Journal of Urology*, *31*(5), 11993.

Okobi, O. E., Ayo-Farai, O., Tran, M., Ibeneme, C., Ihezie, C. O., Ezie, O. B., ... & Tran, M. H. (2024). The Impact of Infectious Diseases on Psychiatric Disorders: A Systematic Review. *Cureus*, *16*(8).

Okon, R., Zouo, S. J. C., & Sobowale, A. (2024). Navigating complex mergers: A blueprint for strategic integration in emerging markets. *World Journal of Advanced Research and Reviews, 24*(2), 2378–2390. https://wjarr.com/content/navigating-complex-mergers-blueprint-strategic-integration-emerging-markets

Okoro, Y. O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., & Sodamade, O. T. (2024). The Role of technology in enhancing mental health advocacy: a systematic review. *International Journal of Applied Research in Social Sciences*, *6*(1), 37-50.

Okoro, Y. O., Ayo-Farai, O., Maduka, C. P., Okongwu, C. C., & Sodamade, O. T. (2024). A review of health misinformation on digital platforms: challenges and countermeasures. *International journal of applied research in social sciences*, *6*(1), 23-36.

Olamijuwon, J., & Zouo, S. J. C. (2024). The impact of health analytics on reducing healthcare costs in aging populations: A review. *International Journal of Management & Entrepreneurship Research*. https://www.fepbl.com/index.php/ijmer/article/view/1690

Olamijuwon, J., Akerele, J. I., Uzoka, A., & Ojukwu, P. U. (2024). Improving response times in emergency services through optimized Linux server environments. International Journal of Engineering Research and Development, 20(11), 1111–1119. International Journal of Engineering Research and Development

Olamijuwon, J., Akerele, J. I., Uzoka, A., & Ojukwu, P. U. (2024). Reducing IT service downtime through data-driven incident management and root cause analysis. International Journal of Engineering Research and Development, 20(11), 1120–1126. International Journal of Engineering Research and Development.

Olamijuwon, O. J. (2020). Real-time Vision-based Driver Alertness Monitoring using Deep Neural Network Architectures (Master's thesis, University of the Witwatersrand, Johannesburg (South Africa)).

Olivera, J., Ford, J., Sowden, S., & Bambra, C. (2022). Conceptualisation of health inequalities by local healthcare systems: a document analysis. Health & Social Care in the Community, 30(6). https://doi.org/10.1111/hsc.13791

Olorunsogo, T. O., Balogun, O. D., Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., & Onwumere, C. (2024). Mental health and social media in the US: A review: Investigating the potential links between online platforms and mental well-being among different age groups. *World Journal of Advanced Research and Reviews*, *21*(1), 321-334.

Olorunsogo, T. O., Balogun, O. D., Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., & Onwumere, C. (2024). Bioinformatics and personalized medicine in the US: A comprehensive review: Scrutinizing the advancements in genomics and their potential to revolutionize healthcare delivery.

Olorunsogo, T. O., Balogun, O. D., Ayo-Farai, O., Ogundairo, O., Maduka, C. P., Okongwu, C. C., & Onwumere, C. (2024). Reviewing the evolution of US telemedicine post-pandemic by analyzing its growth, acceptability, and challenges in remote healthcare

delivery during Global Health Crises. *World Journal of Biology Pharmacy and Health Sciences*, *17*(1), 075-090.

Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Review of predictive modeling and machine learning applications in financial service analysis. *Computer Science & IT Research Journal, 5*(11), 2609–2626. https://fepbl.com/index.php/csitrj/article/view/1731

Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Conceptual frameworks and innovative biostatistical approaches for advancing public health research initiatives. *International Journal of Scholarly Research in Medicine and Dentistry, 3*(2), 11–21. https://srrjournals.com/ijsrmd/content/conceptual-frameworks-and-innovative-biostatistical-approaches-advancing-public-health

Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Comprehensive review of advanced data analytics techniques for enhancing clinical research outcomes. *International Journal of Scholarly Research in Biology and Pharmacy, 5*(1), 8–17. https://srrjournals.com/ijsrbp/content/comprehensive-review-advanced-data-analytics-techniques-enhancing-clinical-research-outcomes

Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Comprehensive review of logistic regression techniques in predicting health outcomes and trends. *World Journal of Advanced Pharmaceutical and Life Sciences, 7*(2), 16–26. https://zealjournals.com/wjapls/sites/default/files/WJAPLS-2024-0039.pdf

Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Theoretical perspectives on biostatistics and its multifaceted applications in global health studies. *International Journal of Applied Research in Social Sciences, 6*(11), 2791–2806. https://www.fepbl.com/index.php/ijarss/article/view/1726

Olowe, K. J., Edoh, N. L., Zouo, S. J. C., & Olamijuwon, J. (2024). Conceptual review on the importance of data visualization tools for effective research communication. *International Journal of Engineering Research and Development, 20*(11), 1259–1268. https://ijerd.com/paper/vol20-issue11/201112591268.pdf

Olulaja, O., Afolabi, O., & Ajayi, S. (2024, October 23). *Bridging gaps in preventive healthcare: Telehealth and digital innovations for rural communities*. In *2024 Illinois Minority Health Conference*. Illinois Department of Public Health.

Opia, F. N., & Matthew, K. A. (2025): Empowering Unrepresented Populations Through Inclusive Policy Frameworks In Global Health Initiatives.

Opia, F. N., Matthew, K. A., & Matthew, T. F. (2022). Leveraging Algorithmic and Machine Learning Technologies for Breast Cancer Management in Sub-Saharan Africa.

Opia, F. N., Peterson–Sgro, K., Gabriel, O. J., Kaya, P. B., Ajayi, S. A. O., Akinwale, O. J., & Inalegwu, J. E. (2025). Housing instability and mental health among low-income minorities: Insights from Illinois BRFSS data.

Oshodi, A. N., Adelodun, M. O., Anyanwu, E. C., & Majebi, N. L. (2024). *Combining parental controls and educational programs to enhance child safety online effectively*. *International Journal of Applied Research in Social Sciences, 6*(9), 2293-2314.

Patel, R. D., Abramowitz, C., Shamsian, E., Okhawere, K. E., Deluxe, A., Ayo-Farai, O., ... & Badani, K. K. (2022, June). Is YouTube a good resource for patients to better understand kidney cancer?. In *Urologic Oncology: Seminars and Original Investigations* (Vol. 40, No. 6, pp. 275-e19). Elsevier.

Shittu, R. A., Ehidiamen, A. J., Ojo, O. O., Zouo, S. J. C., Olamijuwon, J., Omowole, B. M., & Olufemi-Phillips, A. Q. (2024). The role of business intelligence tools in improving healthcare patient outcomes and operations. *World Journal of Advanced Research and Reviews, 24*(2), 1039–1060. https://wjarr.com/sites/default/files/WJARR-2024-3414.pdf

Steinhauser, S. (2021). Covid-19 as a driver for digital transformation in healthcare., 93-102. https://doi.org/10.1007/978-3-030-65896-0_8

Tayebati, S. K., Nwankwo, I. E., & Amenta, F. (2013). Intranasal drug delivery to the central nervous system: Present status and future outlook. Journal of Current Pharmaceutical Design, 19(3), 510–526.

Tayebati, S. K., Nwankwo, I. E., Borsa, M., Traini, E., & Amenta, F. (2011). New route for tizanidine administration: A pharmacokinetics and light microscope autoradiography study. Italian Journal of Anatomy and Embryology, 116(1), 183.

Tayebati, S. K., Nwankwo, I. E., Zamponi, B., Tavoletti, M., & Amenta, F. (2012). Effects of stereoisomers of thioctic acid on rat renal vasculature microanatomy. Italian Journal of Anatomy and Embryology, 117(2), 187.

Tayebati, S. K., Tomassoni, D., Nwankwo, I. E., & Amenta, F. (2013). Activity of choline alphoscerate on cerebrovascular morphology and inflammatory markers in spontaneously hypertensive rats. European Journal of Histochemistry, 57(3), 9.

Tayebati, S. K., Tomassoni, D., Nwankwo, I. E., Di Stefano, A., Sozio, P., Cerasa, L. S., & Amenta, F. (2013). Modulation of monoaminergic transporters by choline-containing phospholipids in rat brain. Journal of CNS & Neurological Disorders-Drug Targets, 12(1), 94–103.

Tayebati, S. K., Tomassoni, D., Traini, E., Nwankwo, I. E., & Amenta, F. (2010). Effects of cholinergic enhancing drugs on cholinergic transporters in the brain of spontaneously hypertensive rats. Italian Journal of Anatomy and Embryology, 115(1-2 Suppl.).

Tomassoni, D., Amenta, F., Di Cesare Mannelli, L., Ghelardini, C., Nwankwo, I. E., Pacini, A., & Tayebati, S. K. (2013). Neuroprotective activity of thioctic acid in central nervous lesions consequent to peripheral nerve injury. BioMed Research International, November 2013.

Tomassoni, D., Amenta, F., Farfariello, V., Amantini, C., Di Cesare Mannelli, L., Nwankwo, I. E., Marini, C., & Tayebati, S. K. (2013). Brain activity of thioctic acid enantiomers: In vitro and in vivo studies in an animal model of cerebrovascular injury. International Journal of Molecular Science, 14(3), 4580–4595.

Tomassoni, D., Amenta, F., Mannelli, L. D. C., Ghelardini, C., Nwankwo, I. E., Pacini, A., & Tayebati, S. K. (2013). Research Article Neuroprotective Activity of Thioctic Acid in Central Nervous System Lesions Consequent to Peripheral Nerve Injury.

Tomassoni, D., Catalani, A., Cinque, C., Di Tulio, M. A., Tayebati, S. K., Cadoni, A., Nwankwo, I. E., Traini, E., & Amenta, F. (2012). Effects of cholinergic enhancing drugs on cholinergic transporters in the brain and peripheral blood lymphocytes of spontaneously hypertensive rats. Journal of Current Alzheimer Research, 1, 120–127.

Tomassoni, D., Di Cesare Mannelli, L., Nwankwo, I. E., & Ghelardini, C. (2013). Activity of thioctic acid enantiomers on spinal cord changes consequent to peripheral nerve injury. European Journal of Histochemistry, 57(suppl.).

Tomassoni, D., Nwankwo, I. E., Gabrielli, M. G., Bhatt, S., Muhammad, A. B., Lokhandwala, M. F., & Amenta, F. (2013). Astrogliosis in the brain of obese Zucker rat: A model of metabolic syndrome. Journal of Neuroscience Letters, 543, 136–141.

Tomassoni, D., Nwankwo, I. E., Gabrielli, M. G., Lokhandwala, M. F., & Tayebati, S. K. (2013). Brain morphological analysis of obese zucker rat: Model of metabolic syndrome. European Journal of Histochemistry, 57(1), 17–17.

Udegbe, F. C., Nwankwo, E. I., Igwama, G. T., & Olaboye, J. A. (2023). Utilizing microfluidic chips for rapid, on-site detection of antimicrobial resistance in infectious pathogens. International Medical Science Research Journal, 3(3), December.

Udegbe, F. C., Nwankwo, E. I., Igwama, G. T., & Olaboye, J. A. (2023). Advancing point-of-care diagnostics through nanotechnology: A focus on low-cost solutions for rural

healthcare. International Journal of Applied Research in Social Sciences, 5(10), December.

Udegbe, F. C., Nwankwo, E. I., Igwama, G. T., & Olaboye, J. A. (2022). Development of portable diagnostic devices for early detection of zoonotic diseases: A one health approach. International Medical Science Research Journal, P-ISSN: 2707-3394, December.

Udegbe, F. C., Nwankwo, E. I., Igwama, G. T., & Olaboye, J. A. (2023). Real-time data integration in diagnostic devices for predictive modeling of infectious disease outbreaks. Computer Science & IT Research Journal, 4(3), December.

Udegbe, F. C., Nwankwo, E. I., Igwama, G. T., & Olaboye, J. A. (2024). Integration of blockchain technology in biomedical diagnostics: Ensuring data security and privacy in infectious disease surveillance. Engineering Science & Technology Journal, 3(2), August.

Ugwu, C., Okoazu, E., Okam, O., Ezike, T., & Noah, G. U. (2024). Equity in Vaccination: A Comprehensive Analysis of Federal Policies-Immunization Information Systems and Child Care Vaccination Laws-Impacting Immunization Uptake across Age Groups. *Health Sys Policy Res*, *11*(1), 001.

Usuemerai, P.A., Ibikunle, O.E., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. A conceptual framework for digital health marketing strategies to enhance public health outcomes in underserved communities. *World Journal of Advanced Pharmaceutical and Medical Research*, 7(2), pp.1–25. Available at: https://doi.org/10.53346/wjapmr.2024.7.2.0044.

Usuemerai, P.A., Ibikunle, O.E., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. A conceptual framework for integrating digital transformation in healthcare marketing to boost patient engagement and compliance. *World Journal of Advanced Pharmaceutical and Medical Research*, 7(2), pp.26–50. Available at: https://doi.org/10.53346/wjapmr.2024.7.2.0045.

Usuemerai, P.A., Ibikunle, O.E., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. A sales force effectiveness framework for enhancing healthcare access through pharmaceutical sales and training programs. *World Journal of Advanced Pharmaceutical and Medical Research*, 7(2), pp.51–76. Available at: https://doi.org/10.53346/wjapmr.2024.7.2.0046.

Usuemerai, P.A., Ibikunle, O.E., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. A strategic brand development framework for expanding cardiovascular and endocrinology treatments in emerging markets. *World Journal of Advanced Pharmaceutical and Medical Research*, 7(2), pp.77–101. Available at: https://doi.org/10.53346/wjapmr.2024.7.2.0047.

Usuemerai, P.A., Ibikunle, O.E., Abass, L.A., Alemede, V., Nwankwo, E.I. and Mbata, A.O., 2024. Advanced supply chain optimization for emerging market healthcare systems. *International Journal of Management & Entrepreneurship Research*, 6(10), pp.3321–3356. Available at: https://doi.org/10.51594/ijmer.v6i10.1637.

Uwumiro, F. E., Ayo-Farai, O., Uduigwome, E. O., Nwebonyi, S., Amadi, E. S., Faniyi, O. A., ... & Aguchibe, R. (2024). Burden of In-Hospital Admissions and Outcomes of Thoracic Outlet Compression Syndrome in the United States From 2010 to 2021. *Cureus*, *16*(10).

Wada, I. U., Izibili, G. O., Babayemi, T., Abdulkareem, A., Macaulay, O. M., & Emadoye, A. (2025). AI-driven cybersecurity in higher education: A systematic review and model evaluation for enhanced threat detection and incident response.

Zouo, S. J. C., & Olamijuwon, J. (2024). Financial data analytics in healthcare: A review of approaches to improve efficiency and reduce costs. *Open Access Research Journal of*

Science and Technology, 12(2), 10–19. http://oarjst.com/content/financial-data-analytics-healthcare-review-approaches-improve-efficiency-and-reduce-costs

Zouo, S. J. C., & Olamijuwon, J. (2024). Machine learning in budget forecasting for corporate finance: A conceptual model for improving financial planning. *Open Access Research Journal of Multidisciplinary Studies, 8*(2), 32–40. https://oarjpublication.com/journals/oarjms/content/machine-learning-budget-forecasting-corporate-finance-conceptual-model-improving-financial

Zouo, S. J. C., & Olamijuwon, J. (2024). The intersection of financial modeling and public health: A conceptual exploration of cost-effective healthcare delivery. *Finance & Accounting Research Journal, 6*(11), 2108–2119. https://www.fepbl.com/index.php/farj/article/view/1699