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**HEAOLUTEADUSTE TIPPKESKUS**

*The Centre of Excellence for  
Well-Being Sciences*



# Ebavõrdsus tervises – käitumisteaduslik perspektiiv

*Dr. Silja-Riin Voolma*

Teadlane @ EstWell, Tartu Ülikool  
Külaliselektor @ psühholoogia instituut, Tartu Ülikool  
Käitumisteaduse juht @ Newel Health  
Käitumisteaduse nõustaja @ Habitual Health



Kuidas teeme tervisealase võrdsuse  
idee Eesti inimeste jaoks reaalsuseks?



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1. Mis on käitumisteadus?
2. Juhtumiuuringud x3



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# Tervisepsühholoog käitumisteaduse erialaga, digitaalsete sekkumisprogrammide fookus

Bakalaureuse kraad @ Cardiff-i Ülikool (UK)

Magistrikraad @ St Andrews-i Ülikool (UK)

Doktorikraad @ Cambridge-i Ülikool (UK)

Järel doktorantuur @ Tartu Ülikool (Eesti)

**CARDIFF**  
UNIVERSITY



University of  
St Andrews



UNIVERSITY OF  
CAMBRIDGE



TARTU ÜLIKOOL



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# 14+ aastat kogemust kolmest vaatest

## Tervishoiusüsteem

- Sotsiaalministeerium (Eesti)
- Terviseministeerium (Malaysia, Bermuda, Sotimaa)



## Tervishoiutöötaja

- Bayer (Austraalia)
- Boehringer-Ingelheim (USA/Saksamaa)
- Orion Pharma (Soome)



## Kasutaja

- Habitual Health Ltd (UK)
- Vencer Pro (UK)
- Newel Health Srl (Itaalia/EL)
- Oura Health OY (USA/Soome)
- MinuGeenivaramu (Eesti)

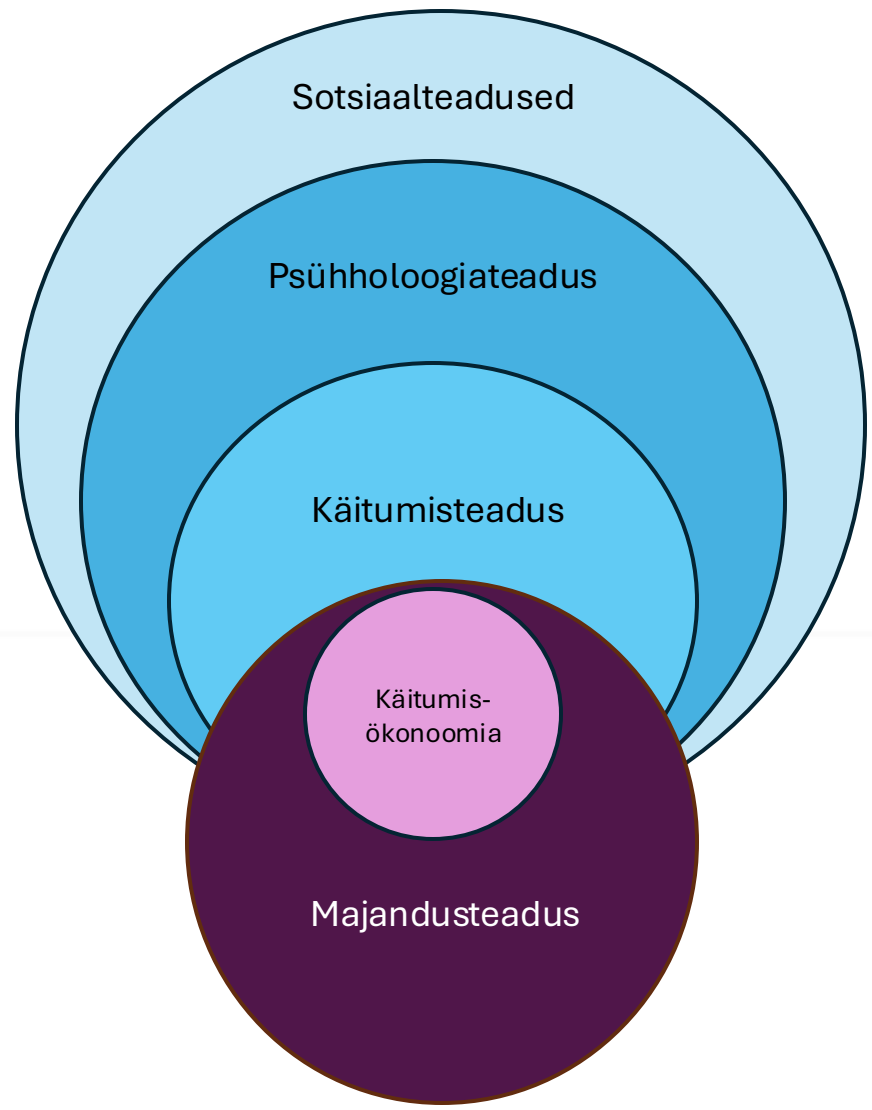


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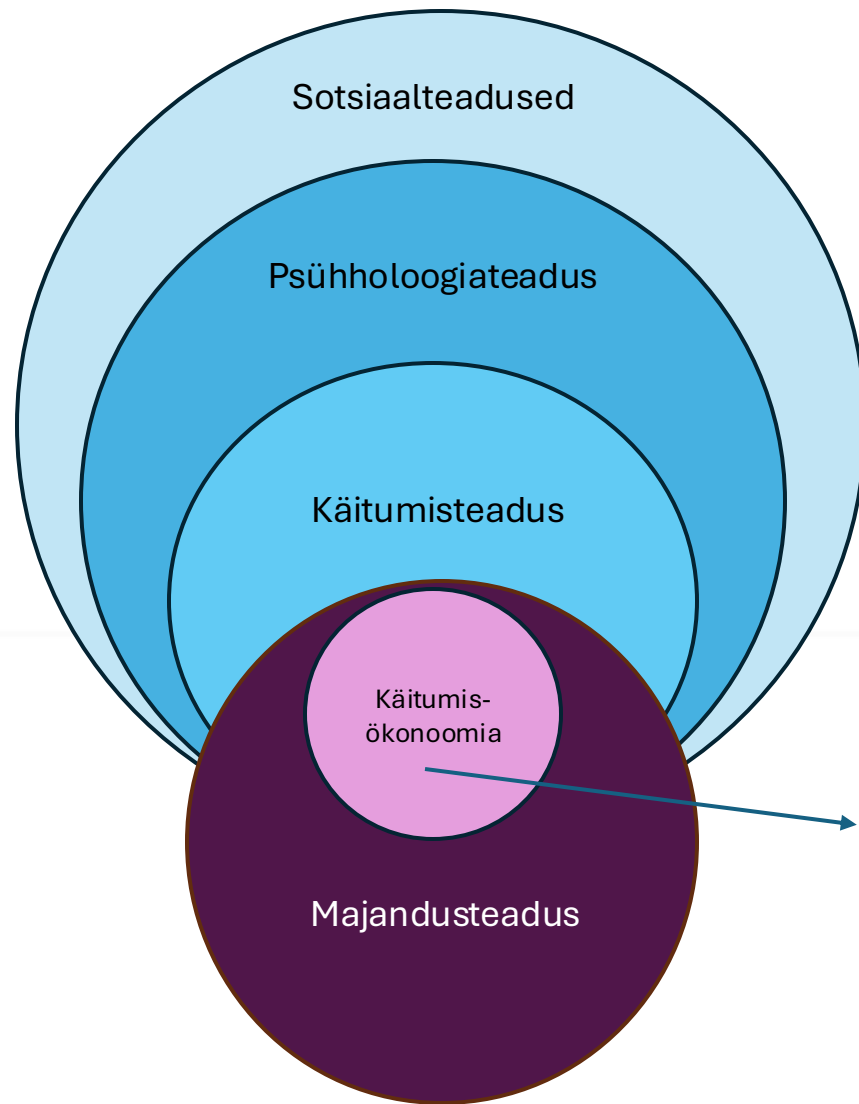
Mis on käitumisteadus ja mida selle rakendamine tervise valdkonnas pakub?



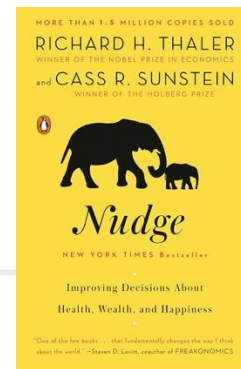
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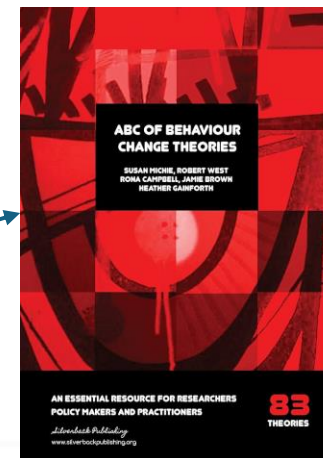
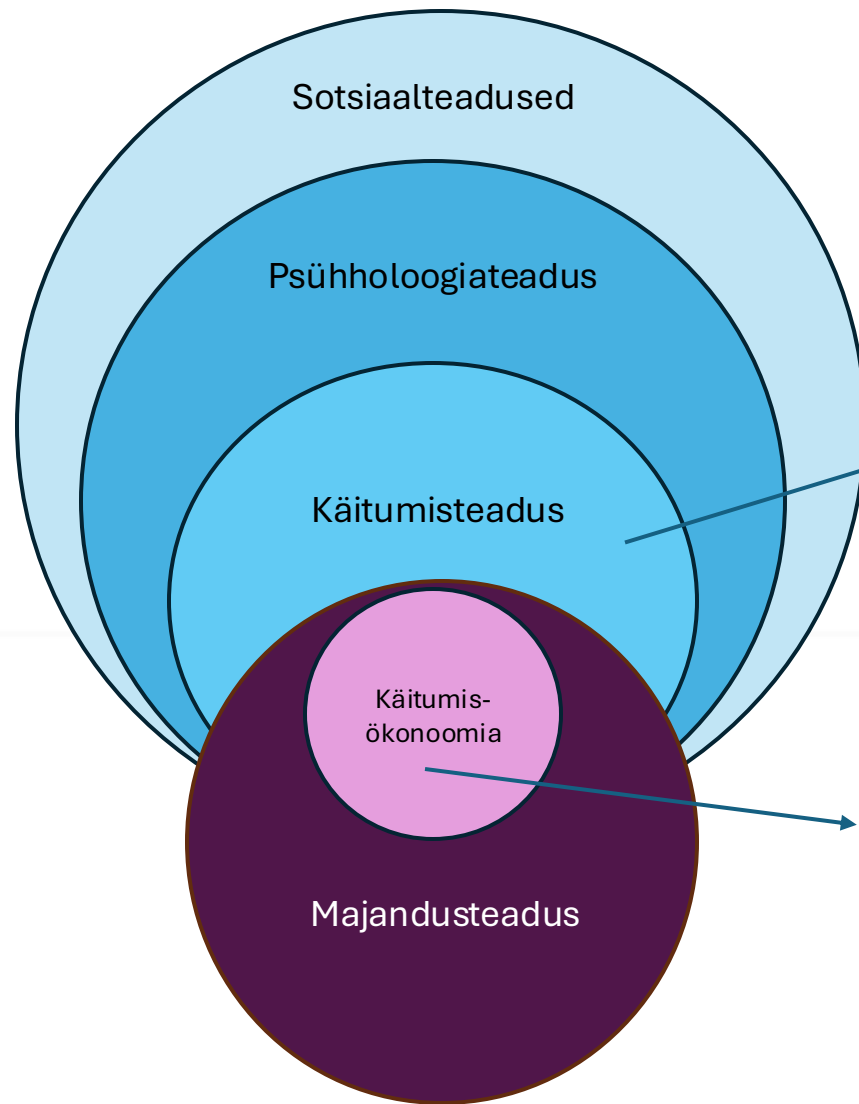




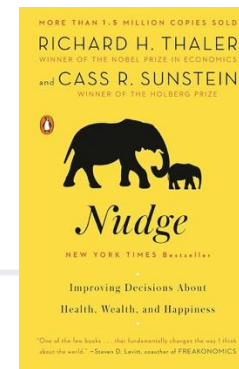


*Näiteks müksamine (käitumise muutmise sekkumistehnika)*





*Näiteks müksamine (käitumise muutmise sekkumistehnika)*



# Tervises aitab käitumisteadus vastata:

1. Kuidas tõlgendada soovitud mõju disainiprotsessi **tulemuseks**?
2. **Kelle** käitumisse sekkuda?
3. **Millisesse** käitumisse sekkuda?
4. **Millal** sekkuda?
5. **Kuidas** sekkuda?
6. Kuidas sekkumise **mõju mõõta**?



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# Kui soovitud mõju on võrdsus tervises, lõimume selle disainiprotsessi ja võtame sekkumise eesmärgiks.

PLOS DIGITAL HEALTH

REVIEW

How to design equitable digital health tools: A narrative review of design tactics, case studies, and opportunities

Amy Bucher<sup>1\*</sup>, Beenish M. Chaudhry<sup>2</sup>, Jean W. Davis<sup>3</sup>, Katharine Lawrence<sup>4</sup>, Emily Panza<sup>5,6</sup>, Manal Baqer<sup>7</sup>, Rebecca T. Feinstein<sup>8</sup>, Sherece A. Fields<sup>9</sup>, Jennifer Huberty<sup>10</sup>, Deanna M. Kaplan<sup>11,12</sup>, Isabelle S. Kusters<sup>13,14</sup>, Frank T. Matera<sup>15</sup>, Susanna Y. Park<sup>16</sup>, Maura Kepper<sup>17</sup>

**1** Behavioral Reinforcement Learning Lab (BReLL), Lirio, Inc., Knoxville, Tennessee, United States of America, **2** School of Computing and Informatics, University of Louisiana at Lafayette, Lafayette, Louisiana, United States of America, **3** College of Nursing, University of Central Florida, Orlando, Florida, United States of America, **4** Department of Population Health, NYU Grossman School of Medicine, New York, New York, United States of America, **5** Department of Psychiatry and Human Behavior, Warren Alpert Medical School of Brown University, Providence, Rhode Island, United States of America, **6** Weight Control and Diabetes Research Center, The Miriam Hospital, Providence, Rhode Island, United States of America, **7** Neamah Health Consulting, Boston, Massachusetts, United States of America, **8** AIHealth4All Center for Health Equity using Machine Learning and Artificial Intelligence, University of Illinois at Chicago, Chicago, Illinois, United States of America, **9** Department of Psychological and Brain Sciences, Texas A&M University, College Station, Texas, United States of America, **10** Fit Minded Inc., Phoenix, Arizona, United States of America, **11** Department of Family and Preventive Medicine, Emory University School of Medicine, Atlanta, Georgia, United States of America, **12** Department of Spiritual Health, Woodruff Health Science Center, Emory University, Atlanta, Georgia, United States of America, **13** Department of Clinical, Health, and Applied Sciences, University of Houston-Clear Lake, Houston, Texas, United States of America, **14** Center for Medical Ethics and Health Policy, Baylor College of Medicine, Houston, Texas, United States of America, **15** Otolaryngology and Population Health, University of Kansas Medical Center, Kansas City, Kansas, United States of America, **16** Radiant Foundation, Salt Lake City, Utah, United States of America, **17** Prevention Research Center, Brown School, Washington University in St. Louis, St. Louis, Missouri, United States of America

\* [abucher@lirio.com](mailto:abucher@lirio.com)



OPEN ACCESS

**Citation:** Bucher A, Chaudhry BM, Davis JW, Lawrence K, Panza E, Baqer M, et al. (2024) How to design equitable digital health tools: A narrative review of design tactics, case studies, and

OXFORD

## Scoping review: exploring the equity impact of current digital health design practices

Laura Evans<sup>1,\*</sup>, Jay Evans<sup>1</sup> and Claudia Pagliari<sup>1</sup> and Karin Källander<sup>2</sup>

<sup>1</sup>The University of Edinburgh, Usher Institute, Old Medical School, Teviot Place, Edinburgh EH8 9AG, UK

<sup>2</sup>Department of Public Global Health, Karolinka Institutet, Norrbackagatan 4, 171 76 Stockholm, Sweden

\*Correspondence address. The University of Edinburgh, Usher Institute, Old Medical School, Teviot Place, Edinburgh EH8 9AG, UK. Tel: +44 (0)131 651 4138;

Fax: +44 (0)131 651 4138; E-mail: [v1levan6@exseed.ed.ac.uk](mailto:v1levan6@exseed.ed.ac.uk)

### Abstract

**Background:** Digital health interventions designed through human-centered design (HCD) have shown potential to impact health equity. This scoping review aims to understand how HCD approaches in digital health impact health equity.

**Methodology:** A scoping review was undertaken. Searches were conducted on PubMed, EMBASE, Web of Science, AMC Digital Library, ProQuest Thesis and Dissertations and Global Medicus Index databases.

**Results:** A total of 6169 references were identified, and 40 of them fulfilled the inclusion criteria for analysis. The application of HCD methodologies varied greatly as did the digital health interventions. The HCD methodologies had an impact on health equity for those individuals included in the development of the digital health tools, but beyond those persons, the impact was harder to establish.

**Conclusion:** There is optimism for the role that HCD in digital health can have in reducing health inequities; however, the evidence is not robust. Most projects failed to scale up to maturity or failed to apply evaluation mechanisms to assess the health equity impact. Recommendations include rigorous application of HCD methodologies, scaling digital health tools beyond pilot projects, and embedding evaluation to determine the impact on health equity.

**Keywords:** digital health, digital intervention, eHealth, mHealth, human-centered design, design, health equity, inequity, scoping review

Oxford Open Digital Health, 2023, 1, 1–15

<https://doi.org/10.1093/odh/ogad006>

Advance access publication date 13 June 2023

Research Article



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Rakendatud käitumisteadus pakub eesmärgipärast ja tõenduspõhist mõju saavutamise protsessi.



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# Käitumisteaduslike uurimismeetodite ja disainiprotsesside kasutamine võib aidata vähendada ebavõrdsust tervises erinevates kontekstides

Santana et al. *Health Research Policy and Systems* (2020) 18:18  
<https://doi.org/10.1186/s12961-020-0526-y>

Health Research Policy  
and Systems

RESEARCH

Open Access

## Advancing tools to promote health equity across European Union regions: the EURO-HEALTHY project



Paula Santana<sup>1,2\*</sup>, Ângela Freitas<sup>2</sup>, Iwa Stefanik<sup>2</sup>, Cláudia Costa<sup>2</sup>, Mónica Oliveira<sup>3</sup>, Teresa C. Rodrigues<sup>3</sup>, Ana Vieira<sup>3</sup>, Pedro Lopes Ferreira<sup>4</sup>, Carme Borrell<sup>5,6,7</sup>, Sani Dimitroulopoulou<sup>8</sup>, Stéphane Rican<sup>9</sup>, Christina Mitsakou<sup>8</sup>, Marc Mari-Dell'Olmo<sup>5,6,7</sup>, Jürgen Schweikart<sup>10</sup>, Diana Corman<sup>11</sup>, Carlos A. Bana e Costa<sup>3</sup> and on behalf of the EURO-HEALTHY investigators

frontiers | Frontiers in Digital Health

PERSPECTIVE  
published: 15 April 2022  
doi: 10.3389/fdigh.2022.831093



## Personalized Digital Health Communications to Increase COVID-19 Vaccination in Underserved Populations: A Double Diamond Approach to Behavioral Design

Kelsey Lynett Ford<sup>\*</sup>, Ashley B. West, Amy Bucher and Chandra Y. Osborn

Lino LLC, Franklin, TN, United States

 **HHS Public Access**  
Author manuscript  
*Soc Sci Med*. Author manuscript; available in PMC 2022 December 13.

Published in final edited form as:

*Soc Sci Med*. 2021 February ; 271: 112450. doi:10.1016/j.socscimed.2019.112450.

### Social and behavioral science at the forefront of genomics: Discovery, translation, and health equity

JOURNAL OF MEDICAL INTERNET RESEARCH

Robinson et al

Viewpoint

### Equity in Digital Mental Health Interventions in the United States: Where to Next?

Athena Robinson<sup>1</sup>, PhD; Megan Flom<sup>1</sup>, PhD; Valerie L Forman-Hoffman<sup>1</sup>, MPH, PhD; Trina Histon<sup>1</sup>, PhD; Monique Levy<sup>1</sup>, MS; Alison Darcy<sup>1</sup>, PhD; Toluwalase Ajayi<sup>2</sup>, MD; David C Mohr<sup>3</sup>, PhD; Paul Wicks<sup>4</sup>, PhD; Carolyn Greene<sup>5</sup>, PhD; Robert M Montgomery<sup>1</sup>, MA

<sup>1</sup>Woebot Health, San Francisco, CA, United States

<sup>2</sup>Joan & Irwin Jacobs Center for Health Innovation, University of California, San Diego, San Diego, CA, United States

<sup>3</sup>Center for Behavioral Intervention Technologies, Northwestern University Feinberg School of Medicine, Chicago, IL, United States

<sup>4</sup>Sano Genetics, London, United Kingdom

<sup>5</sup>United States Department of Veterans Affairs, Mann-Grandstaff Veterans Affairs Medical Center, Spokane, WA, United States



# Juhtumiuuring I – süsteem



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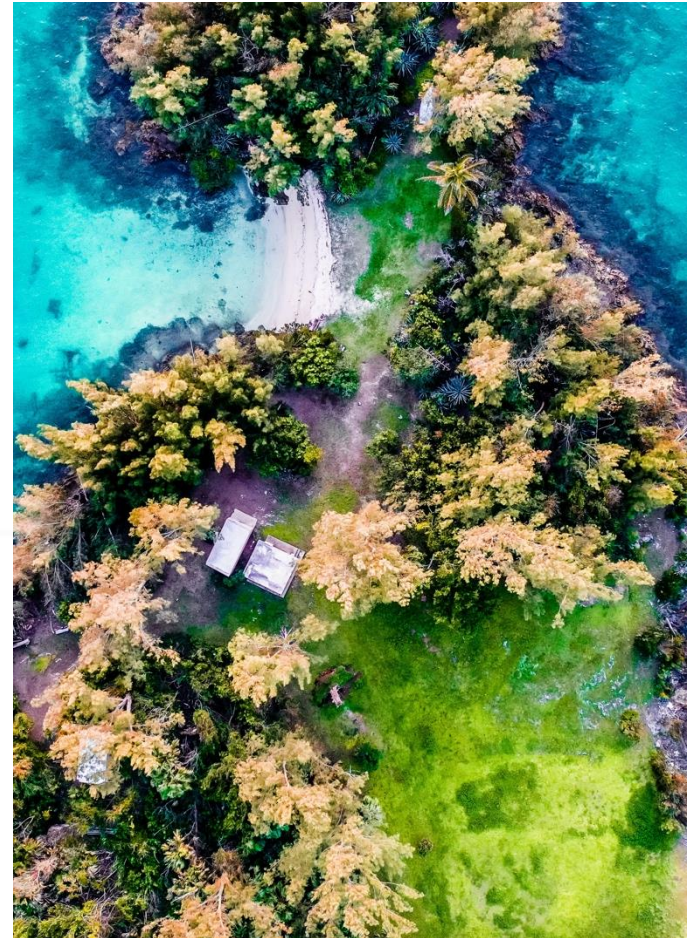
Kuidas tagada  
universaalne  
ravikindlustus ja  
võrdne juurdepääs  
tervishoiusüsteemile  
Bermudas?



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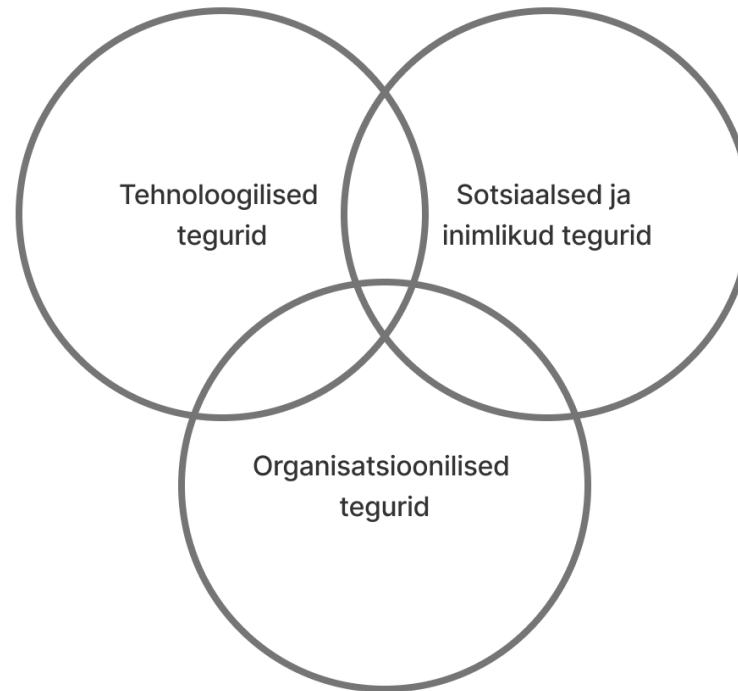


Bermuda on Briti saare territoorium Atlandi ookeani põhjaosas, mis koosneb 181 saarest ja millel elab 63,489 inimest.



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Tehnoloogilised, sotsiaalsed ja organisatsioonilised tegurid mängivad kõik rolli Bermuda terviseministeeriumi valmiduses pakkuda universaalset ravikindlustust.

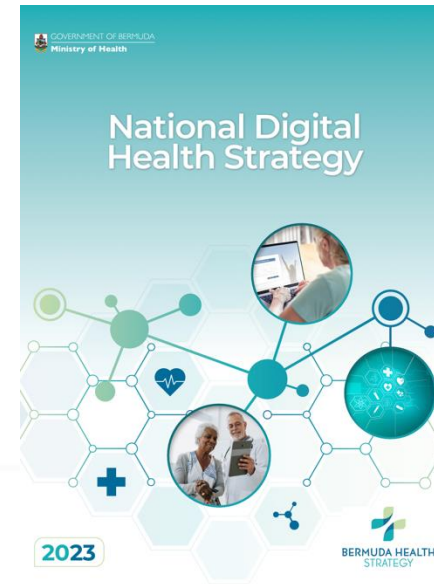


Creswell et al., 2023



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Kogukonna ja tervishoiutöötajate vajadusi austav ja käitumismustreid positiivselt mõjutav tervisetehnoloogia võib aidata ebavõrdset juurdepääsu süsteemile vähendada.



### Part 5: Digital Health Needs Assessment

Feedback from the Needs Assessment has been grouped into two main areas of focus – Community Needs and System Stakeholder Needs. While interconnected, they are distinct.

Community Needs:	Health System Stakeholder Needs:
<ul style="list-style-type: none"><li>• Community engagement</li><li>• Digital health technology</li><li>• Privacy and security</li><li>• Accessibility and equity</li><li>• Digital and health literacy</li></ul>	<ul style="list-style-type: none"><li>• Clinical health and care information</li><li>• Public health information</li><li>• System-level information</li><li>• Insurance/eligibility</li><li>• Workforce training and development</li></ul>

Bermuda terviseministeerium, 2023



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# Juhtumiuuring II – töötajad



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Kuidas innustada Šotimaa  
tervishoiutöötajaid  
rohkem digitaalseid  
oskuseid omandama ja  
rakendama?



 Digital Health & Care  
Innovation Centre



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Digitaalsete oskuste arendamise võimalusi on palju, aga Šotimaa tervise ja hoolduse valdkonna tööjõus rakendatakse neid aeglaselt.



Rimpiläinen, Morrison & Rooney (2018).

 Digital Health & Care  
Innovation Centre



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# Digitaalsete oskuste kasutamise barjääriks on piisavate "pehmete" oskuste puudumine:

- Enesejuhtimine
- Kommunikatsioon
- Suhtlemine



## Educational Pathways into Digital Health and Care in Scotland

A Mapping Study

By Dr. Siija Voolma, Jay Evans and Alan White of IHL

In collaboration with the Digital Health & Care Innovation Centre at the University of Strathclyde and The Glasgow School of Art.

March 2021

Digital Health & Care Innovation Centre, 1st Floor, Suite B,  
Inovo Building, 121 George Street Glasgow, G1 1RD



Voolma, Evans & White, 2021

 Digital Health & Care  
Innovation Centre



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# Juhtumiuuring III – kasutaja



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Kuidas kulutõhusalt ja inimkeskselt suurendada naiste juurdepääsu tervishoiuteenustele?



UNAM



Maailma Pank on tervisetehnoloogiasse investeerinud €3 miljardit, aga naised veedavad ikka 25% rohkem oma elust haigetena, kui mehed, osaliselt väiksema tervishoiuteenuste juurdepääsu tõttu.



McKinsey, 2024



# SMS-tehnoloogia on kulutõhus ja aitab naiste jaoks suurendada juurdepääsu tervishoiusüsteemile.



The European Journal of Public Health, Vol. 30, No. 3, 543–552  
© The Author(s) 2019. Published by Oxford University Press on behalf of the European Public Health Association. All rights reserved.  
doi:10.1093/eurpub/ckz222 Advance Access published on 17 December 2019

## Cost-effectiveness of a stepwise intervention to promote adherence to cervical cancer screening

João Firmino-Machado <sup>1,2</sup>, Djøra I. Soeteman<sup>3</sup>, Nuno Lunet<sup>1,4</sup>

- <sup>1</sup> EPIUnit – Instituto de Saúde Pública, Universidade do Porto, Porto, Portugal
- <sup>2</sup> Unidade de Saúde Pública, ACeS Porto Ocidental, Porto, Portugal
- <sup>3</sup> Center for Health Decision Science, Harvard T.H. Chan School of Public Health, Boston, MA, USA
- <sup>4</sup> Departamento de Ciências da Saúde Pública e Forenses e Educação Médica, Faculdade de Medicina da Universidade do Porto, Porto, Portugal



Primary Care

## How Effective Are Short Message Service Reminders at Increasing Clinic Attendance? A Meta-Analysis and Systematic Review

Rebecca Guy , Jane Hocking, Handan Wand, Sam Stott, Hammad Ali, John Kaldor

First published: 08 November 2011 | <https://doi.org/10.1111/j.1475-6773.2011.01342.x> | Citations: 223

Wagnew et al. *Reproductive Health* (2018) 15:191  
<https://doi.org/10.1186/s12978-018-0635-z>

Reproductive Health

RESEARCH

Open Access



## Does short message service improve focused antenatal care visit and skilled birth attendance? A systematic review and meta-analysis of randomized clinical trials

Fasil Wagnew<sup>1\*</sup>, Getenet Dessie<sup>2</sup>, Animut Alebel<sup>1</sup>, Henok Mulugeta<sup>1</sup>, Yihalem Abebe Belay<sup>1</sup> and Amanuel Alemu Abajobir<sup>3</sup>

016, 444–453  
doi: 10.1093/heapol/czv082  
Advance Access Publication Date: 1 September 2015  
Original article

OXFORD

## Timeliness, frequency and content of antenatal care: which is most important to reducing indigenous disparities in birth weight in Mexico?

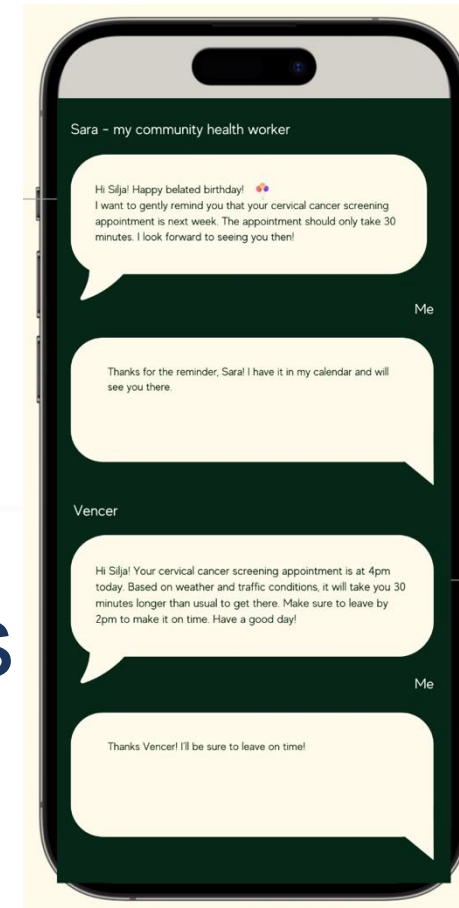
Edson Servan-Mori<sup>1</sup>, Sandra G Sosa-Rubi<sup>1,\*</sup>, Esmeralda Najera-Leon<sup>2</sup> and Blair G Darney<sup>1,3</sup>

<sup>1</sup>National Institute of Public Health, Mexico, Center for Health System Research, <sup>2</sup>National Center for Health Technology Excellence, Ministry of Health, Mexico and <sup>3</sup>Oregon Health & Science University, Portland, OR, USA

\*Corresponding author. National Institute of Public Health, Mexico Center for Health System Research Health Economics Department Av. Universidad 655, Cuernavaca, Morelos. México E-mail: [srubi@insp.mx](mailto:srubi@insp.mx)

Accepted on 30 July 2015

Vencer Pro on SMS-platvorm kahepoolsete ja personaliseeritud tervisekommunikatsiooni programmide disainimiseks ja rakendamiseks.



UNAM



Pilootuuring Mehhikos katsetab SMS kommunikatsiooni vastuvõetavust ja teostatavust sünnieelsete terviseteenuste juurdepääsu suurendamiseks.





# Kokkuvõtteks

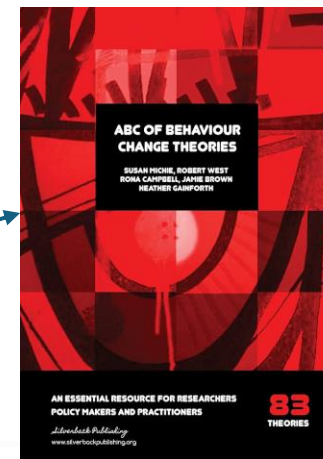
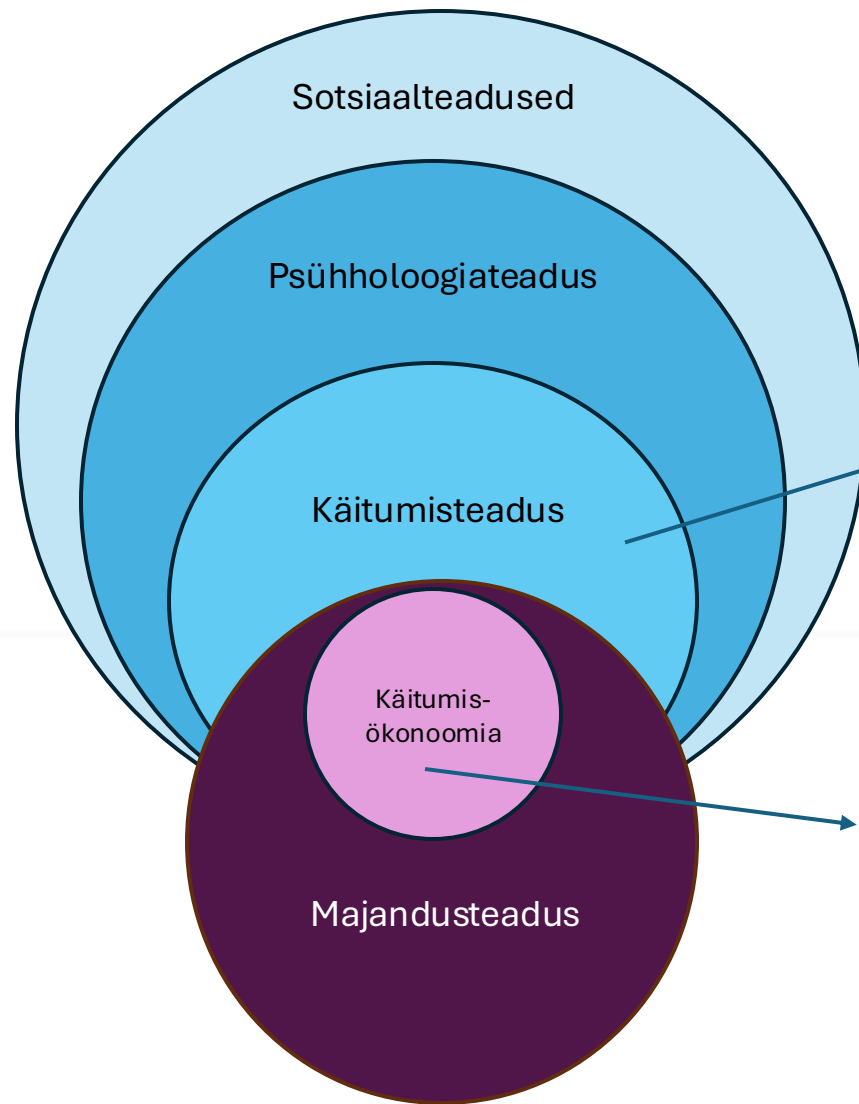


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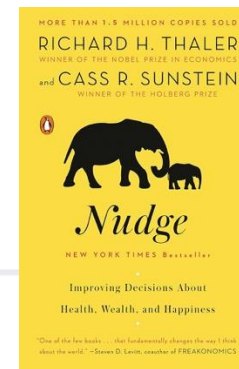
Rakendatud käitumisteadus pakub eesmärgipärast ja tõenduspõhist mõju saavutamise protsess.



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*Näiteks müksamine (käitumise muutmise sekkumistehnika)*





Kuidas teeme tervisealase võrdsuse  
idee Eesti inimeste jaoks reaalsuseks?



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# Aitäh!

[silja-riin.voolma@ut.ee](mailto:silja-riin.voolma@ut.ee)



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