

Libraries and health literacy

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ABSTRACT

Disparities in health care are a universal problem. Different subpopulations of our society are at different predictive risks of morbidity and have different potentials in seeking and receiving appropriate medical care. The parameters involved in health disparities include living standards, nutritional conditions, preventive medicine and diagnostics, medical treatment in a suitable nursing environment, and the degree of the people's health literacy. Indeed, the latter is a pivotal and urgent priority in promoting public health. This literature review focuses on libraries' crucial role in reducing health disparities by providing medical information and librarian guidance and enhancing health literacy. The local library, a crucial source of public medical information, serves any community or minority, offering activation, inclusion, and relief. The accessibility of health information in libraries provides a sense of reassurance and confidence to the public and empowers them with knowledge and understanding. The public libraries represent an information provider network with dense coverage of the whole country in urban and rural areas. They can deliver health literacy services everywhere. In addition, with its safety and inclusivity, the public library environment is where everyone can seek medical information and training in practical and theoretical terms of health conditions, seasonable medical issues, and personal and family care needs in a secure and welcomed environment.

KEYWORDS

Health literacy; Libraries; Health equity; Digital literacy.

Introduction

National health systems are not available to all citizens or residents of countries on a global scale. The living and working environment, social, economic, and cultural conditions, and education emphasizing health literacy significantly affect individual health, even more so than the genetic predisposition factors for disease. In addition, the health literacy of individuals and society indicates the capacities for understanding, trust, response, compliance, and cooperation during health or environmental crises. Inequalities in health and health literacy are realities that, regardless of their sources, pose severe risks on a local and global scale. They must be addressed with solutions both within and outside the narrow framework of health delivery and treatment (NAS 2024).

In contrast to the situation in the field of health, libraries are spaces for the promotion of equality, inclusion, and democratization of knowledge worldwide. They are the cornerstone of valid information and develop a relationship of trust with their public by offering workspace, material, and environment for information seeking, recreation, and interaction (Audunson et al. 2020). Nowadays, the library's traditional role goes beyond the provision of printed material and has been significantly enriched by providing multimedia material and access to documented knowledge sources on the Internet. In addition, municipal and public libraries form in most countries, and in Greece, an information network of dense territorial coverage serves both urban and remote rural or island areas. Can libraries be included and used in national health policymaking?

This study examines the possibilities of libraries operating as external factors of the health system, as carriers of health information, and improving the health literacy of the population to bridge the gap of health inequalities. First, inequalities in the health field and the factors that cause them globally are examined. Emphasis is placed on those individuals who, due to social, economic, cultural, psychological, or emotional concerns or physical barriers, are unable or reluctant to seek health services or medical information on health issues. Secondly, the library is examined as a provider of valid medical information, a contribution to health literacy, and a promotion of public health based on international experience, proposals, practical applications, and how these are evaluated. Finally, the challenges and possibilities of the practical application of this approach in our country are examined in the context of defending the right to documented knowledge and health in the information age.

Inequalities in Health

According to the World Health Organization, health equity is “the absence of unjust and avoidable or remediable differences in health between population groups based on social, economic, demographic or geographic criteria”. Advances in science and technology have increased life expectancy and quality of life, however unevenly. Existing differences widened between those with the best and those with the worst health and well-being. The difference in life expectancy between the richest and poorest countries reaches two decades. Most premature deaths from non-communicable diseases occur in poor and middle-income countries, while infant mortality is eight times higher in Africa compared to Europe (WHO 2019). However, these differences in health are also found within each country, with economic, geographical, social, and cultural criteria, so almost half of the people in the world do not enjoy the necessary health services (Rid et al. 2016).

According to the non-profit Association of American Medical Colleges (AAMC), in the era before the COVID-19 pandemic, residents living in rural areas represented 15-20% of the population of the United States' Americans face inequities and had worse access to health services than residents of urban and suburban areas. It is found that rural America's health disparities are deeply rooted and attributed to economic, social, racial, ethnic, and geographic factors related to the choices of health workers, forming a two-sided problem of access to medical care (Warshaw 2017). The problem is growing in intensity as evidenced by the increase in the number of rural hospitals closing or ceasing to operate as hospitals and converting to short-stay health centers in the United States, with an average of 8.6 hospitals closing per year in five years 2005-2009, 8.8 in the period 2010-2014, and 13.6 in the period 2015-2019, a phenomenon partially interrupted by the COVID-19 pandemic (UNC 2020). Typically, communities that lack hospital infrastructure or suffer economic hardships have unique characteristics (Thomas, Holmes, and Pink 2016). The children in these areas are a sensitive population group exposed to poverty and health and behavioral problems that affect the development and future of their health (Kelleher and Gardner 2017). According to the Centers for Disease Control and Prevention (CDC), focused interventions on the problem of health disparities in the rural population in the United States of America, including health literacy, would result in an overall increase in life expectancy by reducing the five leading causes of death related to heart diseases, malignant neoplasms, unintentional injuries, chronic lower respiratory diseases, and strokes, the spectrum of which statistically burdens rural populations more than urban populations (Garcia 2017).

There is a significantly uneven distribution of hospital units in capital cities and large urban centers rather than in Greece's countryside and islands. On top of this, peripheral health institutions suffer from a lack of personnel or resources. Based on the data of the Hellenic Statistical Authority (ELSTAT), in a total of 267 units, 34% of public and private hospitals are located in Athens, 16% in Thessaloniki, and 12% in Thessaly, cumulatively 62% of the units and the rest are shared in the rest of the country, 6% in Eastern Macedonia and Thrace, 3.4% in Western Macedonia, 2.6% in Epirus, 2.2% in the Ionian Islands, 5.2% in Western Greece, 3.7% in Central Greece, 3.7% in the Peloponnese, 2.6% in the North Aegean, 3.4% in the South Aegean and 5.6% in Crete. Hospital coverage follows the demographic distribution of the population and less the territorial area. Thus, most peripheral hospitals in the region's capitals cover larger territorial areas with a lower population density than the urban ones. These figures are more evident when examining the distribution of beds available for inpatient care, with 41% of the 45,101 beds located in Attica, 18% in Thessaloniki and its wider region, and 9% in Thessaly, followed by 5.6% in Eastern Macedonia and Thrace, 2.4% in Western Macedonia, 3.5% in Epirus, 1.5% in the Ionian Islands, 4.5% in Western Greece, 2.2% in Central Greece, 2.7% in the Peloponnese, 1.4% in the North Aegean, 2.6% in the South Aegean and 5.6% in Crete (ELSTAT 2021). The allocation of hospitals and closed hospitalization beds makes it mandatory for rural and island hospitals to provide mobile units and ambulances for the timely treatment of emergencies. However, regular medical follow-up and laboratory examination become particularly difficult and expensive in these areas for the chronically ill, the elderly, pregnant women, and infants under five years of age since they will have to travel to and from the nearest urban center to be examined. In addition, between 2011 and 2020, the number of hospitals in Greece decreased by 15%, while the number of available beds decreased by 9%. This reduction seems to be a result of the ongoing and prolonged eco-

conomic crisis in the country as it concerns almost exclusively private hospitals and clinics that were mainly in Attica (20% reduction) with a relatively small capacity to treat patients, as shown by the number of beds that were lost (ELSTAT 2021). The Greek data show that in the outskirts of Athens and Thessaloniki, the supply of health services with hospitalization is based almost exclusively on public structures. Thus, in the countryside and islands of Greece, no significant reduction in hospital infrastructure was observed in the last decade. It is worth noting that the Greek state clearly recognizes and legally enshrines Health as a fundamental human right. Whereas the Greek Legislation stipulates that regardless of nationality, color, place of residence, legal status, religious or philosophical beliefs, sexual orientation, economic status, or insurance coverage, everyone has the right to receive health services in the public health system, respecting religious and ideological beliefs of citizens, recognize the right to consent or refuse any diagnostic or therapeutic procedure for oneself or a protected member (MoH 2024). Therefore, health inequalities in Greece are a mixture of geographical population distributions, economic conditions, and social, cultural, or religious beliefs. In the context of individual beliefs and perceptions, health literacy is of value so that choices in health, lifestyle, diagnosis, or treatment are made with knowledge of the health damage that may be caused due to specific choices and the real diagnostic and therapeutic possibilities of different methods. The conceptual framework through which social, economic, political, cultural, educational, biological, and material factors operate, interact, and influence public health to produce disparities is thoroughly analyzed in Solar and Irwin's 2010 World Health Organization study (Solar and Irwin 2010). The factors of social health inequalities can be divided into structural and intermediate. Structural factors are of two kinds, state and individual, with the former shaping the social environment and the latter concerning social stratification. State factors are defined as the organization and operation of the state and, in particular, the state structures that are part of the triptych of Social, Economic, and Political organization, specifically in governance, the macroeconomic policies that are applied, in the social policies of the state and the welfare state, the Health System, and social care for the population, in education, as well as in the legal and regulatory provisions that regulate market, work or housing issues. In addition, the cultural and social values of the society and individual structural factors within this geopolitical environment are also major players. Social and economic stratification define the consumption possibilities of the individual. On top of that, sex, age, race, or ethnic origin may affect social and economic status. Individual structural social factors include the individual's education, occupation, and income. Consumption possibilities are associated with the quality of healthcare access. Social inequalities and their extent determine the degree of social cohesion and social capital. In the intermediate social factors that affect inequalities in health, we have the health conditions that prevail and affect the local populations in the context of the geographical and climatic zones. These factors define the material conditions, life, work, third places, nutrition, hygiene, availability of food or medicine, attitudes, and lifestyle. In addition, the factors in this unit include biological factors such as pathogens, age, and psychological factors that operate independently or are intertwined with material conditions, behaviors, and the state of the state, individual liberties, freedom of speech, freedom of expression or its suppression, the state of peace or war, any natural disasters or situations of crisis and insecurity. The public healthcare system and access to its services should be culturally compatible. This compatibility is based on the values and beliefs of the population being served, general, local, or minority.

These determinants are essential for equality in health and the population's quality of life. Inequalities in health, while primarily affecting and with greater intensity, sensitive social groups, are a matter for the entire society and acquire a global dimension as they are the source of health problems that can affect everyone, especially concerning infectious diseases (Cooper 2021). The US National Academies of Sciences, Engineering, and Medicine's recent report on Diversity, Equity, Inclusion, and State Commitments and Actions for Health Equity by Executive Decision-Making Centers notes that "over the past four decades, a wide variety of special commissions and research groups from international organizations have published numerous reports demonstrating that national health systems are not available to all citizens or residents of states and that systematic restrictions make equal access difficult for all so that they enjoy appropriate health services compatible with their cultural values. Research from the same period shows that where someone lives, works, and plays, i.e., its relevant social factors, affects health more strongly than genetic background. The COVID-19 pandemic has emphatically demonstrated the systemic chronic problems of health systems, especially those related to unequal access to medical care, erosive inequities, and systemic racism that make health systems complicit in erosive health inequities" (NAS 2024). Therefore, solutions to the problem of inequalities in the field of Health should be sought extra-systemically with scientific actions of a developmental and organizational nature (Galaviz et al. 2020).

While the COVID-19 pandemic firstly caused morbidity and increased mortality worldwide, on a second level, it affected lifestyles, individual behaviors, direct interpersonal communication, production, and the global economy; on a third level because it occurred in the Information Age was followed by a phenomenon of cataclysmic proportions referred to as an information pandemic (infodemic). While the term infodemic was introduced by David J Rothkopt in criticism of the role of media news agencies in extrapolating SARS regional health crisis into a debacle that stroke global economy in 2003, SARS-CoV-2 virus caused the pandemic and the information pandemic was caused by unintentional or intentional misinformation affecting and confusing societies in all countries (Scales, Gorman, and Jamieson 2021). At a time when governments were making difficult decisions to manage the health crisis, decisions that required society's compliance and cooperation to achieve and deliver results, conflicting news, scientific rebuttals, pseudoscientific theories, fake news, and theories conspiracy theories flooded the media, and the internet forming an explosive mix. This situation was reinforced by the exchange of messages in social networks that functioned as isolation bubbles (filter bubbles) in which only the echo chamber of the same news or fake news reached them (echo chamber) (Geschke, Lorenz, and Holtz 2019). Evaluating information with reliable evidence and scientific knowledge was essential for rationally shaping public opinion and developing trust in experts. In this information pandemic, the importance of society's health literacy in dealing with health crises has become more evident. Health literacy at the individual and societal levels determines individual health behavior choices. It affects family relationships, organizational efforts, policy decision-making, quality of life, morbidity and mortality indicators, and national economies (Sentell, Vamos, and Okan 2020). Disparities in health literacy substantially affect the outcome of health events.

Furthermore, the conditions demonstrated the close relationship between health literacy and digital literacy, with digital inclusion emerging as a social demand of crucial importance for protecting individual and public health. This request concerns not only access to broadband networking and the use of mobile computing technology but also the use of technology in telemedicine by

utilizing “smart” portable biomedical health monitoring devices (Sieck 2021). However, achieving these methods requires quality education and digital literacy, combined with health literacy so that the public can gain confidence and be encouraged to participate and collaborate in such programs, enhancing understanding of scientific methods and methods of safeguarding personal data against any reservations and hesitations due to the adoption of these technologies.

Timely and valid information on health and technology issues, access to information, and lifelong learning emerge at the forefront of the fight against social inequalities, geographical limitations, and prejudices that shape health inequalities. These actions cannot proceed only through the public health system but need the active participation of external educational agents, with local libraries appearing as the ideal intervention organizations.

Library, Health Information, Health Literacy

In decision-making centers, state actors and health professionals rarely consider libraries when it comes to issues of treatment or prevention in public health or the elimination of health disparities. However, all the evidence points to libraries as the best organizations to solve these problems effectively. Libraries function as regional centers of organized and documented public information. They are the pre-eminent education and literacy providers, providing up-to-date and valid information in physical or electronic form, and medical information is already on the list (Morgan 2016). Guided by this presumption, librarians and information scientists can contribute substantially to the work of health professionals to promote it. Medical information as a library service has added value for vulnerable populations due to economic, social, and physical limitations or exclusions. Having gained the public’s trust and being a living part of the local community (Horrigan 2015), libraries contribute significantly to community engagement in social actions. With targeted health actions, libraries can substantially contribute to cultivating good health practices, healthy lifestyles, basic medical knowledge, and protection of the natural environment, as well as activating and promoting society’s participation in these directions (Aguilar-Gaxiola 2022). Thus, they become shapers of public opinion by promoting public policies to address health issues holistically beyond the self-evident physical to the intellectual and lifestyle level. For the most effective dissemination of community involvement messages, the contribution of specialist health professionals is often necessary, who, with their expertise, can enhance participation and provide feedback on issues that concern the public. In these coordinated actions, the public can receive information on telemedicine issues to better serve geographically isolated communities by utilizing modern “smart” portable health monitoring technologies (wearables) (DeGuzman, Jain, and Loureiro 2022).

A statistical study of public libraries in the United States of America before the COVID-19 pandemic by the Pew Research Center showed that 17,000 public libraries cover 95% of the population. In contrast, 50% visit a public library at least once a year, and they serve four million visitors daily. The reach of public libraries in the US is impressive and demonstrates their importance in the design of health policies (Horrigan 2016). Of the millions of searches, more than 30% are related to personal, family, or friend health issues. In the broader context of health research issues, issues related to the health and care of animals, pets, or production animals, environmental issues, and food and water safety issues are included. Also, issues related to diseases such as infectious

diseases, transmitted by human contact, epidemics, and pandemics or zoonotic diseases, but also non-communicable diseases or health conditions such as cancer, cardiovascular and neurological diseases, psychological issues, aging, lifestyle, occupational hazards, the care of children, the sick and the elderly. In the most specialized topics, we have diagnostic issues that may include modern genomics, proteomic methods, cell biology or stem cell topics, and practical clinical issues such as drugs, medication, their correct dosage, their potential side effects, personalized medicine topics, new therapeutic approaches, surgical approaches, but also bioethical issues or issues of personal data and their protection (Rubenstein 2012).

Recognizing these unique features of the extra-systemic operation of libraries for the benefit of public health, the British National Health Service (NHS) puts forward in its latest strategic planning program the library space as a field of targeted action and funding. The Knowledge for Healthcare 2021-26 program aims to ensure equal access to medical information. It aims as a priority to mobilize evidence for the dissemination of knowledge and the improvement of therapeutic results (NHS 2021). The purpose of the program is achieved through the tripartite of appropriate sources of information, which is achieved through the guidance of library services, a proper intervention group, and a correct division of roles regarding the interaction with health experts and medical information services for all, built on the principles of equity, diversity, and inclusion.

Great Britain's libraries in the system developed by the NHS act as hubs for the dissemination of evidence-based scientific medical knowledge and as a field of action, education, and funding for programs of health education, vaccination, preventive medicine, and systematic medical information for common chronic conditions such as diabetes or hypertension, but also for infectious diseases, epidemics, and pathogenic microorganisms. Furthermore, the libraries present more general health suggestions based on the experts' recommendations concerning changing the public's lifestyle by adopting a healthier lifestyle with proper diet and exercise.

The statistics from the previous period, 2019-2020, demonstrate the success and justify the continuation of the NHS library funding strategy to strengthen medical information. The first phase of the project ensured (a) an increase in staff to 6 librarians per library, (b) the special retraining of the staff in matters of information search and analysis, (c) the enrichment of the physical collections of the libraries in both specialized and popular medical and health literature, (d) access to electronic resources and health databases subscription content, such as the National Medical Information Discovery System interface through EBSCO, (e) the library outreaches, (f) the creation of suitable library websites for remote public access, and (g) the uninterrupted flow of valid information during the pandemic period from the libraries.

In a low-literacy environment, with 20% of adults in Great Britain having a literacy level equal to or below that of a nine-year-old child and with 43% of adults unable to understand and comply with the written medical information on a prescription, the investment in health literacy is expected to contribute to improving the health of the population. In addition, the availability of popularized medical information helps the general population make better individual health decisions. In addition, patient compliance with medical prescriptions and prescriptions increases. In contrast, patients can now actively participate in planning their medical care to achieve better management of chronic diseases and increase trust in specialists while reducing the feeling of embarrassment toward the doctors and fear of ridiculed by them (Gursul 2022). Beyond the social parameters, the program's performance can also be seen in the financial aspect by applying new clinical methods

and adopting good practices. Libraries in Great Britain providing medical information to the public offer public health doctors and nurses time credit. In general, the patient and the public resorting to the library instead of the infrastructure of hospitalization and medical care reduces the number of daily clinical decisions.

At the same time, librarians assist in collecting medical information and specialists by synthesizing evidence-based knowledge necessary for case management. Libraries' support of the public's individual health choices further reduces the burden on the public health system by reducing the incidence of lifestyle-related chronic diseases (Karki et al. 2024). Economically, it is estimated that for every euro spent by the NHS on Great Britain's libraries, the benefit is 2.4 euros.

Libraries worldwide are the most critical enablers of children's and adult literacies, including digital, scientific, environmental, and medical (Koltay, Spiranec, and Karvalics 2016). The libraries' information activities are aimed at the public, regardless of educational level, degree of education, age, or profession. Regarding digital literacy, libraries educate their public to evaluate information, emphasizing information from the internet, helping to fight misinformation and debunk fake news.

Users can check the reliability of information from the website's accreditation data, its publication, updated calendar data, and its general appearance, including the speech within it. Thus, its authenticity (authority), any prejudices (bias), and how modern and up-to-date the information is (current) are examined, an essential element in medical information where new observations and scientific studies can overturn previous data (Atkinson 2016). In terms of scientific literacy, the purpose is to inform the public about the content of science, its mathematical foundation, the use of technology in measurements, trial and error methods, observations, experiments and theory, revision, and formulation of new theories focusing on the real possibilities and limitations (Kearns and Hybl 2005). A particular case is environmental literacy, which aims to provide individual and collective information for decision-making related to the environment and its protection for preserving biodiversity, natural resources, and drinking water, as well as improving the quality of life of people and societies. Therefore, it also touches on health issues (Finn and O'Fallon 2018).

Health literacy refers to how individuals acquire, process, and understand basic information and information needed to make appropriate health decisions. Understandably, a low level of health literacy is related to social inequalities and significantly reduces the adequacy of understanding of health conditions and interpersonal communication between the public and nursing staff. Libraries, safe spaces for inclusion, information, and training, offer medical information commensurate with the needs and capabilities of the public in practical and theoretical health issues, current medical issues, or personal or family needs, improving health literacy quantitatively and qualitatively. The local library should be a vital source of medical information for the public, every community, and every minority, offering meaningful activation, inclusion, and relief (Philbin et al. 2019).

Hypothesis for the Implementation of a Health Information Pole in Greece

In Greece, based on the census data of the ELSTAT, a total of 347 libraries for 2022, 52% of which are public or municipal, while the rest are legal entities. Libraries in our country serve more than three million readers. At the same time, almost seven million users use library websites, four million users use electronic library databases, and more than two million items in physical form were

borrowed by users for external use (ELSTAT 2022). Municipal and public libraries, along with particular academic, research, school, and private libraries, have formed the Greek Libraries Network under the authority of the National Library of Greece (NLG) (2020). This network of 273 libraries has been predominantly built around the public or municipal entities, representing nearly 88% of the total. The Greek Libraries Network aims to deliver better information services to all participants through a standard set of authorities, according to Anglo-American Cataloging Rules, 2nd edition, Revised (AACR2), an aligned legal documentation environment, sharing manuals and guidelines of good librarianship practice, and by facilitating interlibrary loan and resource sharing (NLG 2020). The Network supports coordinated actions to promote reading and creativity. The Greek Libraries Network offers a dense coverage of the regions of Greece, which locally may exceed the hospitals' coverage (Figure 1). It can be postulated that the Greek Libraries Network may deliver health information to regions the healthcare system has not reached, thus covering the information needs of most of the Greek general population.

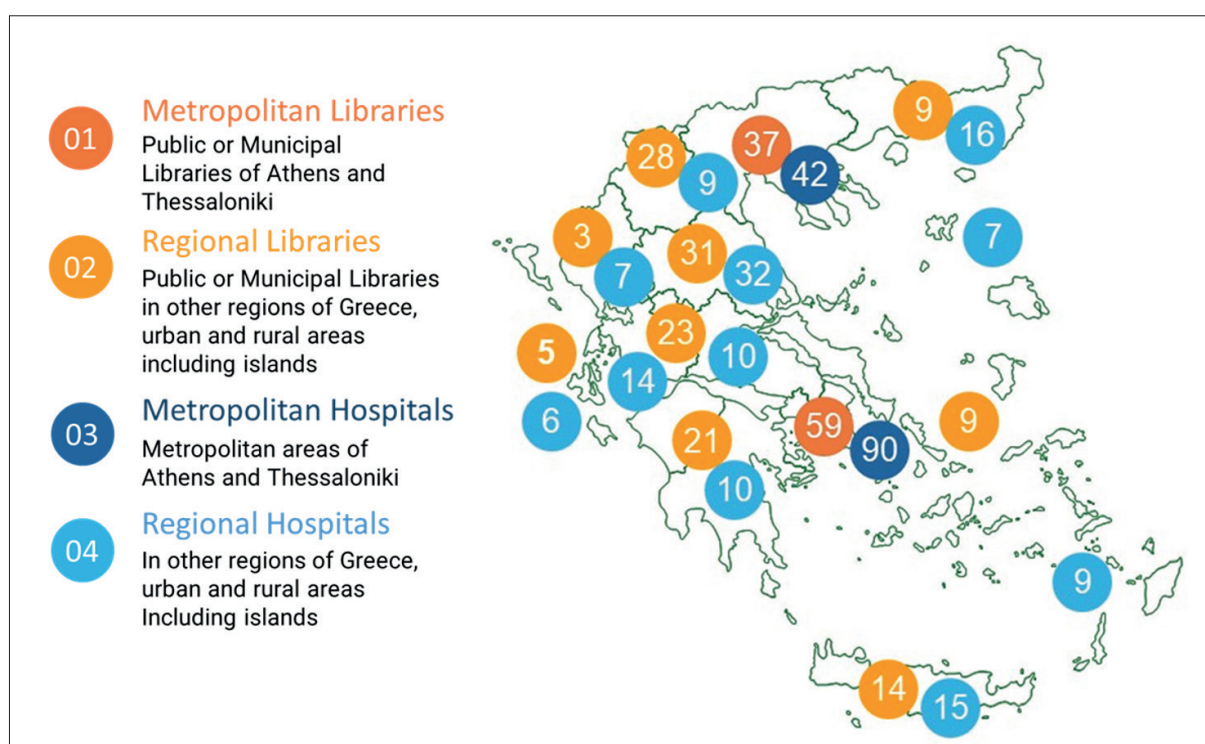


Figure 1: The Greek Libraries Network coverage map with the hospital coverage of regions of Greece.

Taking into account the current situation (state-of-the-art) and international practice, libraries in Greece (a) Form a panhellenic network covering both urban and rural areas, (b) can provide printed and digital material related to health issues (books, magazines, brochures, online databases), (c) they can perform health searches, (d) educate their audience on methods of searching for valid information, while (e) they are a safe, inclusive space for information and education. Therefore, they could be a pole for the development of regional actions to combat inequalities in Health, either due to limited access to therapeutic infrastructure due to geographical coverage,

language restrictions, social inequalities, economic inequalities, fear of stigmatization or ridicule, and discharge the pressure of the public health system in matters of individual counseling and medical information. At the same time, by contributing to public health literacy and combating limited public knowledge of health, prevention, safety and care, and misinformation, they can help reduce morbidity and improve public health.

To achieve these goals, it is necessary: (a) the central coordination, (b) targeted financial support, (c) the enrichment of the libraries' collections in medical records, (d) the strengthening of their human potential, (e) training programs for the existing staff, (f) the access to electronic digital health resources, and (g) the development of a popular source of digital health content for the general public. The inclusion of libraries in the "toolbox" of drawing up public health policy is expected to contribute significantly to the reduction of social inequalities and the improvement of the quality of life of citizens.

References

- Aguilar-Gaxiola, Sergio, Ahmed M. Syed, Anise Ayodola, Atum Azzahir, Kellan E. Baker, Anna Cupito, Milton Eder, Tekisha Dwan Everette, Kim Erwin, Maret Felzien, Elmer Freeman, David Gibbs, Ella Greene-Moton, Sinsi Hernández-Cancio, Ann Hwang, Felica Jones, Grant Jones, Marita Jones, Dmitry Khodyakov, J. Lloyd Michener, Bobby Milstein, Debra S. Oto-Kent, Michael Orban, Burt Pusch, Mona Shah, Monique Shaw, Julie Tarrant, Nina Wallerstein, John M. Westfall, Asia Williams, and Richard Zaldivar. 2022. *Assessing meaningful community engagement: a conceptual model to advance health equity through transformed systems for health: organizing committee for assessing meaningful community engagement in health and health care programs and policies*. NAM Perspectives. Washington, DC: National Academy of Medicine. <https://doi.org/10.31478/202202c>.
- Atkinson, Jeremy. 2016. *Quality and the academic library: Reviewing, assessing and enhancing service provision*. Cambridge, MA: Chandos Publishing.
- Audunson, Ragnar, Herbjørn Andresen, Cicilie Fagerlid, Erik Henningsen, Hans-Christoph Hobohm, Henrik Jochumsen, Håkon Larsen, and Tonje Vold. 2020. *Libraries, archives and museums as democratic spaces in a digital age*. Munich, Germany: De Gruyter Saur. <https://doi.org/10.1515/9783110636628>.
- Cooper, Lisa. 2021. *Why are health disparities everyone's problem?* Baltimore: Johns Hopkins University Press. <https://doi.org/10.1353/book.85070>.
- DeGuzman, Pamela B., Neha Jain, and Christine G. Loureiro. 2022. 'Public libraries as partners in telemedicine delivery: a review and research agenda.' *Public Library Quarterly* 41(3): 294-304. <https://doi.org/10.1080/01616846.2021.1877080>.
- ELSTAT (Hellenic Statistical Authority). 2022. Ελληνική Στατιστική Αρχή (ΕΛΣΤΑΤ). Research on Greek Libraries (except School Libraries) (2022) (Edition 1.0). https://www.statistics.gr/el/home?p_p_id=com_liferay_portal_search_web_portlet_SearchPortlet_INSTANCE_3&p_p_lifecycle=0&p_p_state=maximized&p_p_mode=view&_com_liferay_portal_search_web_portlet_SearchPortlet_INSTANCE_3_mvcPath=%2Fview_content.jsp&_com_liferay_portal_search_web_portlet_SearchPortlet_INSTANCE_3_assetEntryId=18242052&_com_liferay_portal_search_web_portlet_SearchPortlet_INSTANCE_3_type=document.
- ELSTAT (Hellenic Statistical Authority). 2023. *Hospitals and local health centres (beds, staff, equipment)/2021*. <https://www.statistics.gr/el/statistics/-/publication/SHE06/2021>
- Finn, Symma, and Liam R. O'Fallon, eds. 2018. *Environmental health literacy*. Cham, Switzerland: Springer. <https://doi.org/10.1007/978-3-319-94108-0>.
- Galaviz, Karla I., Jessica Y. Breland, Mechelle Sanders, Khadijah Breathett, Alison Cerezo, Oscar Gil, John M. Hollier, Cassandra Marshall, J. Deanna Wilson, and Utibe R. Essien. 2020. 'Implementation science to address health disparities during the coronavirus pandemic.' *Health Equity* 4(1): 463-467. <https://doi.org/10.1089/heq.2020.0044>.
- Geschke, Daniel, Lorenz Jan, and Peter Holtz. 2019. 'The triple-filter bubble: Using agent-based modelling to test a meta-theoretical framework for the emergence of filter bubbles and echo chambers.' *British Journal of Social Psychology* 58(1): 129-149. <https://doi.org/10.1111/bjso.12286>.

- Gursul, Deniz. 2022. *Health information: are you getting your message across?* National Institute for Health and Care Evidence. https://doi.org/10.3310/nihrevidence_51109.
- Horrigan, John B. 2015. *Libraries at the Crossroads*. Pew Research Center: Internet, Science & Tech. 2015. <https://www.pewresearch.org/internet/2015/09/15/libraries-at-the-crossroads/>
- Horrigan, John. B. 2016. *Libraries 2016*. Pew Research Center: Internet, Science & Tech. 2016. <https://www.pewresearch.org/internet/2016/09/09/libraries-2016/>
- Karki, Manisha, Marie Line El Asmar, Eva Riboli Sasco, and Austen El-Osta. 2024. 'Public libraries to promote public health and wellbeing: a cross-sectional study of community-dwelling adults.' *BMC Public Health* 24(1): 1226. <https://doi.org/10.1186/s12889-024-18535-5>.
- Kearns, Katherine, and Tracy Thrasher Hybl. 2005. 'A collaboration between faculty and librarians to develop and assess a science literacy laboratory module.' *Science & Technology Libraries* 25(4): 39-56. https://doi.org/10.1300/J122v25n04_04.
- Kelleher, Kelly J., and William Gardner. 2017. 'Out of sight, out of mind—behavioral and developmental care for rural children.' *N Engl J Med* 376 (14): 1301-1303. <https://doi.org/10.1056/NEJMp1700713>.
- Koltay, Tibor, Sonja Spiranec, and Laszlo Z. Karvalics. 2016. *Research 2.0 and the future of information literacy*. Cambridge, MA: Chandos Publishing.
- Macarena, Garcia C., Mark Faul, Greta Massetti, Cheryll C. Thomas, Yuling Hong, Ursula E. Bauer, and Michael F. Iademarco. 2017. 'Reducing potentially excess deaths from the five leading causes of death in the rural United States.' *MMWR. Surveillance Summaries* 66(2): 1-7. <https://doi.org/10.15585/mmwr.ss6602a1>.
- MoH (Ministry of Health). 2024. *Rights of Healthcare Services Customers*. <https://www.moh.gov.gr/articles/citizen/dikaiwmata-lhptwn-yphresiwn-ygeias>
- Morgan, Anna U., Roxanne Dupuis, Bernadette D'Alonzo, Andria Johnson, Amy Graves, Kiahana L. Brooks, Autumn McClintock, Heather Klusaritz, Hillary Bogner, Judith A. Long, David Grande, and Carolyn C. Cannuscio. 2016. 'Beyond books: Public libraries as partners for population health.' *Health Affairs* 35 (11): 2030-2036. <https://doi.org/10.1377/hlthaff.2016.0724>.
- NAS (National Academies of Sciences). 2024. *Exploring diversity, equity, inclusion, and health equity commitments and approaches by health organization C-suites: Proceedings of a workshop*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/27458>.
- NHS (National Health Service). 2021. *Knowledge for Healthcare* 2021-26. <https://www.hee.nhs.uk/our-work/knowledge-for-healthcare>.
- NLG (National Library of Greece). 2020. *Participating libraries by region of Greece*. <https://net-work.nlg.gr/library/>.
- Philbin, Morgan M., Caroline M. Parker, Mary Grace Flaherty, and Jennifer S. Hirsch. 2019. 'Public libraries: A community-level resource to advance population health.' *Journal of community health* 44: 192-199. <https://doi.org/10.1007/s10900-018-0547-4>.

Rid, Annette, Michael A. Johansson, Gabriel Leung, Hannah Valentine, Esteban G. Burchard, Sam S. Oh, and Cathy Zimmerman. 2016. 'Towards equity in health: researchers take stock.' *PLoS medicine* 13(11): e1002186. <https://doi.org/10.1371/journal.pmed.1002186>.

Rubenstein, Ellen. 2012. 'From social hygiene to consumer health: Libraries, health information, and the American public from the late nineteenth century to the 1980s.' *Library & Information History* 28 (3): 202-219. <https://doi.org/10.1179/1758348912Z.00000000016>.

Scales, David, Jack Gorman, and Kathleen H. Jamieson. 2021. 'The Covid-19 infodemic—applying the epidemiologic model to counter misinformation.' *New England Journal of Medicine* 385 (8): 678-681. <https://doi.org/10.1056/NEJMp2103798>.

Sentell, Tetine, Sandra Vamos, and Orkan Okan. 2020. 'Interdisciplinary perspectives on health literacy research around the world: more important than ever in a time of COVID-19.' *International Journal of Environmental Research and Public Health* 17 (9): 3010. <https://doi.org/10.3390/ijerph17093010>.

Sieck, Cynthia J., Amy Sheon, Jessica S. Ancker, Jill Castek, Bill Callahan, and Angela Siefer. 2021. 'Digital inclusion as a social determinant of health.' *NPJ digital medicine* 4 (1): 52. <https://doi.org/10.1038/s41746-021-00413-8>.

Solar, Orielle., and Alec Irwin. 2010. *A conceptual framework for action on the social determinants of health*. Geneva: WHO Document Production Services <https://doi.org/10.13016/17cr-aqb9>.

Thomas, Sharita R., George M. Holmes, and George H. Pink. 2016. 'To what extent do community characteristics explain differences in closure among financially distressed rural hospitals?.' *Journal of Health Care for the Poor and Underserved* 27 (4): 194-203. <https://doi.org/10.1353/hpu.2016.0176>

UNC (Cecil G. Sheps Center for Health Services Research). 2020. *Sheps Center for Health Services Research, University of North Carolina at Chapel Hill. Rural Hospital Closures*. <https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/>.

Warshaw, Robin. 2017. *Health Disparities Affect Millions in Rural U.S. Communities*. AAMC <https://www.aamc.org/news/health-disparities-affect-millions-rural-us-communities>.

WHO (World Health Organization). 2019. *Social determinants of Health*. https://www.who.int/health-topics/social-determinants-of-health#tab=tab_3.