The status of eHealth in Finland
& research examples from Åbo Akademi University and University of Oulu

Heidi Enwald, Information Studies
University of Oulu & Åbo Akademi University
Themes

Finnish health care system in a nutshell

Situation of eHealth

Examples of research
- HIBA from Åbo Akademi
- University of Oulu

Couple words about the eHealth-related education
Finland is a relatively sparsely populated country (5.5 million inhabitants, with an average population density of 18 persons/km²) with a highly advanced technological infrastructure.

In the eastern and northern parts of the country the population density is especially low and distances are long.
The healthcare system in Finland is mainly based on public health care providers. Municipalities, through taxes, finance most of the health care and the government is providing additional support.

There are additional private services based on insurances and service fees. Occupational healthcare.

Public primary healthcare services are either produced by the municipalities themselves or provided in cooperation with other municipalities or purchased from private or public providers.
Finland’s population is aging faster than that of many other countries.

Demographic and regional diversification is increasing e.g., due to urbanization.

The municipal and service structure is in a state of transition since the current structure cannot bear the challenges of the ongoing demographic changes.

A health and social care reform has been on the agenda of several appointed governments. A suggested reform by prime minister Sipilä’s government was not approved by parliament in 2019.
The Digital Economy and Society Index (DESI)

DESI 2019

eHealth
Today in Finnish healthcare, the documentation of patient data is carried out by electronic means at all levels of care.

All the primary healthcare centers, secondary and tertiary hospitals as well as private service providers obey the same general healthcare and medical treatment guidelines and patient documentation policies, which has contributed positively to the opportunities offered by Telemedicine and eHealth.

National Supervisory Authority for Welfare and Health (Valvira) guides and follows

The objective of the strategy is to support the renewal of the social welfare and health care sector and the active role of citizens in maintaining their own well-being by improving information management and increasing the provision of online services.

"Socially Sustainable Finland 2020"
Monitoring of eHealth situation in Finland

By National Institute for Health and Welfare (THL)

- Ministry of Social affairs and Health has since 2003 regularly commissioned THL to assess status and trends of e-services on a national level in Finland

- The THL-led studies have been conducted in close collaboration with universities:
  - E.g., University of Oulu – responsible for eHealth availability surveys
  - The survey instruments have been kept as similar as possible to enable comparison to previous data collections, but updated each round with questions related to new eHealth functionalities.

- Next data collection round in 2020 – introducing a further user experience study focusing on social workers

The Finnish ICT infrastructure for health and social care is based on legislation from 2007 and all its later amendments (Act 159/2007).

It currently includes KANTA services hosted by Social Insurance Institution (KELA):

- My Kanta pages
- Prescription service
- Pharmaceutical database
- Patient Data Repository
- Archiving of old patient data
- My Kanta pages give citizens access to their electronic patient records, laboratory tests and e-Prescriptions.

- Patients can access log data on the usage of their data.

- Manage their consents – e.g. Giving or refusing medical staff access to the data

- Organ donation testament

Kanta services in 2018

Sign-ins and number of persons signed into My Kanta 2010–2018

- 63% of adults had accessed the PAEHR (cumulatively from 2010) by the end of 2018.

eHealth at home: Virtual hospital 2.0, all university hospitals involved

- Specialised care services available in net.
- Terveyskylä.fi (Health village) – web pages provide professional services in various speciality domains, "virtual houses".
- By the end of 2018, more than 30 different advisory virtual houses in operation, from mental health services to pain management, from rehabilitation to emergency guidance.
- Open services and general guidance without registration.
- Digital care pathways (more than 80 in 2018), prescribed out-patient clinic services.
- Terveyskylä PRO, tools for research and quality guidance for health professionals

https://www.terveyskyla.fi/
http://kunnat.net

Twitter: @reponenjarmo
Research
Taking Health Information Behaviour into Account implications of a neglected element for successful implementation of consumer health technologies on older adults

Åbo Akademi University collaboration with Oulu University and Uppsala University

Financed by the Academy of Finland 2015-2020

Lead by professor Isto Huvila
Research questions

1. How do older adults (born 1946–1960) experience the usefulness, effectiveness, trustworthiness and privacy of e-health services?

2. Do existing e-health services have an impact on issues related to older adults health information behaviour?

3. How can e-health services be tailored to effectively fit older adults everyday health information behaviour? What are characteristic features of such tailored services?

Data collected e.g., by:

- *Focus group interviews* with older adults having used patient-accessible electronic health records (May-June 2018)
- *National postal survey* of a random sample of 1,500 Finns aged 55-70 years (July 2019-Oct 2019)
Anticipating ageing: Older adults reading their medical records

Isto Huwila, Heidi Enwald, Kristina Eriksson-Backa, Noora Hirvonen, Hai Nguyen, Isabella Scandurra

Taking Health Information Behaviour into Account in the design of e-health services

Isto Huuila, Stefan Ek, Heidi Enwald, Kristina Eriksson-Backa, Noora Hirvonen, Helena Känsäkoski

Relationship Between Everyday Health Information Literacy and Attitudes Towards Mobile Technology Among Older People

Heidi Enwald, Noora Hirvonen, Maarit Kangas, Niina Keränen, Timo Jämä, Isto Huuila, Raija Korpelainen

Differences in Health Information Literacy Competencies Among Older Adults, Elderly and Younger Citizens

Isto Huuila, Noora Hirvonen, Heidi Enwald, Rose-Marije Ahlfeldt

Health information seeking, beliefs about abilities, and health behaviour among Finnish seniors

Kristina Eriksson-Backa, Heidi Enwald, Noora Hirvonen

The paper presents a study that examines older Finnish adults’ self-perceived capability to access, evaluate, understand and use health-related information, and their perceived ability to influence their health themselves, and the relationship between these factors and their current health, health behaviour and information seeking. Questionnaires were mailed by post to 1000 Finns aged 65–79 years, and a total of 281 completed questionnaires (28%) were returned. Of these, 273 were
Some preliminary results

• Focus group studies:
  • EHRs are perceived to still be under construction when taken into use and hence lack information and features that users require, which might increase frustration and hinder use.

• National postal survey:
  • >2/3 had accessed the My Kanta Pages
  • >2/3 of users of digital health services were positive and thought they are useful, increase awareness of own health, help to manage own information, increase knowledge and help to seek more information.
  • More than 80% of all respondents claimed that most important features of digital health services are credible, actual and consistent contents, ease of use, that they contain needed information, and contain information that is easy to understand and can be readily used.
Next data collection will be in 2020

User experiences with different regional health inform exchange systems in Finland

Hannele Hyppönen, Jarmo Reponen, Tinja Lääveri, Johanna Kaipio

National questionnaire study on clinical ICT systems
Physicians suffer from poor usability

Johanna Viitanen, Hannele Hyppönen, Tinja Lääveri, Jukka Vänskä, Jarmo Reponen, Ilkka Winblad

Usability problems do not heal by themselves: National survey on physicians’ experiences with EHRs in Finland

Johanna Kaipio, Tinja Lääveri, Hannele Hyppönen, Suvi Vainiomäki, Jarmo Reponen, Andre Kushniruk, Elizabeth Borycky, Jukka Vänskä

Finnish physicians’ experiences with computer-supported patient information exchange and communication in clinical work

January 2011 · International Journal of Medical Informatics

© Research consortium: THL, Medical Association, University of Oulu, Aalto University, University of Eastern Finland, Nurses’ Association, TEHY
Feasibility studies in the real world digital environment of the Oulu University Hospital, facilitated by the OYS Testlab

Implementation of an eHealth application in oncology: a real-world feasibility study

Anna Majala¹, Jari Haverinen¹,², Satu Malmqvist³, Niina Keränen¹,⁴, Timo Jämsä⁵, Jarno Reponen¹,⁴

¹Research Unit of Medical Imaging, Physics and Technology, Faculty of Medicine, University of Oulu, Finland; ²Centre for Health and Technology, Faculty of Medicine, University of Oulu, Finland; ³Department of Operative Care, Oulu University Hospital, Oulu, Finland; ⁴Medical Research Center Oulu, Oulu University Hospital and University of Oulu, Oulu, Finland; ⁵Department of Diagnostic Radiology, Oulu University Hospital, Oulu, Finland

Introduction

Text-based interaction between patients (P) and health care professionals (HCP) and real-world implementations of patient reported outcome (PRO) tools are under-reported to date in oncology.

Numerous digital solutions are taken into clinical use → need for evaluation with evidence-based information

Perspectives for outcomes evaluation: Implementation process, service and client

Twitter: @reponenjarmo
Health Technology Assessment (HTA) for digital solutions, a new Digi-HTA toolkit developed in Oulu

Digi-HTA: Health technology assessment framework for digital healthcare services

Jari Haverinen, MHSc, MSc1,2, Niina Keränen, MD, MSc1,2, Petra Falkenbach, MSc2, Anna Majälä, MHSc, MSc1, Timo Kolehmainen, MSc1, Jarmo Reponen, MD, PhD1,3

- Health Technology Assessment (HTA) for digital solutions, a new Digi-HTA toolkit developed in Oulu
- Twitter: @reponenjarno

In this study, the state-of-the-art HTA methods were evaluated using a literature review and interviews. It was noted that some good practices already existed, but the overall picture showed that further development is still needed, especially in the AI and robotics fields. With the cooperation of professionals, key aspects and domains that should be taken into account to make fast but comprehensive assessments were identified. Based on this information, we created a new framework which supports the HTA process for digital healthcare services. The framework was named Digi-HTA.
Digitalized Solutions for Future Healthcare (DigiHealth)

Finnish Academy: University profiling
University of Oulu received 6.6 M€ for 2018-2022 and was ranked #3 among Finnish universities. DigiHealth was one of three main areas.

R1: Next-generation data for digital healthcare
R2: System level architectures for future digital healthcare
R3: Medical AI to support clinical decisions
R4: Impact and business solutions

https://www.oulu.fi/digihealth/
Artificial Intelligence research in Oulu: CARDS: Decision Support for radiologists$^{1,2}$

- A helping tool, which is not making the diagnosis, but helps the radiologist by seeking similar cases from the existing hospital databases.

- Combines references from RIS text and PACS images.

- "Augmented Intelligence".


Education
Finland as a forerunner: Special "eHealth" competence for medical doctors

- Finnish Society of Telemedicine and eHealth is in charge of its further development.
- Basically it is a full two year study program after medical specialist exam.
- The program is targeted to medical/dental specialists, with already gained experience in medical/dental work.
- 125 doctors and dentists have enrolled to the programme, of which 72 doctors and 13 dentists have qualified (status 12/2018)
- Responsible teacher: Prof. Jarmo Reponen, Univ. of Oulu
The University of Oulu started medical students’ education on eHealth and mHealth together with health companies since 2016, fifth edition in 2020.

In 2019, the 4th edition of the eHealth Seminar gathered about 300 medical and nursing students and more than 30 digital health companies for a day full of practical testing of innovations that can improve future healthcare services.

Hands-on sessions in small groups provided students with an opportunity to find out how they could use them in their own work with patients.

University of Oulu coordinates the Finnish national MEDigi project that aims for harmonising and renewing medical and dental education in Finland by utilising digitalization.

The objectives include:
1) To specify core competencies in the medical fields
2) To create an online service for the basic education,
3) To produce electronic study material,
4) To develop electronic exam and evaluation methods,
5) To familiarize the students to eHealth and mHealth,
6) To increase the digital pedagogy skills of teachers.


*4,3 M€
*3 years
*5 medical schools
*300 teachers

Future Hospital OYS 2030

The smartest hospital in the world.

http://ouluhealth.fi/future-hospital/

https://oys2030.fi/english.php
Heidi Enwald
heidi.enwald@oulu.fi

In collaboration with:
Professor of practice & MEDigi project leader Jarmo Reponen
Jarmo.reponen@oulu.fi
Twitter: @reponenjarmo

DigiHealth: Professor Simo Saarakkala & Coordinator Tuire Salonurmi
simo.saarakkala@oulu.fi
tuire.salonurmi@oulu.fi

HIBA research group, Åbo Akademi:
https://blogs2.abo.fi/hiba/