Digital Public Healthcare in Kosovo:

An overview of the situation and challenges

Content

1. Background

1.1. Digital health globally

Advancement of technology and its application in public services has played a crucial role in enhancing human health. In the present day, healthcare is undergoing a profound transformation, driven by innovative technologies that continually push the boundaries of disease management. State of the art devices aid in diabetes tests, HIV detection, and fabrication of orthotics, prosthetics, and clinical devices. Additionally, the integration of remote care, telemedicine, and mobile health services is revolutionizing healthcare delivery by bolstering care in medical facilities and empowering patients to actively participate in decision-making alongside healthcare providers (1,2).

The utilization of wearable devices, mobile health solutions, telehealth, health information technology, and telemedicine has led to enhanced accessibility in healthcare, reduced inefficiencies within the healthcare system, improved service quality, lowered costs, and facilitated individualized or personalized care (2).

1.2. Digital health in the region

The Western Balkan countries have demonstrated some effort in the digitization of healthcare, although the successful implementation of digital projects has faced obstacles stemming from limited infrastructure and data management challenges. However, amidst these challenges, certain countries have made some progress. For instance, North Macedonia has introduced a real-time e-booking system as early as 2013. This system has effectively reduced long waiting times, enhancing patient experiences. Recognizing the benefits, Serbia later followed suit by implementing a similar e-booking system within its healthcare system. Moreover, North Macedonia has also taken steps to improve he-

althcare efficiency through the implementation of an e-prescriptions website to enable the monitoring and tracking of prescriptions, as well as the diagnosed conditions. In 2017, Montenegro also implemented a real-time e-Referral and e-Prescription system, radically reducing waiting times (3).

In 2021, the World Health Organization (WHO) launched a Western Balkans Digital Health Network with the aim to support digital health priorities identified by the WHO for the Western Balkans, accelerate the digitalization of healthcare systems in the Western Balkans with a focus on primary care and to foster knowledge sharing and identify best practices in digital health. In addition the network aimed at enhancing collaboration and coordination among countries in the Western Balkans region to align actions and initiatives related to digital health (4).

1.3. Kosovo context

Kosovo has faced significant challenges with its underperforming healthcare system, aggravated by financial constraints that hindered significant investments in post-war healthcare infrastructure. The country has leveraged international aid to improve healthcare services, but transformative changes have been lacking, coupled with an inflexible and inefficient healthcare system (5).

On the other hand, Kosovo is witnessing a rising incidence of non-communicable diseases (NCDs), accounting for more than two-thirds of all deaths (6). Life expectancy in Kosovo was reported by the World Bank to be 77 in 2021, slightly higher than the surrounding countries but significantly less than developed countries (7). Harmful drinking has been found to be of high prevalence in Kosovan youth (8) and there have been persistently reported high

rates of tobacco and alcohol consumption (6). However, minimal efforts have been made to address and prevent the unhealthy behavior and potential diseases as a consequence among Kosovars.

Healthcare technology and innovation are increasingly employed in the contemporary world to bridge gaps in healthcare systems and effectively meet the needs of populations. Kosovo is failing to follow the trend, due to a myriad of challenges. Kosovo has piloted the implementation of a health information system, aligned with the European core health indicators, facilitating virtual communication between users/patients and general practitioners. This system aims to provide counseling services and captures data related to patient admissions, discharges, and transfers. However, not all healthcare institutions in Kosovo utilize this system, and there is a need to incorporate additional functionalities such as pathology, radiology, blood transfusion, vaccination, and other interventions, as stated in the Kosovo Progress Report of 2022 (9).

Considering the high number of patients with NCDs, an integrated care approach is of paramount importance, where all three levels of care have access to a patient's history without having to make separate evaluations thus overwhelming the system.

The advancement of technology in healthcare appears to have a low priority in public discussions and government agendas in Kosovo. Notably, digitalization in the healthcare sector has not been addressed extensively in any of the strategies or national documents for the upcoming years.

However, it is important to note that several development agencies in Kosovo are actively working towards digitizing specific segments within the overall healthcare system. These initiatives aim to leverage technology to enhance healthcare delivery and improve overall efficiency.

During the pandemic, Kosovo has launched the first digital platform aiming at digitalizing segments of each system including healthcare. This platform was used to book Covid-19 vaccines but also to store vaccination digital passports. From its' launch the platform has had around 360M visits, has provided around 2.40M health services and counts around 785K registered individuals (10). It also served as a key example of how necessity drives adoption, and provided a view of the applicability of digital services on a larger scale.

Nevertheless, digitalizing healthcare in Kosovo has a history of unsuccessful implementations. Future strategizing in this area must be thoroughly informed by lessons learned and key practices derived from regional expertise. This paper is an overview of the main digital healthcare landscape in Kosovo and its associated challenges.

2. Methodology

This paper was prepared during April 2023 – June 2023. We conducted a thorough literature search with the keywords: digital, healthcare, digitalization, health systems, and innovation within the Kosovo region.

We analyzed both gray and academic literature available for this analysis. Data was synthesized using a grounded approach, where key challenges were clustered according to frequency and relevancy of themes.

We also focused on strategic documentation of the republic of Kosovo within health and digitalization initially from the past 5 years, as a criterion of relevance.

Due to the scarce documentation of recent years related to the field, we also used preliminary interview data with healthcare workers and experts ahead of publication, in reports where the key authors are engaged. These sources are cited as such and original sources will be available upon publication. We also requested data from experts and stakeholders through electronic communication.

3. Strategic environment

3.1. Digital Healthcare

The Kosovo government has operated without an official sectoral strategy for health since 2021. The three recent strategies do not focus on digitalized healthcare in any other aspects except for establishing the Health Information System (HIS). The HIS is a key strategic policy for healthcare in Kosovo and region, who aim to be in line with EU standards. The HIS is a network based system which will be functional across all public healthcare services, including pharmaceuticals. All healthcare data will be digitally stored and processed.

In the past decade, all strategic documents have aimed at establishing HIS. The most recent strategy of 2017-2021, and the preceding strategic document, the Health Sectoral Strategy 2010- 2014, both considered HIS as a main strategic goal.

3.2. The Health Information System: Prospect for digital healthcare services

Despite years of effort and numerous attempts, the healthcare system in Kosovo has yet to achieve full implementation of a comprehensive health information system (9,11). This was attributed to the absence of a realistic architecture across three levels: application architecture for receiving information, data architecture for deriving value from accumulated data, and technology architecture for supporting the efficient and secure operation of the aforementioned architectures. Furthermore, the lack of adaptation and training for deprived age-groups has also been identified as a contributing factor (12). Though initially piloted in certain healthcare centers, a 2017 report concludes that the health information system was never

established in more than 30% of the overall Kosovo territory (13).

MoH will launch the upcoming strategy 2023-2030 during July. In this document, MoH once more has determined the HIS as one of its main strategic objectives. Activities under the strategy indicate that the ministry aims to complete the development of the system, in compliance with international standards, and complete the training of staff. This denotes the third time in the past decade that Kosovo attempts to establish a digital health information system, under a similar strategic approach.

3.3. Digitalization

The current strategic agenda for digitalization considers the process of digitalization as cross cutting through main national development areas (14). Digital healthcare is envisioned within its third strategic objective, whereby it aims to establish HIS through gigabit connectivity. During the previous mandate of this strategy, Kosovo did not manage to apply digital principles and tools in healthcare, and it was in fact considered one of the weakest deployments (15).

Analysis of the previous digital agenda, which included digital health, identified the mechanisms which had limited performance that can impact health system digitalization. Technical factors include 1. Low performance of broadband networks, and 2. General low capacity of mobile networks and a below average quality of services (16). The first one is related to the functioning of broadband networks in which HIS would depend, and the second has implications for digital apps. In this regard, the new strategy sets out to mediate these mechanisms by expanding network services and strengthening 5g mobile systems.

However, other key obstacles in digitalizing public health services remain. The analysis denotes that the digitalization process in general is not scaled, including across private and public sectors. This has implications for the adherence of citizens, especially for less literate groups, to digitalization of health services. This has already been identified as a shortcoming of the previous strategic mandate (17). The objective for increasing competence within the population in the current strategy for digitalization does not address senior population access to digital

services. The activities proposed under this document are mainly targeting activities within the secondary and higher education levels, which are already digitally literate compared to senior populations. Moreover, some healthcare institutions have reported that senior staff are not competent in digital technology (18), and though data is scarce, the same may hold true for the general population. The level of competence should be thoroughly analyzed and addressed.

The new agenda for digitalization is directed towards forming legislation which ensures cybernetic security, including a strategy for cybernetic security and information security in general. This documentation is imperative for the functioning of healthcare digitalization, considering data risks. Currently patient data is considered personal data and protected under the Law on Protection of Personal Data (Table 1).

Healthcare System	Data and privacy	Innovation and health
1 Law on Public Health	**1** Law on Protection of Personal Data	**1** Law On Scientific Innovation and Transfer of Knowledge and Technology
2 Law on Health Insurance	**2** Law on Electronic Communication	
3 Law on the Rights and Responsibilities of Kosovo Residents in Health Care	**3** Regulation on electronic databases	
4 Law on Health Inspectorate	**4** Law on Scientific-Research Activities	
5 Law on Mental Health		
6 Law on Reproductive Health		

Table 1. Current legislative landscape for digital healthcare

4. Challenges

All countries, particularly those with low and low-to-middle incomes, face shared challenges when it comes to adopting technology in healthcare systems and services. In Kosovo, the obstacles to implementing innovation and technology in healthcare are akin to those encountered by other countries in other low-to-middle income countries.

4.1. Infrastructure

The National Audit Office's report (13) on the piloted HIS has identified various infrastructural issues, including lack of equipment in health centers across different service levels, and poor network services.

Currently, Kosovo aims to extend high broadband internet speed to all healthcare institutions with the World Bank supported KODE project (Kosovo Digital Economy) (19). Though the project aims to foster digital inclusion, its main activity regarding healthcare institutions is directed only towards better broadband connection.

4.2. Human resources

Kosovo falls behind the EU standard and behind regional ratios of healthcare staff compared to population in general. It has 1.5 physicians per 1000 inhabitants (EU: 9.1/1000), and 4.1 nurses per 1000 inhabitants (EU: 4.9/1000) (20).

Findings from the Digitalization Agenda report (17) show that central public institutions lack staff qualified in digital and information technology in general.

At the local governance level, there are no recent identified initiatives towards digitalization of healthcare. Representatives from munici-palities also reported on the lack of specialized workers in information and technology as a key lack for proper implementation of digitalization of primary health care centers (21). For example, the municipality of Prishtina employs 5 IT workers who are in charge of systems requests for local e-governance. For reference, around 650 monthly patients attend main primary health care services in Prishtina alone (22).

There are currently two approaches for training healthcare workers with regard to digital infrastructure. The first one is through an external economic operator which was employed during the initial phases of the HIS, and likely another EO will conduct the training during the new HIS project. There are concerns about the manner of capacity building through trainings, and in previous efforts, these trainings were not deemed efficient. For example, according to the National Audit Office report (13), during the previous HIS project:

TThe trainings were basic trainings held on a two-day and three-day basis depending on the role of the health personnel. In the evaluation lists completed by the personnel who benefited from these trainings, we found that most of them answered "satisfied with the training". On the other hand, we have found that the trained health personnel in the Pediatric Clinic do not have basic knowledge of using the system. This shows that the two-day training is not enough to understand and learn the basic functions of the SISH program.'

The second form of capacity building is through the continuous professional education that is mainly provided through health professional chambers. There is no pre-approved curricula for healthcare workers, therefore there is no indication of pre-planned professional training for digital health competences. A needs

assessment must be conducted before these programs are launched and implemented. In the upcoming health strategy, training of staff through continuous professional education is also foreseen, though it is not specifically part of the HIS objective.

4.3. Data practices: Security and privacy

A context analysis of the digital health and innovation ecosystem in Kosovo identified some key issues in the large-scale application of advanced technologies in the public healthcare system (21).

One key challenge for Kosovo is the implementation of data privacy regulations. Experts indicate that Kosovo's data security challenges in healthcare have not been properly assessed, as the Health Information System is not functional across all centers and levels of healthcare.

" *I think we should first have a clear policy framework which regulates patient data, you know at the end of the day, in a classic health scenario, we have nothing written in a patient or doctor file. What we need, is first regulation that defines how we store that data, and then provides security for that data, so that patients are willing to participate in this large program, because there for example are elderly patients, and it won't be easy, for someone with no literacy to trust a digital system, as opposed to a physical doctor or nurse in the room who speaks and diagnoses."[1]*

The National Auditors' report for HIS which was conducted for the period 2010-2017 flagged key issues with data privacy and security. The report explains that the State Agency for Protection of Personal Data, which has the mandate to monitor legislation of health data among others, has not conducted proper analysis of processing of data as part of the HIS (13). This is especially problematic as the report noted that various users of all levels can access the data, including users who are not defined as medical users, which has legal implications for data protection.

4.4. Data practices: Storage and usability

For example, data from a study on monitoring of mental health centers (23) shows that health centers run a 'dual' system for data storage. They store both physical and digital copies of patient data. Physical files are complete and considered as default, and they do not always have a corresponding digital copy. Some centers report dysfunctional or unreliable HIS, with no responsive support staff. This also discourages staff from using the program. For this reason, the National Auditor's Office reported that only 39% of patients were registered in the HIS while it was piloted (13).

Previous research with healthcare experts in the area of advanced technologies described the lack of translation of technologies into clinical practice as one of the key issues for implementation of advanced technologies in Kosovo (21). For healthcare providers, one of the key issues for translating their current physical documentation into the digital infrastructure is the lack of accommodation provided by the latter. Centers use forms and instruments for which there is no structural space in the system. In addition, the lack of standardized practices between providers also means that some providers are known to use outdated forms out of habitual use and non- compliance with digital systems. This finding is corroborated by the National Auditor Office in their official report.

---

1   Context analysis: Intervews with digital health experts. See reference 21.

4.5. Healthcare financing

In general, the healthcare system in Kosovo has faced challenges due to unstable investments and the non-implementation of the health insurance fund. Insufficient funding has been a significant issue, as indicated by a recent study (24). The limited healthcare budget makes it more difficult to invest in technology-related developments which typically require larger investments (9).

The MoH in Kosovo has increased its annual budget for 27% in 2023 (24) compared to the previous year. However, public spending in healthcare is considered one of the lowest in Europe (27).

The new budget for the year 2023 does not provide detailed investment regarding digitalization of healthcare across the public system. Therefore, the financing landscape for innovation and digitalization in healthcare is not clear.

MoH has recently entered a new agreement with the Luxembourg Development Office in Kosovo, as part of their program for supporting health. The project planned for the next three years will support two hospitals in Prizren and Gjilan, including with innovative services. MoH does not co-finance the project (26).

Previous examples, such as the national health insurance fund, show that poorly defined financial streams pose key challenges for strategic projects. Insufficient funding has been a significant issue for MoH projects, as indicated by a recent study (25).

Experts have previously highlighted   the issue of prioritizing expenses as a shortcoming for digital health, especially in comparison to other economic and development areas (21).

A large amount of this country's budget goes into health and education, and we found through our research that health and education, these two areas, are the least digitalized. Transport, trade, economy, energy, these are much more digitalized even though the public doesn't see this, but still, compared to health and education, they are much more digitalized, so, I think that it would not go to waste, if we allocated funding from the annual state budget, in these key areas, which do not have any advances in technology despite the need.[2]

4.6. Management and administrative capacities

In Kosovo, the management of healthcare institutions and clinics has traditionally been dominated by individuals with clinical backgrounds, lacking the necessary knowledge, skills, and expertise in management and leadership (29). This situation has hindered the potential for organizational development and growth, effective staff management, efficient allocation of institutional resources, enhanced client/patient-oriented focus, and the implementation of strategic planning. The absence of a solid foundation in managerial competencies hampers their ability to effectively lead and manage healthcare institutions and services.

4.7. Healthcare workers: Training and education

According to the Progress Report (9), Kosovo faces a shortage of trained healthcare professionals, which may limit the ability of the healthcare system to adopt and implement new technologies and innovations. Additional-

---

2   Context analysis: Intervews with digital health experts. See reference 21.

ly, there may be a lack of specialized expertise in certain areas, such as health informatics or medical technology (9). In a scientific study published in 2021 with healthcare workers in Kosovo, low levels of self-confidence on using digital technologies has been observed due to the lack of education and professional training (28). In another study, the majority of nurses were more likely to imagine themselves using a computer, laptop or smartphone and less likely to imagine themselves using an assistive robot or telemedicine. Nevertheless, the same study indicates an interest among nurses for future training regarding the use of health technology (30).

An additional concern for the Kosovo government is migration of healthcare workers. In the context of digital healthcare, a study by the Federation of Kosovo Health Syndicates has found that better educated healthcare workers show higher intent of migrating. Shortage of specialized healthcare staff can further deepen the overall digital competence landscape of healthcare workers in the country (29).

4.8. Health inequality and digital divide

Although access to the internet is distributed all across Kosovo, and it has been reported to be the country with the highest internet penetration in the region, a report conducted by UNDP in 2021, reveals a distinct digital divide in the productive utilization of devices and networks. For instance, utilization of social media and communication has been associated with a lower level of education, while activities such as e-collaboration, e-banking, web content creation, and coding have been associated with higher levels of education.

Furthermore, a notable digital divide is evident between households with lower incomes and those with higher income levels. A lower level of access to the internet has been also reported for older people over the age of 75. While

this does not establish a direct connection to the digital health divide, it implies that a similar situation may persist in that aspect as well (31).

For Kosovo, experts have also raised the risk of a gap between the private and public sector (21). Though there is little data on the use of digital health systems within private healthcare institutions, some enterprises in Kosovo have already created digital services, including telemedicine and teleconferencing devices.

5. Recommendations

Kosovo's young population provides a favorable demographic for digital adoption. Younger generations are typically more tech-savvy and open to embracing digital technologies, which can drive the overall digitization process.

The growth of the ICT industry in Kosovo indicates a thriving tech ecosystem, including software development, IT services, and innovation. This contributes to the availability of digital expertise, infrastructure, and technological advancements necessary for digitization.

Achieving 100% internet penetration in Kosovo is a substantial milestone. Universal access to the internet provides the foundation for digital transformation, enabling widespread connectivity and facilitating the adoption of various digital services and technologies.

While Kosovo can leverage its young population, fast-growing ICT industry, and high internet penetration to drive digitization efforts, ensuring a full-scale adoption of digital healthcare interventions requires a comprehensive approach. Some of the key considerations include:

5.1. Feasibility assessments

Previous attempts of digitalizing public health services have provided information on key bottlenecks. It is important to assess the practicality and viability of renewed interventions prior to its implementation. In the case of a health information system and any other complex interventions it is compulsory to assess the risks, barriers and opportunities of technical, financial, organizational, and operational infrastructure associated with the implementation of the intervention. Having in mind that

the project had a low success rate during its piloting stage in various domains, it is imperative the MoH also strictly follow the outcomes of their planned feasibility report (32).

While the feasibility plan ensures alignment between goals and existing infrastructure, implementation science focuses on the methods, processes, and factors that drive successful implementation and adoption of interventions. Implementation science leverages research findings and evidence to guide efforts in implementing health information systems and other digital health technologies. Furthermore, it enables continuous improvement of digital interventions.

5.2. Human resource training

HIS and other public digital health services are only functional if they are inclusive at the national level. This indicates that all healthcare staff must obtain digital literacy in order to deliver services. Thorough needs assessment related healthcare worker competences, and then design of training packages is imperative to the functioning of services.

In addition, support staff in ICT areas for healthcare must also be increased, considering the ratio of provided services and existing capacities.

Establishing partnerships with academic institutions to provide training on the application of digital technologies to young professionals may support training shortages in the field. By collaborating with universities and educational organizations, healthcare decision-making institutions can achieve the development of a proficient up and coming workforce, and promote innovation in the digital field, with minimum costs.

5.3. Financing landscape

The financing sources for digital healthcare services are contingent on public spending and donor grants. For the Health Information System, the intervention will take place from equipment of centers with necessary infrastructure, secure and stable networks, and a sustainable process of maintenance. In this line, the multifaceted nature of digital services requires budgetary alignment between authorities who are responsible for each area, including health systems, innovation and technology, as well legal infrastructure surrounding data practices.

References

1.   Shaffer Franklin., Preziosi Peter. 2019." Digital Health: In: Nursing administration quarterly vol. 43,4 351-353.https://pubmed.ncbi.nlm.nih.gov/31479056/.

2.   Ronquillo, Yasmyne., Meyers, Arlen., & Korvek, Scott J.. 2023. "Digital Health." In StatPearls. Treasure Island, http://www.ncbi.nlm.nih.gov/books/NBK470260/.

3.   Bjornberg Arne. 2018. "Euro Health Consumer Index 2017." In Health Consumer Power-house. https://healthpowerhouse.com/media/EHCI-2017/EHCI-2017-report.pdf.

4.   World Health Organization: WHO. 2021. "WHO/Europe Launches Western Balkans Digital Health Network." Who.Int. https://www.who.int/europe/news/item/13-10-2021-who-eu-rope-launches-western-balkans-digital-health-network.

5.   World Bank. 2017. "Republic of Kosovo Systematic Country Diagnostic". Washington. https://doi.org/10.1596/26573.

6.   World Bank. 2023."Tackling Noncommunicable Diseases in Kosovo to Enhance Human Capital and Economic Growth". Washington, June 27. https://doi.org/10.1596/39936.

7.   World Bank. Open Data. "World Bank Open Data," https://data.worldbank.org/.

8.   Sajber, Dorica., Tahiraj Enver., Zenic Natasa., Peric Mia, Sekulic Damir. 2016."Alcohol Drink-ing Among Kosovar Adolescents": An Examination of Gender-Specific Sociodemographic, Sport, and Familial Factors Associated With Harmful Drinking. Substance Use Misuse; 51(4):533–9. DOI:10.3109/10826084.2015.1122064.

9.   European Neighbourhood Policy and Enlargement Negotiations (DG NEAR).2022. "Kosovo Report 2022." https://neighbourhood-enlargement.ec.europa.eu/kosovo-report-2022_en.

10. eKosova. 2023."Platforma eKosova.". https://ekosova.rks-gov.net/.

11. Obas Katrina, Ariana Bytyci-Katanolli, Marek Kwiatkowski, Qamile Ramadani, Nicu Fota, Naim Jerliu, Shukrije Statovci, Jana Gerold, Manfred Zahorka, and Nicole Probst-Hensch. 2022."Strengthening Primary Healthcare in Kosovo Requires Tailoring Primary, Secondary and Tertiary Prevention Interventions and Consideration of Mental Health." Frontiers in Public Health 10. April 5. https://doi.org/10.3389/fpubh.2022.79430

12. Qehaja, Besnik, Fatime Lumi Qehaja, and Edmond Hajrizi. 2022. "Framework for Re-al-Time Monitoring E-Health Systems." IFAC-PapersOnLine 55, no. 39. 81-376. https://doi.org/10.1016/j.ifacol.2022.12.057.

13. Zyra kombetare e auditimit Nacionale kancelarija revizije national audit office. 2017. "Raport i Au-ditimit Efikasiteti dhe Efektiviteti në Implementimin e Sistemit Informativ Unik të Integruar Shënde-tësor.":3-51. https://zka-rks.org/wp-content/uploads/2017/12/Raporti_auditimit_-SISH_shq.pdf.

14. Digital Agenda of Kosovo 2030. Strategic orientation for transformation of Kosovo into a successful digital country. https://konsultimet.rks-gov.net/viewConsult.php?Consultation-ID=41846

15. Electronic communication sector policy. 2013."Digital Agenda For Kosova 2013-2020.",3-39. https://kodeproject.org/wp-content/uploads/2019/11/Electronic-Communication-Sector-Policy-2013-2020-1.pdf.

16. ME - Ministria E Ekonomisë. "Public Consultations Held on the Kosovo Digital Agenda 2030," https://me.rks-gov.net/en/blog/public-consultations-held-on-the-kosovo-digital-agenda-2030/.

17. Open Data Kosovo. 2021."Digital Agenda Observatory 2020 - Open Data Kosovo." November 24. . https://opendatakosovo.org/portfolio/digital-agenda-observatory-2020/.

18. Interviews with healthcare workers at SHSKUK.

19. World Bank. 2023. "Kosovo - Kosovo Digital Economy (KODE) Project." https://documents.worldbank.org/en/publication/documents-reports/documentdetail/249951531020771941/kosovo-kosovo-digital-economy-kode-project.

20. "Health Statistics, 2021.".https://ask.rks-gov.net/en/kosovo-agency-of-statistics/add-news/health-statistics-2021.

21. Context analysis of digital healthcare and innovation in Kosovo, Institute of South East Europe for Health and Social Policy, 2023.

22. Hoxha, Ilir, Valid Apuk, Besfort Kryeziu, Premtim Rashiti, Mrika Aliu, Alejandro Gonzalez-Aquines, Olga Khan, and Ha Nguyen. "Management of Non-Communicable Diseases in Kosovo: A Scoping Review." International Journal of Environmental Research and Public Health 20, no. 4 (February 13, 2023): 3299. https://doi.org/10.3390/ijerph20043299.

23. Shëndeti mendor në Kosovë: Analizë e përgjithshme e sistemit publik. Shegë Bahtiri dhe Shpresë Neziri, 2023. Qips, Prishtinë

24. Budget Appropriations for the Budget of the Republic of Kosovo for year 2021, Law No. 08/L-213. https://mf.rks-gov.net/desk/inc/media/8A95D37F-A8B7-4D49-9640-24FE1A8F950E.pdf

25. Draft Health Sectoral Strategy 2023-2030, Ministry of Health of the Republic of Kosovo, 2023 (unpublished).

26. Ministry of Health in an e-mail to authors, dated June 20th, 2023.

27. Bytyqi, Albina, and Bujar Gallopeni. 2021"The Examination of the Profile of Leadership and Management in Healthcare Institutions in Kosovo." European Journal of Medicine and Natural Scinces Articles. https://ideas.repec.org//a/eur/ejmnjr/32.html

28. Hoxha, Adnan, Besarta Taganoviq, and Arben Hysenaj. 2021. "Qualitative research: Determinants and Long-Term Implications of Readiness and Trust of Kosovo Health Professionals on Digital technology". Pielęgniarstwo w Opiece Długoterminowej / Long-Term Care Nursing 6 (4): 47-56. doi:10.19251/pwod/2021.4).

29. Murataj, Nora, Blerim Syla, Yllka Krasniqi, Shege Bahtiri, Dardan Bekaj, Petrit Beqiri, and Ilir Hoxha. 2022."Migration Intent of Health Care Workers during the COVID-19 Pandemic in Kosovo." International Journal of Environmental Research and Public Health, September 5. https://doi.org/10.3390/ijerph191711122.

30. Petrit Beqiri et al., (data collected in 2023). Affinity for assistive technology and interest in future training of Kosovar nurses.

31. UNDP. 2022. "Talking about Kosovo's Digital Potentials for an Inclusive Digital Transformation | United Nations Development Programme," https://www.undp.org/kosovo/stories/talking-about-kosovos-digital-potentials-inclusive-digital-transformation.

32. Shqiptarja.com. 2023. "Kosova Pa Sistem Informativ Shëndetësor," April 17. https://shqiptarja.com/lajm/kosova-pa-sistem-informativ-shendetesor.