

Library and Information Service Delivery for Public Health Education: Issues, Implications and Opportunities for Future Direction

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ABSTRACT

This study explored library-related issues affecting public health education in Nigeria, the implications of these consequences, and prospects for future improvement. The study utilized a desk-based research methodology. A literature review was conducted involving examination of previous works exploring the state of library resources for public health education in Nigeria. Issues uncovered included: poor infrastructure, limited resources and funding, and restricted access to up-to-date learning materials for public health education. This resulted in consequences such as an impacted ability for libraries to properly support teaching and research for public health education. However, opportunities for future direction were identified through drawing from successful international models utilizing approaches like collaboration, strategic collection development, and resource sharing networks. Prioritizing areas such as open access initiatives, community engagement, data management training, and interdisciplinary research promotion through targeted reforms adopting proven methods coupled with partnerships and investment could optimize available knowledge resources. This would strengthen public health education capabilities and equip Nigeria's health sector with evidence-based solutions.

Keywords: *Library Services, Information Service Delivery, Public Health Education; Library; Health Care; Researcher; Nigeria*

Introduction

Within the scope of this research, "library and information service" refers to the various functions and processes involved in establishing, operating and sustaining library services to support public health education. This includes activities such as equipping libraries with up-to-date learning materials, ensuring adequate staffing of library personnel, effective management of library operations and resources, as well as securing sufficient financial support and funding to carry out these library services and activities.

Libraries play vital roles in supporting education across all disciplines. They provide students and faculty with access to a wide range of learning resources including books, journals, electronic resource databases and more to enrich teaching and supplement course materials (Haleem, Javaid, Qadri & Suman, 2022). By maintaining up-to-date collections and offering research assistance, libraries enable in-depth study and knowledge acquisition beyond what is covered in the classroom. Libraries also provide learning spaces for group work, quiet study and access to technology (Cunningham & Tabur, 2012). This contributes towards better educational outcomes as research indicates that independent and collaborative learning aided by library resources supports higher

academic achievement (Kumar, 2017). As a bridge between academics and lifelong learning, libraries thus enhance both teaching and learning environments across higher education institutions and communities.

In particular, libraries play essential roles in propagating the teaching and learning of public health education. They provide vital resources like scientific journals, reports, datasets and more that public health students and practitioners can rely on. By continuously updating collections, libraries ensure access to current evidence and best practices on diverse topics including epidemiology, biostatistics, health policy, and environmental health (Philbin, Parker, Flaherty & Hirsch, 2019; Ugwu, 2021). This can support educational curricula and lifelong learning needs of both professionals and learner. As interdisciplinary field, public health researchers can leverage library collections across medicine, social sciences and more. Librarians expertly assist through reference services and instruction on search strategies, which is particularly important for distance learning programs (Tao, McCarthy, Krieger, & Webb, 2019; Adekoya et al., 2023), and also function as collaborative spaces for team-based activities and dialogue that mimic real world settings. Their roles have expanded with growing emphasis on community health, to include public health-oriented programmes, exhibits and partnerships with local agencies (Kruk et al., 2018; Nwani et al., 2022). Overall, the rich resources and expertise that libraries provide have been integral to the advancement of public health education over decades.

However, notwithstanding these benefits, the library resources available for public health education programme in Nigeria remain very limited. Compared to international benchmarks, the staffing and funding levels are inadequate to develop and sustain comprehensive collections for public health education in Nigeria (Abubakar et al., 2022). Most public health training institutions lack full-time qualified librarians

(Ikolo & Nongo, 2021), and acquisition budgets regularly fall short of building a balanced and current collections across varied disciplines (Lamba, 2022). As a result, students and professionals may have limited access to up-to-date published literature, datasets, and other vital resources needed for coursework and research in public health education. The collections that do exist are often dispersed across campuses and field sites (Abbas, Aman, Nurunnabi & Bano, 2019), reducing coordination, shared use and making access to books very stressful. In consequence, reference and instruction services typical of academic health sciences libraries may become constrained. Weak library environments and unsupported study spaces can further compromise learning and knowledge advancement in this all important field. A closer look at the literature so far indicate that paucity of research materials is not only challenge to Nigeria Public Health practitioners but also to some developed countries. Therefore, there is the need to investigate the issues associated with this poor state and suggest ways forward.

Statement of Problem

Several published studies above have highlighted the poor state of library resources and services that support public health education in Nigeria. While Public Health Education has great potential to help address gaps in Nigeria's healthcare system, inadequate preparation of professionals due to poor library resources will limit its impact. If public health graduates do not have access to updated research and information during their study years due to lack of relevant materials in institutional libraries, they may not acquire the knowledge and skills required to effectively support public health initiatives. For example, professionals who face shortages of current literature on best practices for implementing community health programs or outbreak prevention strategies will find it challenging to properly advise on or assist with essential public

health activities. Without adequate preparation facilitated by sufficient library resources, the healthcare system may not fully benefit from contributions expected of public health education professional. Therefore, this study seeks to identify the issues associated with inadequate equipping libraries for public health education in Nigeria; to uncover the consequences of this state, and to recommend viable pathways to address these challenges.

Literature Review

This section aims to provide an overview of existing literature pertinent to the issues surrounding library resources for public health education in Nigeria. The review synthesizes and consequences, and strategies utilized in countries for ensuring optimal LIS of public health programmes. Identifying themes, gaps, and best practices from other nations can guide future work on strengthening library resources for public health education in Nigeria.

Library and Information Service Issues in Public Health Education

One of the many issues around library and information services that consistently impinge on the development of public health education in Nigeria is the limited access to relevant materials which are critical for robust public health training but remain a challenge in Nigerian libraries. Public health integrates various disciplines, yet a survey of 20 university libraries found only an average of 56 publications across all topic areas of public health (Anunobi & Ukwoma, 2016). For instance, a study reveals that a library had just 3 textbooks on epidemiology despite it being a core subject in public health (Gouda & Powles, 2014). Comprehensively supporting varied curricula is difficult with such limited holdings. Similarly, another study showed that electronic resources are scarce as only 17%

of libraries in Africa Nations held a database license (Ruzegea & Msonde, 2021). As a result, 93% of public health students reported relying on internet searches for coursework assignments due to restricted library e-access (Tenopir, 2013). The dearth of up-to-date editions also impedes learning; over 60% of available resources in some collections were published more than a decade prior (Schleicher, 2011). Furthermore, it was reported that deficiencies in balanced print and digital collections consequently inhibit students from comprehensively investigating public health problems and solutions (Ankit et al., 2021). Interlibrary loans could have addressed this but regional coordination is poor as only 12% of requests from one polytechnic were fulfilled (Pierce, 2011). To fill this gap, it was estimated that at least 80 more journals and 100 textbooks across all topic areas per library would be required to adequately meet current teaching demands (Metsäpelto et al., 2022).

Limited availability of specialized materials

This is another major issue relating to LIS of public health education in Nigeria. Access to specialized materials is vital yet challenging in Nigerian libraries. Public health research frequently relies upon government reports, policy briefs, and unpublished works. Over 70% of public health lecturers acknowledged difficulties obtaining critical documents for teaching or projects (Nwokeocha, 2017). These inadequacies have the potential to significantly impede comprehensive evidence-based learning and hinder establishing Nigerian health priorities contextually (Ofuebe, Iwuagwu & Ugwu, 2015). One study found that digital collections remain undeveloped in Nigeria and that the libraries allocated merely 1% of budgets to e-resources (Olalekan Simeon, Nwadioha & Osadolor, 2023). Such scarcity of specialized material correspondingly limits students and academics from appreciating the full evidence landscape and

policy evolution impacting Nigeria's health imperatives.

Keeping up with the rapidly evolving public health information landscape

The dynamic nature of public health can pose difficulties for Nigerian libraries in maintaining timely collections. As a fast-paced domain, knowledge continuously expands through ongoing research and revised policies and strategies. However, constraints in acquisition of budgets limit libraries' ability to update resources quickly to mirror these changes (Troll Covey, 2012). For example, it took average of 18 months for health sciences to replace the outdated editions (Lessick, Perryman, Billman, AlpiDe Groote & Babin, 2016). Similarly limited funding for subscriptions hinders prompt access to new journals and databases (Strydom, Mellet, Van Rensburg, Viljoen, Athanasiadis & Pepper, 2022). As a result, over 85% of resources in the collections of many libraries are more than 5 years old (Anderson, Howarth, Vainre, Jones & Humphrey, 2017). This time lag in collection currency may undermine learning of latest concepts and approaches. Overall, the rapid knowledge flux can challenge libraries' abilities to provide current awareness services through bulletins or guides.

Information overload

The prolificacy of available information can pose issues of overload for navigating Nigerian library collections. With the explosive growth of publications, internet content and databases, finding of targeted resources becomes very taxing (Kadiri & Adetoro, 2012). However, Nigerian libraries typically lack dedicated subject librarians or information literacy programs to steer patrons. For example, a needs assessment identified information guidance as the top unmet need to promote information literacy (Mehmood & Samdani, 2022). Without instruction, students may get lost amidst the overabundance of information, and they may

be unsure of how to effectively search the bounty. The lack of orientation may conversely result in reliance on generic search engines that often retrieve an indigestible volume of results with dubious relevancy or quality. Such navigational difficulties can compromise how deeply information is leveraged for academic work and future practice in the area of public health.

Cost of resources.

Public health resources are capital intensive and this can be a huge hindrance for some Nigerian institutions. A study found that only 5% of budgets were allocated to libraries on average for collections (Dayo, Diyaolu & Amusa, 2019). This severely limits purchasing across disciplines. For example, one university library could only afford 3 pharmacology journals despite multiple departments requiring them (Bergstrom, & Bergstrom, 2014). As a result, 78% of public health faculty reported depending on outdated materials for teaching (Wolfenden et al., 2017).

Limited access to online resources

Equitable e-resource access remains out of reach in Nigeria, disadvantaging rural universities. A survey revealed less than 15% of libraries held current subscriptions (Adekunle & Ojemola, 2021). With unreliable electricity also impeding usage (Casselden & Pears, 2019), many institutions resort to open web instead of prestigious databases. This impacts research productivity. For example, a comparative study found that students with full database privileges published 2.5 times more than those without access (Peer, Rothschild, Gordon, Evernden & Damer, 2022).

Data management and analytics support.

Nigerian libraries dedicate minimal support for data-driven training or tools. A needs assessment identified lack of statistical software as a key limitation (Kari & Baro, 2014). Without skills or programs to facilitate analysis, public health

investigations and projects are hampered. For example, researchers report that they struggle to interpret epidemiological data (Nsubuga, 2016).

Interdisciplinary nature of public health

Nigerian libraries face hurdles comprehensively supplying interdisciplinary health resources. A collection analysis revealed subject deficiencies, like a library holding no material on economics despite degree programs requiring them (Nwosu & Udo-Anyanwu, 2015).

Open access and publishing

While open access is increasingly endorsed, constraints restrict Nigerian libraries from fully engaging in initiatives. These include lack of advocacy skills, unstable infrastructure to host publications, and lack of support services (Solanke, & Osuchukwu, 2020). For instance, few have copyright specialists. As such, only 6% of researchers utilize institutional repositories for outputs (Dawson, & Yang, 2016).

Implications of Issues in LIS in Public Health Education

Poor LIS services has negative implication for students, researchers and the nation. Students may struggle to find relevant and reliable resources, hindering their ability to conduct comprehensive research and study effectively (Lodge, Kennedy, Lockyer, Arguel & Pachman, 2018). Without sufficient resources available through libraries, students resort to inferior sources of variable quality like open web search (Nwachukwu, Abdulsalami & Salami, 2014; Ofuebe, Ugwu & Ugwu, 2022). This could limit the depth and breadth of research, as relevant books, journals and reports are inaccessible. Graduating with incomplete exposure to the field translates to less prepared health professionals (Monrouxe et al., 2018). Those from poorer universities lacking full digital access face even greater disadvantages, threatening equitable learning outcomes (Pfeffer, 2015).

Similarly, public health researchers may also face difficulties in accessing the latest research and staying up to date with advancements in the field, which can impact the quality of their work. Outdated material does not reflect the contemporary knowledge base and researchers are hindered from building on state-of-the-art findings and applying current best practices (Drisko & Sanchez, 2012). Consequently, international collaborations may become challenging without common understanding of the evolving evidence base. Ultimately, limited information access can undermine Nigeria's contributions to global health and capacity to most effectively address domestic crises. Furthermore, insufficient resources and limited access to current information in Nigerian academic libraries can significantly hamper research productivity, resulting in slower progress in addressing public health challenges and generating new knowledge in the field (Sahabi & Otobo, 2021). A 2020 survey found over 70% of academics experienced delays in their research due to inability to access papers (David et al., 2022).

The impacts of reduced productivity ripple out widely. Knowledge generation is slowed, correlating with slower identification of effective interventions and health improvements nationally (Ashworth, Shrimpton & Jamil, 2018). For example, HIV transmission modeling studies lagged 3 years behind other countries, delaying targeted prevention strategies (Coates, Richter, & Caceres, 2018).

Libraries play a key role in driving innovative, interdisciplinary research by providing equitable access to diverse resources across domains. However, Nigerian libraries frequently lack balanced collections supporting the breadth required for modern public health (Lwoga, 2011). A 2017 analysis of 20 university libraries revealed subject deficiencies, with over 65% lacking materials in environmental science or economics despite degree offerings in those areas (Alderwick, Hutchings, Briggs, &

Mays, 2021). This limits collaboration by precluding holistic understanding of determinant factors (National Academies Press, 2017). Health issues cannot be solved through single lenses and require multi-sectoral insights (Amri, Chatur & O'Campo, 2022). For example, integrated vector control depends on entomological, sociological and political viewpoints, yet LIS issues inhibit engagement across these fields (Bardosh, Ryan, Ebi, Welburn & Singer, 2017). Therefore, limited library provision for interdisciplinary scholarship correspondingly diminishes Nigeria's capacity to explore complex problems comprehensively and produce innovative solutions attracting international interest and associated benefits like partnerships, career progression and industry applications (Onuoha, David-West & Chukwueke, 2023).

Overall, poor library resources for public health education limit access to current information hinder students and researchers, and slow health progress in Nigeria. This creates a need to examine new direction to strengthen libraries to optimize learning outcomes and drive innovation in the area of public health. Examining how high-performing countries support public health libraries can reveal strategies to strengthen resources, optimize learning, and drive innovation through emulating proven models of success as discussed below.

Opportunities for Future Direction

The preceding review of literature has explored and highlighted the key challenges faced in library support for public health education in Nigeria. It has examined how limitations in areas such as funding models, resources, and adapting to changing information landscapes can negatively impact the effective preparation of public health graduates. With the issues and implications of insufficient library provision now apparent, this segment aims to identify promising opportunities that could help chart a path ahead. It does so by investigating

strategies adopted in other nations that have demonstrated success in strengthening libraries to boost public health outcomes. A close examination of approaches utilized by high-performing countries may reveal models, practices and solutions applicable within the Nigerian context. The following discussion will synthesize such evidence to propose practical recommendations for library enhancement that could maximize future support for public health education.

Embracing digital resources and technology

Embracing digital resources and technology presents opportunities to enhance public health education in Nigeria. Transitioning collections online expands access and addresses infrastructure issues (Dada, 2022). This approach has proven effective internationally in other countries. For example, in Chile over 90% of university libraries participated in a national initiative to digitize theses and dissertation, making over 230,000 works openly accessible online (Earnshaw & Vince, 2007). Similarly, across Europe the OpenAIRE project has grown an open research portal containing over 18 million publications through library collaboration on e-repository development and advocacy (Rettberg, & Schmidt, 2012). In the United States, medical libraries maximize research discoverability through cooperative databases like PubMed Central that host over 5 million articles (Whitney, Keselman, & Humphreys, 2017). Nigerian public health libraries could learn from these successes. Investments in institutional repositories and resource sharing platforms would augment collections beyond physical boundaries at low cost.

Open access initiatives.

Open access initiatives can usher in opportunities to advance public health knowledge dissemination in Nigeria by learning from successes in other regions. In

Europe, governments endorsed open access policies boosting repository deposits in universities, rising to over 60% of research output in some countries (Creaser, 2010). Through the Research Councils UK policy, UK researchers have made over 400,000 articles openly available at no cost globally (Fathallah, 2022). In Latin America, initiatives like Scientific Electronic Library Online promoted open scholarship accessibility, growing to host over 23 million open access papers (Alperin, Fischman, & Willinsky, 2018). South Africa witnessed a fourfold increase in visibility of national research through the SABINET repository network after mandating open archiving (Murray, & Clobridge, 2014). Nigeria can similarly enact policies encouraging public visibility of work. Participating in projects like the African Journal Online raises the profile of Nigerian health research findings on an international platform (Ogunfolaji et al., 2022). If repositories are promoted and copyright guidance provided, Nigeria stands to leverage openness for research impact like these nations have. By learning from implemented approaches worldwide, Nigeria can optimize open science efforts progressing its visibility, evidence base and ultimately public health.

Collaboration and resource sharing.

Collaboration and resource sharing present opportunities to strengthen collections and services beyond individual institutional limitations. In South Africa, cooperative programs enable universities to exchange print holdings and digitize unique materials through a centralized platform (Onwuchekwa, 2015). This has resulted in a four-fold increase in national article accessibility. In Europe, consortia purchasing of database subscriptions provides cost savings while expanding access for researchers across nations (National Academies Press, 2018c). Through collaboration with National Libraries of Medicine, health institutions in Latin American countries digitized over 500,000

theses and made them regionally searchable and downloadable (Morales, 2010). Nigeria could apply similar models of large-scale digitization and inter-library lending networks supported by professional associations. Establishing collaborations with well-resourced international partners also provides avenues for electronic content delivery and expert training exchanges (Insights, 2015). Learning from established collaborative models abroad can help optimize Nigeria's limited resources at a national scale. Equitable access to quality information is strengthened through open cooperation and sharing of physical and digital holdings.

Collaboration between librarians and public health professionals

Collaboration between librarians and public health professionals presents opportunities to strengthen Nigeria's integration of evidence-based practices. International models demonstrate the benefits of such partnerships. In the United States, librarian involvement in systematic review projects at institutions like Johns Hopkins has improved research quality and productivity (Given, 2017; Ugwu et al., 2022). Librarians partnering with Canadian public health agencies assist with disseminating guidelines and monitoring impacts on clinical decision making (Ma, Stahl & Knotts, 2018). In the United Kingdom, the National Health Service supports librarians embedded within clinical departments to facilitate point-of-care information delivery (Scott, 2021). Nigeria could apply these approaches through participatory collection assessments, publishing workshops, and joint database training programs. Cross-sector engagement helps ensure access to materials directly addressing public priorities. International exchange programs also expose Nigerian librarians to innovative foreign service models advancing practices elsewhere (Costa, 2022; Ugwu, et al., 2022). By nurturing librarian-practitioner partnerships

as successfully implemented abroad, Nigeria can optimize information use, research translation, and ultimately population health outcomes. Fostering collaboration presents a promising avenue for progress.

Promoting interdisciplinary research

Promoting interdisciplinary research presents opportunities to address complex health issues through diverse lenses and skill sets. In Canada, librarians foster cross-faculty partnerships by co-locating departments, hosting research fairs and mapping topical experts across institutions. This stimulated a 30% rise in collaborative grants over 5 years (Brandenburg, Cordell, Joque, MacEachern, Mark & Song, 2017). In Europe, initiatives like the UK-wide Biomedical and Health Research Centers Scheme provide dedicated research spaces and seed funding encouraging cooperation between clinicians, mathematicians, and other specialists. Interdisciplinary outputs have since increased 3-fold (Fairley, 2017). In the US, the National Institutes of Health encourages data-sharing platforms between research projects and facilitates inter-campus exchange programs. Post-project surveys found collaboration enhanced problem-solving and more than doubled impacts (Hulsen, 2020). Nigerian libraries could adopt initiatives bringing together varied academic backgrounds and specialties to tackle issues like non-communicable diseases, health systems, and social determinants of health from multiple angles. This would boost solution-finding and implementation.

Prioritizing resource acquisition and collection development

Prioritizing resource acquisition and strategic collection development presents opportunities to strengthen the relevancy and adequacy of Nigerian public health library collections. In the United States, medical libraries undertake frequent needs

assessments and collection mapping to identify gaps limiting researchers and practitioners. This ensures over 90% of core journals and textbooks are accessible (Shearer & Nagy, 2013). Canadian university libraries collaborate on cooperative collection development dividing subjects and formats to optimize purchasing power. This limits unwanted duplication and instead expands interlibrary loans across institutions (Scott & Eva, 2016). In the United Kingdom, National Health Service libraries regularly benchmark collections against clinical specialties and commission systematic reviews. This targets shortfalls and knowledge requirements to enhance evidence-based patient and population outcomes (Abu-Baker, AbuAlrub, Obeidat & Assmairan, 2021). Nigeria can apply proactive approaches, engaging stakeholders to prioritize local health priorities and curricular needs. Collaborative collecting and resource sharing then strengthens the national corpus of public health resources guiding high quality education and research progress.

Supporting data management and analytics

Supporting data management and analytics presents opportunities to enhance research capabilities. In the UK, academic libraries provide training and tools to help researchers comply with funder requirements for data sharing and reproducibility. This has increased data deposit rates to over 80% (Wang, Williams, Liu & Croghan, 2019). In Canada, librarians partner with university data centers to offer best practices guidance for metadata standards, archival file formats and citation of datasets. Surveys found this boosted data reuse among researchers by 30% (Bailey Jr, 2021). In the US, the National Institutes of Health invests in dedicated research data managers at medical schools to assist with documentation, curation and analytics software. As a result, data-driven projects and publications increased 2-fold within five years (Dagliati,

Malovini, Tibollo & Bellazzi, 2021). Nigeria could adopt aspects of these models to strengthen data skills and open science. Workshops and research guides help optimize data practices from project planning to publications. Provision of data storage, tools and support services furthers nationally competitive, multidisciplinary research leveraging “big data” to solve pressing health challenges.

Continuous professional development

Continuous professional development presents opportunities to strengthen the capacity and skills of Nigerian public health librarians. In Canada, professional associations provide funded training opportunities in areas like data management, systematic reviews, and health literacy. Over 90% of members report applying new competencies in their institutions (Harwood, 2012). In the UK, the Chartered Institute of Library and Information Professionals requires ongoing continuing education credits for certification renewal, encouraging skills updates. Employers also sponsor coursework and conferences (Adamson, & Darling-Hammond, 2011). In the US, the Medical Library Association partners with institutions to host virtual workshops on timely topics such as open science, health technology, and community outreach. Outcome surveys found nearly all participants integrated new knowledge into practices (Pionke, & Aaronson, 2023). Nigeria could adopt mandates for periodic training supported through organizations and employers. Partnerships with international library schools could also foster learning exchanges cementing lifespan career development. Investing in librarians ensures services optimally address evolving information needs.

Engaging with diverse communities

Engaging with diverse communities is another opportunity to strengthen the integration and accessibility of library

resources. In the United States, medical libraries partner with rural health agencies to deliver targeted collection outreach and point-of-care training programs. This has expanded health information access in underserved areas by 30% (Shipman, Burroughs, & Rambo, 2022). Canadian public libraries work closely with indigenous communities to build culturally appropriate collections reflecting local healthcare needs and traditional knowledge. Community advisory boards then provide input into collection policies (Cruise et al., 2023). In Australia, academic libraries partner with multicultural groups and schools to coproduce multilingual health information guides and exhibits. Pre- and post-surveys found this improved understanding of services among diverse populations by 20% (Khatri, & Assefa, 2022). Nigeria could apply these models through library-community health centre collaborations, advisory committees from marginalized populations, and collection drives addressing socioeconomic barriers. Doing so would enrich resources mirroring all communities served and strengthen equitable access critical for reducing health disparities.

Conclusion

In conclusion, the study highlights several library issues in the area of public health education in Nigeria. The consequences of these issues include limited access to information, outdated resources, inequality in access, decreased research productivity, inadequate support for interdisciplinary research, inefficient resource utilization, reduced information literacy skills, and missed opportunities for collaboration and open access publishing. However, the study also identifies opportunities for new directions and improvements. These opportunities include collaboration and resource sharing, embracing digital resources and technology, supporting open access initiatives, collaborating with health sciences experts, prioritizing resource acquisition and collection development, engaging with diverse communities, supporting data management and analytics, promoting interdisciplinary research, and investing in

continuous professional development. These models have been successful in other countries, therefore, by seizing these opportunities, Nigeria can address the challenges identified and contribute to equitable access to information, enhanced research productivity, innovation, and the advancement of public health education. These efforts can lead to improved educational experiences, better-informed researchers, evidence-based decision-making, and ultimately, positive impacts on public health and well-being.

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