Digitalization in health in 2021

A summary report of the track on Digitalization in health

at the 14th European Public Health conference 2021

The 17th European Public Health conference was held virtually from 10-12 November, 2021. This report summarises key messages from the track Digitalization in health. A list of the sessions that were summarized for the report can be found in the Annex. Subscribe to the EUPHA Digital health section on the section's webpage, right menu, here.

| Key Messages

1. The pandemic showed how digital tools can support the implementation of public health interventions. However, we still face major barriers to enhance digitalisation in health, namely the lack of normative and technical infrastructures, lack of training, the public health workforce organization in silos, data accessibility and interoperability constraints.

2. For capacity building we need to raise awareness about digital health basic concepts, develop practical tools to enhance digital interventions and encourage monitorization and evaluation, promoting best practices exchange and accountability, as well as promote multi-disciplinary approaches to digitalization in health.

3. Even though the European Health Data Space (EHDS) is a promising path to facilitate the sharing of health data in Europe, a lot of challenges still have to be overcome, mainly related to governance and legislation.

4. Digital health requires a more people-centred vision, never forgetting the core principles of affordability, inclusion, diversity and transparency.

5. We do not need to invest more in digital solutions, we need to invest in good governance, training of professionals and how to implement these solutions, with the trust of the population.

| Introduction

The Digital track sessions could not fit any better in the 14th European Public Health Conference (EPHC) moto: "*Public health futures in a changing world*". Digital health plays a critical role in Public Health. The pandemic showed the importance of digital tools to support the implementation of public health interventions and the necessity to build capacity in this area to create a strong public health workforce, able to respond to the present and future necessities of our "changing world".

The EUPHA Digital health section was established during the 12th EPH Conference in 2019 and already has 963 members. The section published, on behalf of EUPHA, a conceptual framework on 'Public health digitalization in Europe: EUPHA vision, action and role in digital public health'[1]. During the 2021 edition of the EPH Conference, one plenary was dedicated to the theme of digital health, a full track on digital health with 11 sessions, and the EUPHA-DH section facilitated 5 sessions. During the join the network, the section presented the work developed during the past year and discussed the main potentials and barriers of digitalization in public health in Europe and beyond. The section's work was focused essentially on communication, enhancing the promotion of digital health through research, policy papers, and best practices.

Even though its recognized importance and added value to medical practice, and more specifically to public health practice, there is still a long and sinuous path to walk to arrive at a digital health world. Data is still inaccessible to many, fragmented in different registries, under different wardship, and left without a proper legal framework. But the main necessities identified to prompt a successful Digitalization in Health is a strong leadership and public commitment. In the following chapter of this report, you will find more about the main outcomes from the digitalization in health sessions.

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[1] Available here: https://academic.oup.com/eurpub/article/29/Supplement_3/28/5628048.

| Main outcomes

Lessons learnt from the pandemic

In the plenary sessions that addressed both the COVID-19 pandemic and the use of digital health tools and solutions, it was highlighted that this is not the first and will not be the last pandemic suffered by human kind.

In plenary 4 "*Capturing the breadth and depth of the digital health era – beyond the COVID-19 pandemic*", organised by EUPHA Digital health section and WHO Regional office for Europe, Ran Balicer shared how Clalit Health Service has used data and digital technologies to tackle population health challenges amidst the COVID-19 pandemic in Israel. Dr. Balicer also took the opportunity to share some key messages from *"The Lancet and Financial Times Commission on governing health futures 2030: growing up in a digital world"* report (the executive summary is [available here](#)), around digital determinants of health and data solidarity. Naomi Lee (The Lancet) shared how in this report it is argued that public health and universal health coverage cannot be separated from digital health. Dr. Lee also highlighted that, mostly thanks to COVID-19, we are at a crucial turning point in our understanding about the use of digital tools and data.

Dr Iveta Nagyova, EUPHA president, stressed the need for a **new vision on digital health**, with a more **people-centred approach** that ensures access to digital technologies and is founded upon principles of affordability, inclusion, diversity, and transparency.

Ioannis Dimitrakopoulos (European Union Agency for Fundamental Rights) emphasized that, if left unchecked, digital health technologies can lead to the violation of human rights. Appropriate Health technology assessment (HTA), public participation, accountability and transparency are key to fostering a trust architecture and ensuring

good governance. "*While digital tools improve people's health and access to healthcare, we need to address existing inequalities reflected in their use, by ensuring new technologies are assessed for impact and developed/designed with a human rights-based approach*", he said.

Michael Edelstein (EUPHA-IDC) on the Plenary 3 *"Learning from the pandemic and getting ready for the next one"*, shared some pitfalls identified in the UK, that include forgetting some basic principles and lessons learned in other crises and pandemics, the lack of targeted action and effective communication, and the alarm that unequal vaccine coverage must have worldwide. Dr. Edelstein also stressed that we cannot be too confident or too dependent on technology. There was a consensus on the need for greater investment in public health, multilateral collaboration and measures to increase health literacy levels to tackle misinformation, in order to be better prepared for the challenges of tomorrow.

During the Round Table *"Digital innovation to fight the pandemic, what is here to stay?"*, Malta, Germany, and Portugal presented their digital tools progress during COVID-19. The three countries created dashboards to report real time data concerning the pandemic. Eduardo Rodrigues from Portugal stated that "*We need to shift from systems of records to intelligence"*, yet data accessibility and interoperability are still the main barriers. Systems of intelligence can enhance our profession, prevent our flaws, automate cumbersome tasks and maximize impact on health outcomes.

The COVID-19 pandemic proved not only the wide uses and applications of technologies and digital health in care services, but also raised concerns and questions about how health data is being gathered, used and stored.

Solution: from systems of records to intelligence
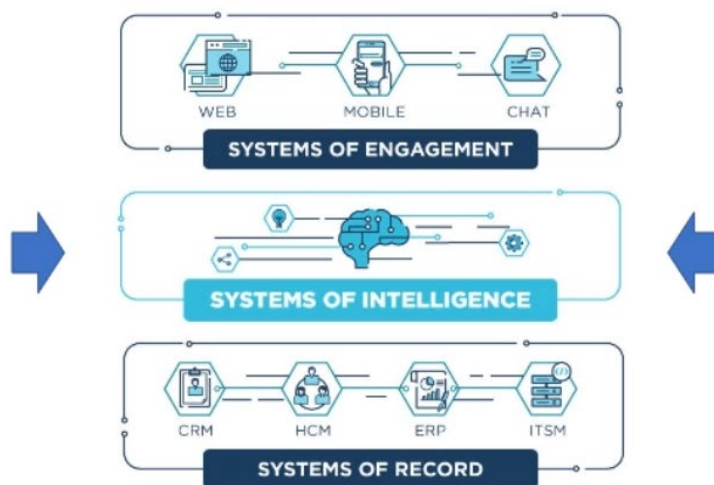
In the workshop 'Looking beyond COVID-19: Putting people at the centre in the digital health era', Clayton Hamilton (Digital Health Flagship, WHO/Europe) kicked-off with a talk called *"COVID-19 contact tracing apps: Have they really been useful in the European Region?"* He started by highlighting the advantages of digital proximity tracing, such as to simplify the task of manual contact tracing, to facilitate the rapid identification and notification, to increase the accuracy of the tracing process, to provide some additional public health insight and to reduce the incidence of violence/abuse of healthcare professionals. Of the 53 countries of the European Region, 29 countries have digital contact tracing solutions, which shows how widespread is this technology, thanks to the necessity caused by COVID-19. Dr. Hamilton concluded by showing some preliminary results of the *"Indicator framework to evaluate the public health effectiveness of digital proximity tracing solutions"* ([available here](available-here)).

David Novillo (Data, Metrics and Analytics, WHO/Europe) stressed how real-time data and effective integration of different data and information systems are crucial in guiding an effective, timely and targeted response in public health. However, there are challenges in leveraging this data, because there are delays in receiving data and it isn't widespread the concepts of data standardization, data and systems integration and interoperability. These problems have existed for decades, but only the pandemic was shed light on the importance of solving this gap. When trying to digitalize data and information systems, digitizing a broken data process, gets you a digitized, broken data process. Dr. Novillo finished off with a reflection about the need *"to develop or enhance a nation data governance plan that includes a clear coordination mechanism, well-defined and documented data processes, the exchange of data and a data culture to empower user"*. Read more about this call to action here.

Ioana-Maria Gligor (European Reference Networks and Digital Health DG SANTE, European Commission) gave a talk titled *"The EU Digital Vaccination Certificate - Where do freedom of movement, equity, and public health coincide?"*. The Digital COVID Certificate (DCC) is used in 45 countries, in the European Union, the European Economic Area and in Third countries, and is a tool that supports the importance of an European Health Data Space (EHDS). The EHDS tries to solve some problems already identified, such as the limited access to patients' data which leads to repeated tests and high costs and the uneven national legislative frameworks with uneven procedures for prescriptions, reimbursements and liability.

Overall, the panel agreed that digital health is here to stay, but we need to be aware of its pitfalls. Moreover, maybe there is no need to invest more on digital solutions, but rather in governance, training and how to implement Digital Health solutions, putting people on the center of these technologies.

On the round *table "EU Digital COVID Certificate: Hope for restoring freedom or simply opening Pandora's box? ",* Dimitra Lingri and Dr. Elena Petelos discussed COVID-19 and Public Health Law. It is important to know that the DCC is regulated by EU law, as an interoperable certificate that contains information about vaccines, tests results or disease recovery, in the context of the COVID-19 pandemic. This ensures the free movement of citizens as well as safeguards public health. As for limitations of free movement, Member States have to follow a set of criteria, that should be based on specific and limited public interest grounds, respecting the general principles of the EU of proportionality and non-discrimination. These criteria are strictly limited in scope and time and cannot affect the seamless free movement of goods and essential services across the internal market. Dr. Barbara Prainsack tackled the concerns and challenges around DCC. Besides the challenge to freedom of movement in EU citizens, the DCC also raises some questions about its effectiveness, discrimination, costs, data protection and privacy, counterfeiting/forgery and the misuse by authoritarian regimes.

Shaping the digital future of Europe

During the *workshop "Developing a consent model for health information – challenges in a rapidly changing digital world"* more interesting discussions were held on digital health. Pieces of advice that arose were:

- To reuse as much as possible already existing solutions and involve stakeholders. More important than getting more technologies or more money, is to get a digital leadership. It is important to find suitable compromises between the different stakeholders.
- When balancing the public goods and rights of the citizens in terms of data accessibility, it is important to build trust and use communication strategies to explain how the data will be used and that it can drive the country to successful

solutions for all. Transparency is the key. People want a clear idea of what happens to their data, giving the sense of control in their own information.

The Round table *"Governing digital transformations in health: Shaping the digital future of Europe"* also accentuated the need of a strong leadership. Public health digitalization should integrate the following pillars: political commitment, normative frameworks, technical infrastructure, targeted economic investments, education, research, monitoring and evaluation. To shape the digital future of Europe, we need medical skills coupled with digital skills, strong leadership and public commitment. Digital transformations are happening at different pace among countries, and between regions in the same country (e.g. Italy), and this gap has to be reduced. Finally, the European Health Data Space (EHDS) is one promising path to facilitate the sharing of health data in Europe and one of the European Commission priorities. There is high political commitment, and not only from the health sector, to make the EHDS a reality. But there are several challenges and barriers to address to be able to progress, mainly related to governance and legislation.

Capacity building for the public health workforce and preparedness in health systems

AI for public health dummies, led by Dr. Dan Assouline, provided an introduction to Artificial Intelligence (AI) and Machine Learning (ML) systems, highlighting the importance of its application in healthcare, despite its complexity. Some of the main concepts and frameworks of AI were explained, particularly the Random Forest algorithm. The use of AI and its prediction value, if applied correctly, can impact public health policies, decision-making and surveillance and monitoring of public health threats.

The COVID Health Literacy Network presented the results of the first global population-based survey on digital health literacy. Data from over 70'000 university students was

collected, and some of the conclusions were that there is a need to strengthen digital health literacy among university students and develop skills for seeking information on the Internet through health education interventions. Information search and evaluating reliability are associated with the sources used for information search, and social media are considered a breeding ground for misinformation. Surprisingly, there was no association found with social gradient. Below you can see some of the presented results.
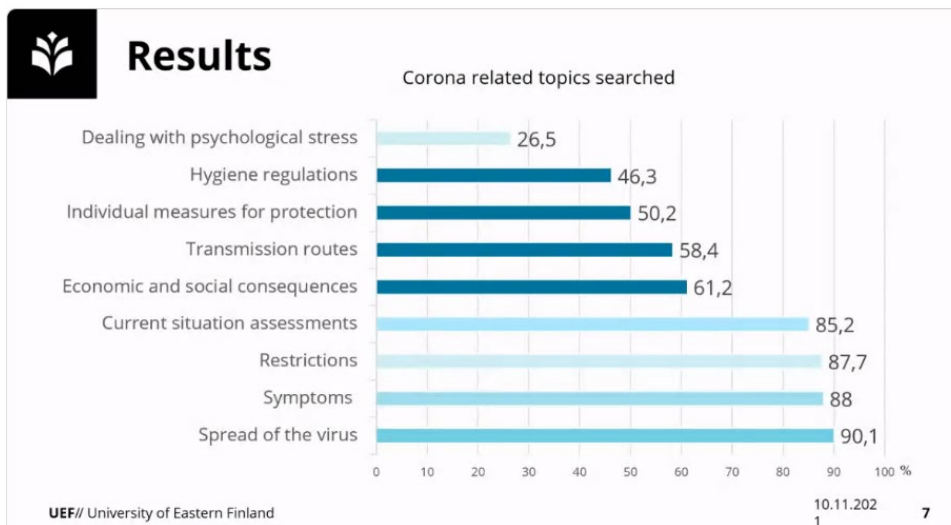

The COVID-HL survey
Results: HL differences on media use
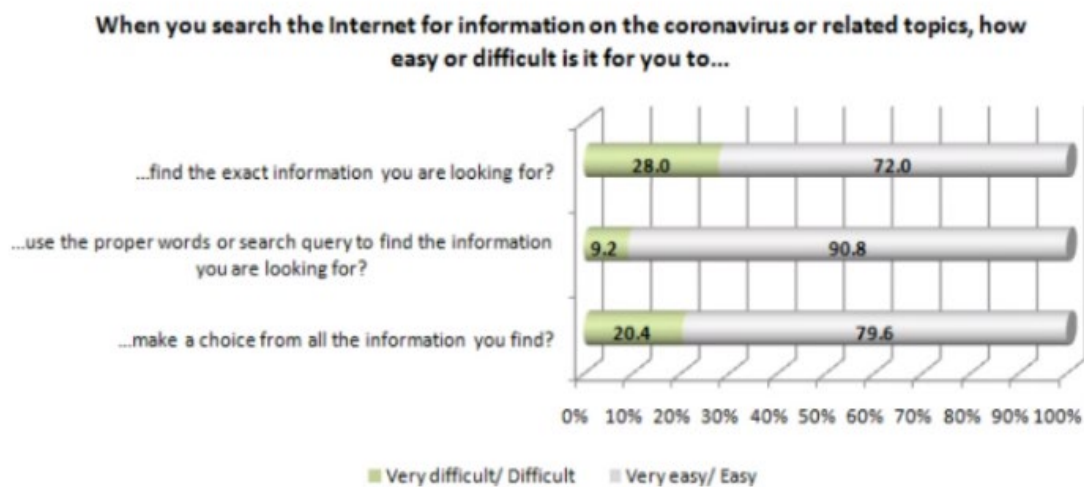
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	Limited digital HL M (SD)	Sufficient digital HL M (SD)	Dimension of digital HL p, d
Website of public bodies (e.g. RKI, ministry of health)	3.13 (0.92)	3.45 (0.79)	Evaluating reliability, p<.001, d=0.37
Website of public bodies (e.g. RKI, ministry of health)	3.20 (0.79)	3.36 (0.85)	Information search p<.001, d=0.18
Social Media (e.g. Facebook, Instagram)	2.38 (1.15)	2.07 (1.10)	Evaluating reliability, p<.001, d=-0.27
Support-communities (e.g. gute-frage.de)	1.36 (0.64)	1.22 (0.53)	Evaluating reliability, p<.001, d=-0.23

Dadaczynski et al., 2021

EUPHA 2021 | Dadaczynski et al. | 10 November 2021
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Results

Corona related topics searched

Topic	Value
Dealing with psychological stress	26,5
Hygiene regulations	46,3
Individual measures for protection	50,2
Transmission routes	58,4
Economic and social consequences	61,2
Current situation assessments	85,2
Restrictions	87,7
Symptoms	88
Spread of the virus	90,1

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DHLI – information search

When you search the Internet for information on the coronavirus or related topics, how easy or difficult is it for you to...

	Very difficult/ Difficult	Very easy/ Easy
...find the exact information you are looking for?	28.0	72.0
...use the proper words or search query to find the information you are looking for?	9.2	90.8
...make a choice from all the information you find?	20.4	79.6

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

■ Very difficult/ Difficult   ■ Very easy/ Easy

During the Round Table *"How to prepare the public health workforce for a digital health future?"*, the needs for capacity building were discussed. In short, we need to raise awareness about digital health basic concepts, develop practical tools to enhance digital interventions, encourage monitoring and evaluation, and promote best practices exchange and accountability. Digital health plays a critical role in public health, yet professionals still lack training in this evolving area.

Digital health as a tool for change

Digital health can be a tool for change, which was highlighted with the example of its direct impact on the European Climate Pact and Green Deal and on improving mental health. Digital health proved to be an opportunity to evolve the quality and efficiency of health services, as simultaneously developing greener solutions. Digital health transformation is a solution that can contribute to less energy consumption and less mobility. A digital public health approach can be used to guide investment with highest

public health impact, reduce harm to individuals and populations, support social cohesion and trust in emergency response, and guide interventions to deal with epidemics, food chain disruptions and climate change consequences. As so, public health professionals need urgently to leverage digital health, to bridge the gap across governmental sectors. One challenge for the European Green Deal highlighted by COVID-19 relates to the organisation of local communities for concerted action and, in this area, digitalization could be either a solution or an opportunity. COVID-19 allowed for a major "digital leap" in Europe's digital transformation, but it is essential to make sure that no one is left behind.

Both the Sustainable Development Goals and the European Green Deal are taking a similar path that integrates public health, environment and the One Health approach. We can consider climate change as a pandemic. As so, public health authorities are required to fuse climate action and preventive measures. The emergence of digital public health expands the available intervention toolkit but reaping the benefits of digital public health into climate action may not be immediately clear. Alone, digital technology does not affect the climate, but integrated, digital public health could reduce healthcare carbon footprint (for example, a Telecardiology Service has reduced its CO_2 emissions by 16'000 tons just by avoiding 2'000 flights from Africa to Portugal). It can also -partly- compensate for 17 million healthcare workers lacking worldwide. but digital health is not a fit-for-all solution, as there is still a phenomenon of digital-divide – the difference of digital availability and digital capabilities worldwide.

Digital health also comes as an opportunity for mental health, with solutions such as gamification for decreasing stigma about mental health and increasing mental health literacy e.g. apps for reducing mental health symptoms like post-traumatic stress in refugees or suicide thoughts and behaviours among adolescents.

Refugees have a diminished access to mental health services because of numerous barriers, such as language, stigma, taboos and shame. The App "Sanadak" showcased during the EPH Conference showed some results in the reduction of symptoms and sustained effect of treatment for reducing stigma among refugees, with a higher rate of acceptance and use, and less side effects than medication. although digital health solutions cannot yet be a gold-standard treatment for most mental health conditions, such as post-traumatic stress experienced by refugees, they can help by bridging the gap between this vulnerable population and healthcare services, and by helping in a holistic and stepped treatment plan for mental health disorders.

Another solution aimed at reducing suicide risk among adolescents: There is plenty of evidence that for suicide thoughts and behaviours (STB) among adolescents, adequate psychiatric care is crucial. However, after the first weeks of discharge, the risk of suicide increases again. The current approach relies on the adolescent's ability to recognize distress and its ability to remember coping strategies. Bearing this problem in mind, a mobile app (called EMIRA) was developed to help on the planning of these weeks, in safety.

Nebolus is a game that wants to promote (mental) health literacy among adolescents. Health literacy is the *"knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgements and take decisions in everyday life concerning healthcare, disease prevention and health promotion"*. There is evidence that shows that around 70% of adolescents and young adults have a limited health literacy. Nebolus intervenes directedly on the needs of local context, promoting local health and prevention services, which reduce maladaptive (risk) behaviour and reduce the prevalence of (mental) health problems. Nebolus considers the relational nature of health literacy, focusing on the socio-ecological surroundings. It is suitable to

reach vulnerable target groups, with hight prevention needs, such as teenagers. It can be adapted to local needs and contexts and it can be used in different settings and groups.

Finally, the living lab AI4U was presented, as a solution for personalized digital mental health promotion and prevention in youth. This project argues that most of the existing mHealth app are not adaptive to the moment, context or patient. This strongly limits the potential of the digital intervention. The Living Lab AI4U believe that may advancing machine learning algorithms, it can further optimize the delivery of intervention components to moment, context and patient/person, especially for mental health promotion and prevention in youth.

| Conclusions

To conclude, digital public health is an ongoing change, happening at different paces in different places. The digital transformation of our world has brought countless possibilities for what can be achieved with the new technologies in health, yet the Public Health workforce is still not prepared to use these tools at their highest potential. Neither the efforts put into digital transformation until now have centred this process of change in the citizens and involved them in the process so that we can deal with the transparency and accessibility issues diligently. We end this report with our final remarks in the form of questions that we hope to see answered and marked as resolved soon: Will the ownership of the data continue to be a major topic of discussion? Will the patients have control on who can access their information? Will intersectionality be a reality with the open exchange of data between the several health actors? Will paper still have place in our healthcare system e.g. for prescriptions, exams results, referrals? And lastly, will digital transformation accentuate inequalities? If so, what can we do to prevent it?

| Annex - List of the sessions at the EPH2021 reflected upon in this report

- PL0 - Opening Ceremony: Public health futures in a changing world
- 1.G. - Workshop: COVID-HL: A global survey on digital health literacy in university students during the pandemic
- 2.G. - Workshop: The European Health Data Space (EHDS): future opportunities and current challenges
- 3.E. - Workshop: The Role of Digital Public Health in the European Climate Pact and Green deal
- 3.G. - Round table: How to prepare the public health workforce for a digital health future?
- 6.G. - Workshop: Developing a consent model for health information – challenges in a rapidly changing digital world
- PL3 - Plenary 3: Learning from the pandemic and getting ready for the next one
- 8.A. - Round table: Governing digital transformations in health: Shaping the digital future of Europe
- 8.G. - Skills building seminar: AI for public health dummies – overview and a benchmark algorithm: Random Forests
- PL4 - Plenary 4: Capturing the breadth and depth of the digital health era – beyond the COVID-19 pandemic
- 9.C. - Round table: Digital innovation to fight the pandemic, what is here to stay?
- 9.G. - Workshop: Looking beyond COVID-19: Putting people at the centre in the digital health era
- 10.G. - Workshop: Digital interventions for improving public mental health
- 11.G. - Round table: EU Digital COVID Certificate: Hope for restoring freedom or simply opening Pandora's box?

The European Public Health Association, or EUPHA in short, is an umbrella organisation for public health associations in Europe. Our network of national associations of public health represents around 20'000 public health professionals. Our mission is to facilitate and activate a strong voice of the public health network by enhancing visibility of the evidence and by strengthening the capacity of public health professionals. EUPHA contributes to the preservation and improvement of public health in the European region through capacity and knowledge building. We are committed to creating a more inclusive Europe, narrowing all health inequalities among Europeans, by facilitating, activating, and disseminating strong evidence-based voices from the public health community and by strengthening the capacity of public health professionals to achieve evidence-based change.

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