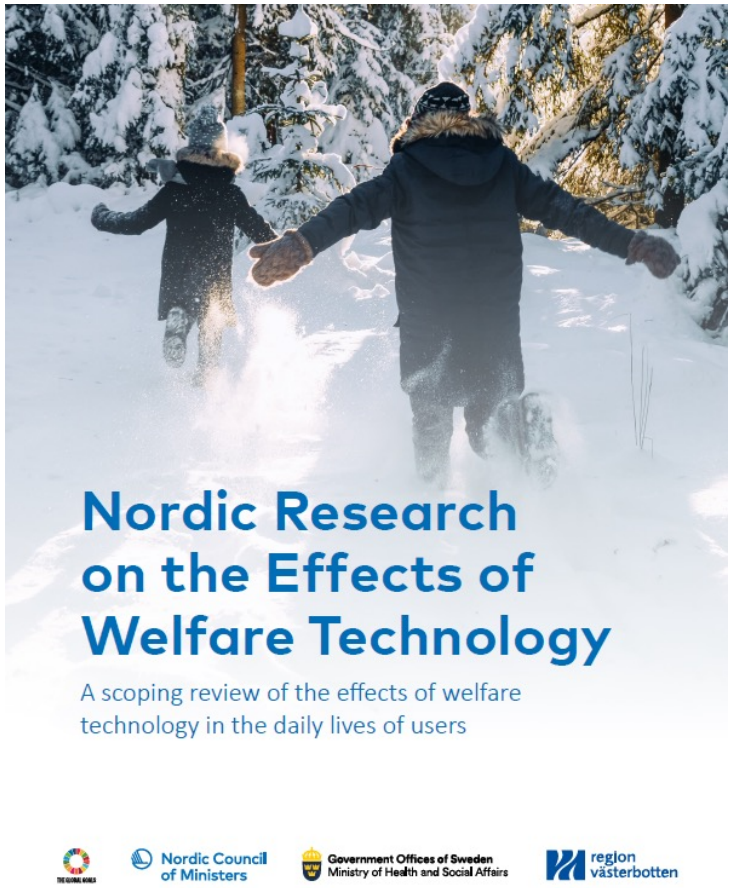
Nordic Research on the Effects of Welfare Technology - a scoping review



The Nordic Research Network: Health and Welfare Technology

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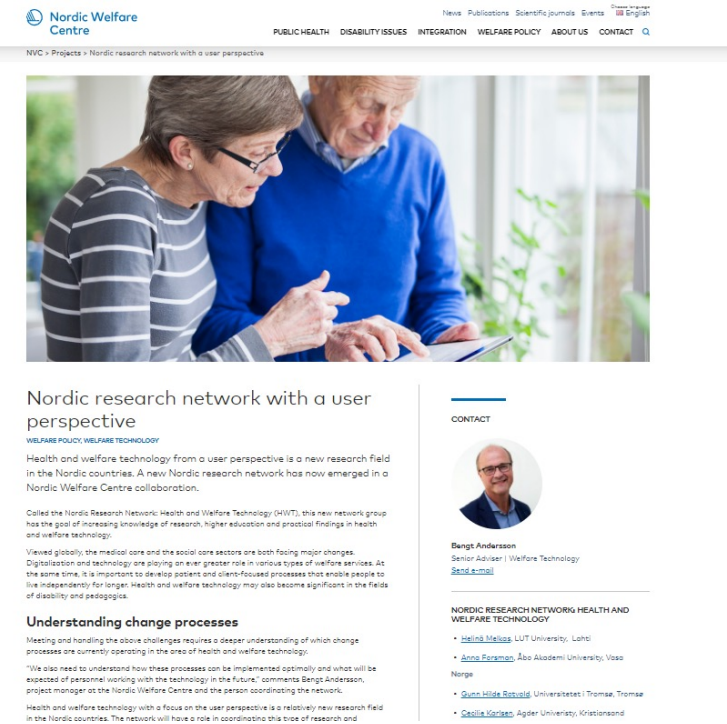
Nordic Research Network: Health and Welfare Technology

https://nordicwelfare.org/hwtresearch

- The aim of the network is to consolidate knowledge, research, higher education and experiences in the field of health and welfare technology with a user perspective including end users, relatives and staff working in the welfare sector.
- A contribution primary to Nordic health and welfare and social care
- Nordic Welfare Centre, and some funding from Forte to build the network
- Denmark, Finland, Norway and Sweden…Iceland
  - Core team, Members, Webpage and a web site for the members
  - Seminars, activities, proposals, collaborations (The network and PROTECT project)



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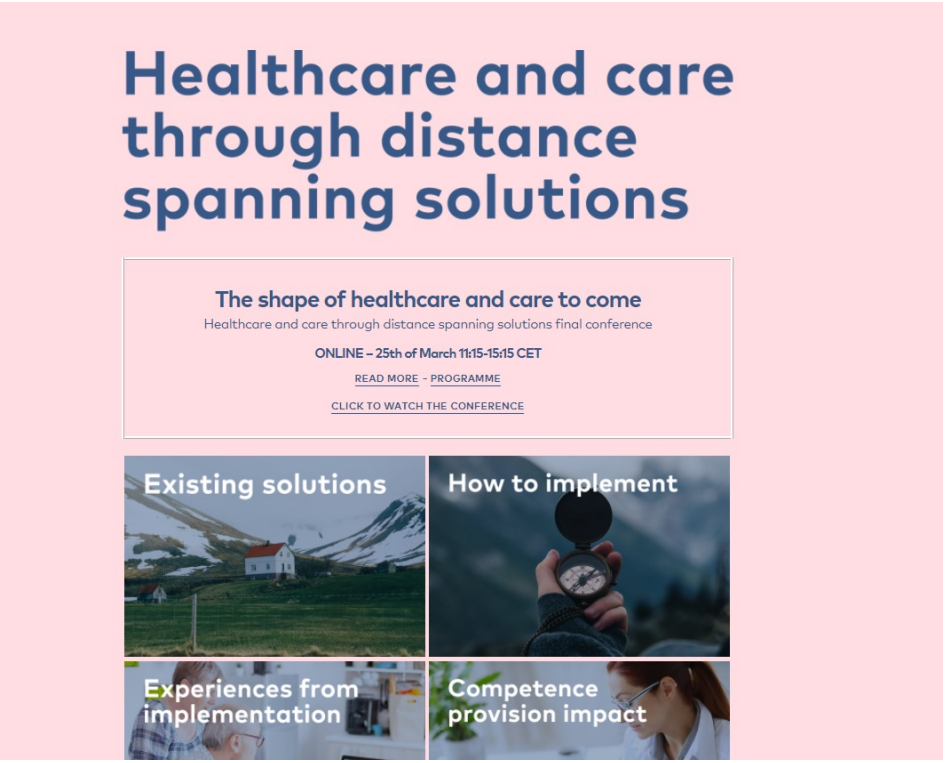
An assignment from the VOPD Project

- To compile Nordic research on the effects of welfare technology (distance spanning solutions) in the daily life of the users.
- Nordic scientific publications and grey literature
- At a minimum include 10 publications



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A Compilation
– a scoping review

- Aim: To explore Nordic research of the effects of welfare technology, from a user perspective.

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Welfare Technology

- The concept welfare technology
- A Nordic concept
- Welfare technology according to its functions:
  - distance treatment
  - distance monitoring
  - distance meetings
  - new digital services for healthcare and social care
- The expectations and aims of welfare technology

Data search

- Literature search supported by an experienced librarian
  - Search terms: eHealth, telemedicine, mHealth (mobile Health), telehealth, intelligent assistive, digital assistive, welfare technology, gerontechnology, gerotechnology, smart home, remote sensing, ambient/active assisted living, telenursing, telemetry, internet-based intervention.
  - -in combination with daily living, everyday life, quality of life, and activities of daily Living

- Cinahl, Web of Science, Pubmed
- Grey literatur databases (Juuli, Danish National Research Database, CRISTIN, Skemman, Opin vísindi, Swepub, Bielefeld Academic Search Engine, Darte Europè and Google Schoolar)

Inclusion process and ”data set”

- The search was limited to publications from the Nordic countries written in English or any of the Scandinavian languages or Danish and published from 2010 onwards.
- **956** hits in total
- Publications from 2015 onwards were selected **-> 656**
- Titles indicating a study exploring the effects of WT **-> 85**
- Abstract reading **-> 40**

- 40 selected publications served as a data set for the compilation of Nordic research on the effects of WT in healthcare and social care.

Table 1. Nordic Research and Grey Literature Exploring the Effects of WT

Country	Number of included publications
Denmark	11*
Finland	5
Iceland	2
Norway	11*
Sweden	12

*One publication was a transnational collaboration between Norway and Denmark.

Findings

- The studies selected for this report consisted of peer-reviewed scientific publications (journal articles), reports, PhD, Lic. and Master dissertations.
  - Distance monitoring
  - Distance meetings
  - Distance monitoring and Distance meetings
  - Distance treatment
  - Distance monitoring, Distance meetings, and Distance treatment
  - Distance monitoring and Distance treatment
  - Distance meetings and Distance treatment
  - New digital solutions
  - Review studies

Findings

- Target groups: older adults, patients with different medical conditions (dementia, heart diseases, COPD, stroke, NCD, MS), orthopaedic conditions, urinary incontinence, prostate cancer and cognitive disabilities. Also representation of relatives, staff and healthcare and social care providers perspectives.
- The contexts: home care, home healthcare, dementia care, rehabilitation, mental health and palliative care.
- Some of the included studies are doubly or triply categorised because their content covers more than one category.

Table 2. The 40 Selected Nordic Publications

Category	Reference and country	Publication	Target group	Welfare technology	Design and participants
Distance monitoring	Hansen et al., 2018 Norway	Article	People with dementia, next of kin, cognitive disability.	Sensors in the home, bed sensors, front-door sensor, fall sensor.	Qualitative interview study (n = 6)
	Ausen et al., 2016 Norway	Report	Older adults?	Security solutions, mobile security alarm with GPS and fall sensor, various sensors for a digital security alarm, and electronic drug dispenser.	Pilot studies, qualitative interviews, GPS users (n=47), drug-dispenser users (n=12), and relatives (n = unspecified).
	Cai et al., 2015 Denmark	Article	Home-care patients.	Intelligent bed. Functions: power to the bed, user voice call, out-of-bed detector, bed in unsafe position, bed rails in unsafe position, brake not locked, moisture detection, catheter bed detection, light control, ergonomic movements.	Qualitative case study, logbook, participant observations, (45 hrs) and interviews (n = 23).
	Karlsen et al., 2019 Norway	Article	Homecare, older adults.	11 different telecare devices. Personal alarm, medication reminder (2 different), light sensor, electric stove alarm, GPS positioning and tracking, memo calendar, smoke detector, door sensor, video surveillance, light and sound warning system.	Qualitative study, interviews with older adults (n=18) and follow-up interviews (n=15), and interviews with relatives and family caregivers (n=7).
	Rohne et al., 2017 Norway	Report	Older adults.	Wearable and mobile technology.	Real-life pilot studies, older adults (n=71), and their relatives and caregivers.
Distance monitoring, Distance meeting	Catalan-Matamoros et al., 2019 Norway	Article	Pacemaker-implant patients	Telehealth monitoring, remote communication.	RCT, experiment group (n = 25), and control group (n = 24).
	Cichosz et al., 2019 Denmark	Article	Heart-failure patients.	Telehealth, Telecare North COPD trial, monitoring physical and self-reported indicators.	RCT, intervention group (n = 299), and control group (n = 154).

Findings -a three parted selection/examples Part 1

- **Distance monitoring**
  - better sleep, increased safety and security, independency, activity and QoL
- **Distance monitoring and Distance meeting:**
  - similar quality as hospital monitoring, positive impact on mental health, increased QoL no significant effects on COPD symptoms
- **Distance monitoring, Distance meeting, and Distance treatment:**
  - positive impact on workflow and interorganisational collaboration, positive impact on rural medicine (availability) decreased symptoms (COPD)
- **Distance monitoring and distance treatment:**
  - monitoring heart failure was highly cost-effective

Findings - part 2

- **Distance treatment:**
  - improved independency, effectiveness, physical activity and health literacy
- **Distance meeting**
  - Cost effectiveness and no difference in patient-reported satisfaction and health was found between video-assisted and standard consultations (orthopaedic patients)
- **Distance meeting and Distance treatment**
  - Improved rehabilitation, telemedicine support decreased the length of post-operative stay, telemedicine, lowered post-operative contacts compared to patients without telemedicine support. QoL was similar when comparing the two groups.

Findings – part 3

- **New digital services for healthcare and social care**
  - Increased communication (tablets in dementia care).
- **Review studies**
  - WT has the possibility to increase self-health monitoring, improve quality of care, and make healthcare services more user friendly.
  - WT also offers reduced medical errors, improved health communication, and other advantages.
  - There are also multiple drawbacks examples: financial issues, adaption to policies and organisational structures, and the lack of evaluations of the efficiency and outcomes of using WT.

Reflections

- There exists Nordic research about effects of welfare technology!
- Evidence?
- Technology optimism – inclusion of participants?
- Need of larger studies, -we are ready for quantitative studies measuring effects
  - Lack of instruments measuring expected effects as: independency, safety & security, health, QoL, participation, activity etc.
  - Multicultural aspects – family care traditions
  - Beneficial with Nordic collaboration-similar welfare systems
  - Collaboration in the Nordic context, allows larger rural studies.

http://evidensbaseradpolicy.se/

Future research

- An interdisciplinary research area with great potential to contribute to Nordic healthcare and social care.
- Development of validated instruments measuring the expected effects of: independency, safety & security, social participation, activity and health and models of cost-effectiveness.
- Larger studies exploring (measuring) effects of welfare technology from the users' perspectives.

- **The Nordic Research Network: Health and Welfare Technology is ready to serve!** https://nordicwelfare.org/hwtresearch

Thank you!

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- The report/review: www.healthcareatdistance.com/user-experiences/
- The Nordic Reserch Network: Health and Welfare Technology: https://nordicwelfare.org/hwtresearch