

<https://helda.helsinki.fi>

---

## From Tertiary to Primary Care - Understanding Context in the Transfer of Digital Headache Service Pathway

Valja, Auri

IOS PRESS

2019

---

Valja , A , Tenhunen , H , Harno , H , Mäkitie , L , Tanila , T & Lillrank , P 2019 , From Tertiary to Primary Care - Understanding Context in the Transfer of Digital Headache Service Pathway . in J Mantas , A Hasman , P Gallos , A Kolokathi , M S Househ & J Liaskos (eds) , Health Informatics Vision : From Data via Information to Knowledge . Studies in Health Technology and Informatics , vol. 262 , IOS PRESS , Amsterdam , pp. 304-307 , 17th International Conference on Informatics, Management, and Technology in Healthcare (ICIMTH) , Athens , Greece , 05/07/2019 . <https://doi.org/10.3233/SHTI190079>

---

<http://hdl.handle.net/10138/326609>

<https://doi.org/10.3233/SHTI190079>

---

acceptedVersion

---

*Downloaded from Helda, University of Helsinki institutional repository.*

*This is an electronic reprint of the original article.*

*This reprint may differ from the original in pagination and typographic detail.*

*Please cite the original version.*

# From Tertiary to Primary Care – Understanding Context in the Transfer of Digital Headache Service Pathway

Auri VÄLJÄ<sup>a</sup>, Henni TENHUNEN<sup>a1</sup>, Hanna HARNO<sup>b</sup>, Laura MÄKITIE<sup>b</sup>,  
Tuomo TANILA<sup>a</sup> and Paul LILLRANK<sup>a</sup>

<sup>a</sup>*Institute of Healthcare Engineering, Management and Architecture (HEMA),  
Department of Industrial Engineering and Management, Aalto University, Espoo,  
Finland*

<sup>b</sup>*Department of Neurology, Helsinki University Hospital, Helsinki, Finland*

**Abstract.** A digital service pathway for managing chronic headache has been designed in tertiary care in Finland. The digital tool facilitates self-management by providing exercises, information and messaging opportunities for patients. However, the largest potential benefits are in primary and occupational care. Thus, the purpose of this study was to explore the needs and requirements of primary and occupational care actors for better understanding of the context in the transfer of the service. The study was performed as a single embedded case study. The qualitative data was collected through semi-structured interviews with 16 informants from different organizations and analyzed with Gioia-methodology. This study gathers important empirical knowledge about the meaning of context and transferring digital health interventions from one context to another from clinician and management perspective. Nine key contextual differences were identified and six main expectations emerged.

**Keywords.** Telemedicine, Headache, Health Services

## 1. Introduction

Clinicians and researchers at Helsinki University Hospital (HUU) have developed a digital service pathway for chronic headache patients in tertiary care. The service offers alternative methods for treatment and provides support throughout the care pathway. The service helps patients to recognize and manage the characteristics of their headaches. Trained nurses act as headache coaches who supervise the progress of patients along the pathway. There is a messaging feature through which the clinicians can be contacted in case of questions or worries.

Headache is one of the top ten most common diagnoses in the world in 2016 besides being the second most common cause for disability [1]. In a Danish study, tension-type headache led to the loss of 820 workdays in 1000 persons [2]. Thus, improving the care for headache is economically important [3]. Offering the service to wider groups of patients, including primary and occupational care patients could increase the impact. Occupational health care is a Finnish model for organizing primary care for working-age

---

<sup>1</sup> Corresponding Author, Henni Tenhunen; E-mail: henni.tenhunen@aalto.fi.

people, where the employer provides and pays for the health services to support employees' work ability. This study concerns this move of the service from tertiary to primary care.

Researchers have recognized the difficulty of transferring healthcare interventions successfully into other contexts [4,5]. Contextual understanding acts as a basis for developing successful digital health services [6]. One way to analyze the phenomena is through a design science approach called CIMO logic, where the situation is modeled with context, intervention, mechanism, and outcome [7]. The purpose of this study was to investigate the contextual factors, which affect the transfer of a digital health intervention into other contexts. We also examined what features are valued considering the digital care of headache patients in the target contexts of primary and occupational care. **RQ1:** *What are the key contextual differences between tertiary, primary, and occupational care in digital headache treatment?* **RQ2:** *How do the differences influence the needs and expectations of the service providers for the digital service pathway?*

## 2. Methods

The study was performed as a single embedded case study with two units of analysis, public primary care and private occupational care. The data was collected by conducting 16 semi-structured interviews structured around the CIMO-framework [7], 10 within primary care context and 6 within occupational care context. Theoretical and snowball sampling were used. Data collection was finished after the data saturated. The public primary care organizations were from several parts of Finland with different population characteristics. The occupational care informants were from two major national service providers. Data was analyzed with Gioia-methodology and thematic analysis [8].

## 3. Results

Table 1 presents the identified contextual differences between the three healthcare organization types: patient population, resources, continuity of care, preventive approach, payer, IT infrastructure, adoption of digital tools, procurement, and success evaluation.

**Table 1.** Contextual differences

Contextual dimension	Tertiary care	Public primary care	Private occupational care
<b>Patient population</b>	Selected and chronic patients	Wide array of patients with multiple problems	Working-age people, mostly tension headache
<b>Resources</b>	Specialized physicians and nurses	Primary level physicians and nurses, possibility to consult	Primary level physicians, possibility to consult specialized physicians in-house depending on the contract
<b>Continuity of care</b>	Fixed treatment periods, good follow-up during that	Continuous relationship with the patients, but patients are not actively monitored	Continuous follow-up of customer organizations and the patients. Named clinicians for each customer
<b>Preventive approach</b>	Mainly reactive treatment	Preventive care in some areas	Algorithms which aim to spot patients in risk

<b>Payer</b>	Hospital districts	Municipalities or co-operation districts	Customer companies
<b>IT infrastructure</b>	No digital treatment tools before headache service pathway.	Every area has their own system. ODA-project in some areas.	Some digital infrastructure, e.g. chats, surveys and self-management plan tools.
<b>Adoption of digital tools</b>	Not under study	Apart from ODA, no consistent plans for future.	Digital development programs, strategic fit is assessed.
<b>Procurement</b>	Not under study	Available resources and skills vary a lot.	Systematic procurement according to predetermined needs.
<b>Success evaluation</b>	Indicators: Headache days and intensity, medication, headache impact on life, quality of life, anxiety and depression, patient satisfaction, absences from work.	Resources and skills to measure success vary a lot. Cost efficiency through decreased service use is central.	Intervention-specific indicators are developed. Effect on ability to work is essential.

The informants underlined six main mechanisms they expected to produce good outcomes: capability to self-management, emotional support, willingness to self-management, more accurate care decisions, environment level intervention and prevention, and usability. First, the digital service encourages patients' self-management and makes patients better informed. Second, digital emotional support could reduce the need for excessive contacts due to anxiety. Third, besides supporting the patients' capability to self-management, also supporting their willingness to it would be important. Fourth, the tool should help in enabling professionals to provide more accurate care for the patients. Fifth, occupational care actors discussed the importance of environment level actions. Finally, usability was emphasized.

#### 4. Discussion and conclusions

The implications for the headache intervention developers were analyzed with regard to outcomes and intervention features. From public primary care perspective, the cost aspect was emphasized. In private occupational care, evidence is wanted on the effects on ability to work and sick leaves. Considering new features compared to the existing solution, both primary care and occupational actors were interested in self-diagnosis features. The primary care informants called for service personalization, particularly regarding age and headache intensity. The effects of the context on the desired outcomes and the mechanisms that produce these outcomes through an adapted intervention are illustrated in Figure 1.

This study gathers important empirical knowledge about the meaning of context and transferring digital health interventions from one context to another from clinician and management perspective. This study also has certain limitations. The findings from a single service pathway in the Finnish healthcare system cannot be generalized to other digital solutions in other countries, although several contextual similarities might arise.

In conclusion, nine key contextual differences were identified and six main expectations emerged in relation to the transfer of a digital headache service pathway from tertiary care to the contexts of public primary care and private occupational care.

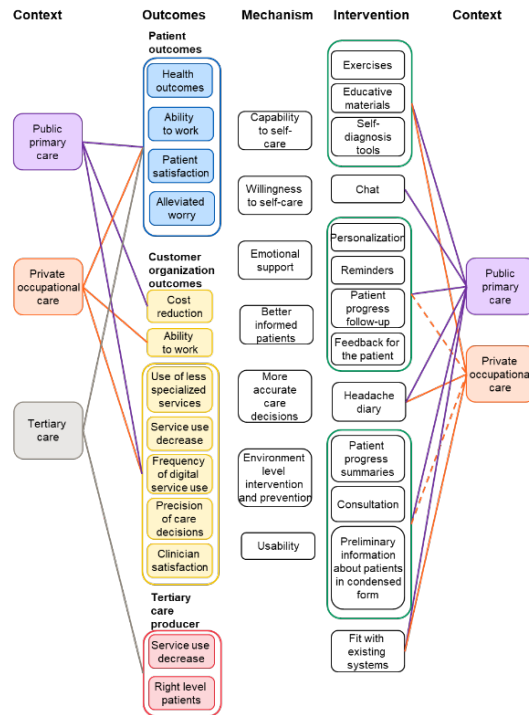


Figure 1. Influence of the context on outcomes and mechanisms through an intervention.

## Acknowledgements

This study was part of DiRVa research project funded by Business Finland. The authors did not disclose any conflicts of interest.

## References

- [1] T. Vos et al., Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016, *Lancet* **390** (2017), 1211–1259.
- [2] B.K. Rasmussen, R. Jensen and J. Olesen, Impact of headache on sickness absence and utilisation of medical services: a Danish population study, *J. Epidemiol. Community Health* **46** (1992), 443–446.
- [3] R. Jensen, L.J. Stovner, Epidemiology and comorbidity of headache, *Lancet Neurol.* **7** (2008), 354–361.
- [4] J. Luoto, P.G. Shekelle, M.A. Maglione, B. Johnsen and T. Perry, Reporting of context and implementation in studies of global health interventions: a pilot study, *Implement. Sci.* **9** (2014), 57.
- [5] J. Shoveller, S. Viehbeck, E. Di Ruggiero, D. Greyson, K. Thomson and R. Knight, A critical examination of representations of context within research on population health interventions, *Crit. Public Health.* **26** (2016), 487–500.
- [6] J.E.W.C. van Gemert-Pijnen, N. Nijland, M. van Limburg, H.C. Ossebaard, S.M. Kelders, G. Eysenbach and E.R. Seydel, A holistic framework to improve the uptake and impact of eHealth technologies, *J. Med. Internet Res.* **13** (2011).
- [7] D. Denyer, D. Tranfield and J.E. Van Aken, Developing design propositions through research synthesis, *Organ. Stud.* **29** (2008), 393–413.
- [8] D.A. Gioia, K.G. Corley and A.L. Hamilton, Seeking qualitative rigor in inductive research: Notes on the Gioia methodology, *Organ. Res. Methods.* **16** (2013), 15–31.