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Design practices and stakeholder engagement in value creation of a prescription feedback system for physicians

Master's Thesis

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Abstract

Medicine expenses have increased continuously in Finland during the last few decades. The Finnish government has identified the need for cost containment and named Kela's prescription feedback service as one development project. Kela has an advantageous position to enhance their role as a knowledge distributor and raise awareness of medicine expenses among physicians. However, the prescription feedback service has multiple identified flaws. Thus, this thesis examines how the adoption and use of the service could be enhanced.

This empirical study was conducted with a qualitative approach, and the data was collected through semi-structured interviews. In this research, two medical students, six health center general practitioners, two pharmacists, and seven physician association employees were interviewed. The interviews were analyzed using a thematic approach.

Based on the research and analysis, the current marketing efforts do not reach and motivate physicians to use the prescription feedback service. Further, the information in the feedback service does not offer enough analyzed content and improvement suggestions to result in reflection and change in prescribing behavior. Other issues hindering the adoption of the service are preconceptions and miscommunications inside the healthcare domain, lack of discussion on societal medicine expenses, and physicians' busy and chaotic work schedule.

This thesis suggests a collaboration with physician associations to better reach individual physicians and facilitate co-design practices with physicians to determine detailed requirements for the feedback. Through these actions, Kela can design relevant feedback, create transparency to the feedback process, increase acceptance among physicians, and diminish preconceptions and communication barriers.

This thesis contributes to the larger societal discussion of medical expense reduction and the role of physicians in this process. The results guide further research on how stakeholder collaboration and design methods can lead to cost reduction of medicine expenses. This thesis also raises a question of whether, for example, reducing redundant prescribing could be an alternative way for cost reductions.

Keywords Participatory design, co-design, stakeholder engagement, physician interventions, medicine expenses, healthcare, Kela

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Tiivistelmä

Lääkekustannukset ovat kasvaneet Suomessa viime vuosikymmenien aikana. Hallitus on tunnistanut tarpeen kustannusten hillitsemiselle, ja sosiaali- ja terveysministeriö on nimennyt Kelan lääkemääräyspalautepalvelun yhdeksi kehityskohteeksi. Kelalla on edullinen asema tiedonvälittäjänä ja mahdollisuus lisätä lääkäreiden tietoisuutta lääkekustannuksista. Tässä diplomityössä tarkastellaan, miten palvelun käyttöönottoa ja käyttöä voitaisiin tehostaa.

Tämän empiirisen tutkimuksen kvalitatiivinen aineisto kerättiin puolistukturoitujen haastattelujen avulla. Tässä tutkimuksessa haastateltiin kahta lääketieteen opiskelijaa, kuutta terveyskeskuksen yleislääkäriä, kahta farmaseuttia ja seitsemää eri lääkäriyhdistysten työntekijää. Haastattelut analysoitiin temaattisesti.

Tutkimuksen perusteella Kela ei tavoita lääkäreitä tehokkaasti, eivätkä lääkärit ole motivoituneita käyttämään palautepalvelua. Palvelun tuottama sisältö ei ole tarpeeksi analysoitua eikä se tarjoa konkreettisia kehitysehdotuksia. Tämän takia palaute ei aiheuta muutoksia lääkemääräyskäytännöissä. Muita palvelun käyttöönottoa vaikeuttavia seikkoja ovat lääkäreiden ennakkoluulot ja kiire, terveydenhuollon kentän kommunikaatiokatkokset, ja vähäinen keskustelu lääkekustannuksista yhteiskunnallisesta näkökulmasta.

Tämä diplomityö ehdottaa Kelalle yhteistyötä lääkärijärjestöjen kanssa ja yhteissuunnittelun hyödyntämistä. Näiden keinojen avulla Kela tavoittaisi yksittäisiä lääkäreitä tehokkaammin. Yhdessä lääkäreiden kanssa Kelan tulisi suunnitella lääkäreille merkityksellistä sisältöä palveluun, ja luoda läpinäkyvyyttä palautteen antamisen prosessiin.

Tämä diplomityö ottaa kantaa laajempaan keskusteluun lääkekustannusten vähentämisestä, ja siitä, mikä lääkärin rooli on tässä prosessissa. Tutkimuksen tulokset näyttävät suuntaa jatkotutkimukselle sidosryhmäyhteistyön ja suunnittelumetodien vaikutuksista tehokkaan lääkemääräyspalautteen suunnittelussa. Tämä opinnäytetyö herättää myös kysymyksen, voisiko esimerkiksi tarpeettomien reseptien vähentäminen olla vaihtoehto kustannusten vähentämiseen.

Avainsanat Yhteissuunnittelu, osallistava suunnittelu, sidosryhmäyhteistyö, lääkekustannukset, terveydenhuolto, Kela

Esipuhe

“Mistä tietää, että joku on diplomi-insinööri?
- Hän kyllä ilmoittaa sen sinulle omatoimisesti.”

Kiitos Annukka Svanda ja Severi Uusitalo tuestanne tässä projektissa. Teidän viisaat sananne olivat korvaamattomia tämän puolen vuoden aikana, ja avullanne opin valtavasti tutkimuksen tekemisestä ja design-maailmasta. Jaksoitte myös tsempata ja asettaa diplomityön oikeisiin mittasuhteisiin, mikä oli ajoittain erittäin tervetullutta.

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Espoossa 22.4.2022

Suvi Hämäläinen
pian diplomi-insinööri

Contents

1 Introduction

1.1 Background and motivation

During the last few decades, medicine expenses have increased significantly in Finland (Kinnunen *et al.*, 2021; Ministry of Social Affairs and Health, 2018b). This is due to the increasing prices of new drugs and expanded use of medicine caused by the normalization of prescribing and expanded possibilities to treat different conditions (Vuorenkoski, 2004). Furthermore, the multi-medication of the elderly is more common, and since Finland is an aging population, the number of multi-medicated people is only growing (Jauhonen and Jyrkkä, 2020).

The Finnish government has noticed the need for medicine expense moderation. The Ministry of Social Affairs and Health created a rational pharmacotherapy action plan to provide medical care which is effective, safe, cost-effective, equal, and of high quality (Ministry of Social Affairs and Health, 2018c). The cost considerations are only one part of the action plan, but they will be highlighted in this thesis due to the topic. In the action plan, prescribing cheaper medication, use of biosimilar medication (synthetic versions of expensive biological medication), and use of clinical decision support systems are mentioned as ways to moderate the growth of medicine expenses (Ministry of Social Affairs and Health, 2018b). The prescription feedback system of The Social Insurance Institution of Finland (Kela) is mentioned as one development project since it involves individual physicians in the rational pharmacotherapy action plan (Ministry of Social Affairs and Health, 2018c). The action plan does not list increasing wellbeing in general as a focus point, but indirectly mentions “assessment of the need of the drug”.

The healthcare field is experiencing other changes, most notably the introduction of the new electronic healthcare record Apotti in the Helsinki metropolitan area and the health and national social services reform. Accessing and utilizing reliable data about the cost and quality of healthcare is becoming more critical. However, the responsibilities are scattered, and there is a lack of national and widely used registers. Since Kela maintains the National Prescription Register, which contains all purchase information of prescription drugs, and already has a prescription feedback system, they have an advantageous position to enhance their role as a knowledge distributor.

It is crucial to find ways to make the information relevant and actionable for physicians. This research highlights the possibilities co-design methodology creates for impacting physicians' prescribing habits since co-design has gained compelling results in the healthcare context and intervention design. Understanding and exploiting the physicians' context enables more viable solutions that are accepted more easily (Yuan, Pronovost, and Marsteller, 2018). For the same purpose, this research draws from the stakeholder engagement research. IT innovations and prescribing habits spread through social networks (Zheng *et al.*, 2010), so utilizing physicians' stakeholders can be advantageous when trying to impact prescribing results.

This thesis describes the current value of the prescription feedback service and improvement suggestions for Kela and thus contributes to the broader discussion of societal medicine expenses. The premise is that individual physicians play a significant role in managing medicine expenses since they ultimately make prescription decisions. The problem setting of this thesis is intriguing since it demands multidisciplinary collaboration.

1.2 Case organization

The Social Insurance Institution of Finland (Kela) is supervised by the Finnish Parliament (Kela.fi, 2018). Kela provides social security for Finnish residents and Finnish people living abroad through various benefits, including parental allowance, student financial aid, unemployment benefits, and pensions (Kela.fi, 2021a). The purpose of Kela is to secure income and promote the health and independent living of individuals in all life situations. In addition, Kela is an information provider since Kela offers statistics and research publications to advance innovation and collaboration between Kela and Kela's customers and partners (Kela.fi, 2020).

Kela offers reimbursements for expenses caused by sickness, such as medicine expenses (Kela.fi, 2021b). However, only medicine approved by Pharmaceuticals Pricing Board (Hila) is available for reimbursement, and the customer has to pay an annual deductible (Kela.fi, 2021b). Figure 1 presents how medicine expenses and reimbursements relate to different stakeholders.

In 2020, the total cost of benefits for Kela was €15.9 billion ('Kela annual report 2020', 2020). The cost of medicine reimbursements was €1,635.3 million, which has grown from the previous year by 5%. The medicine reimbursements were 10% of the total cost of benefits. This is a significant expense for society since Kela's finances come almost solely from taxes (Kela.fi, 2021b).

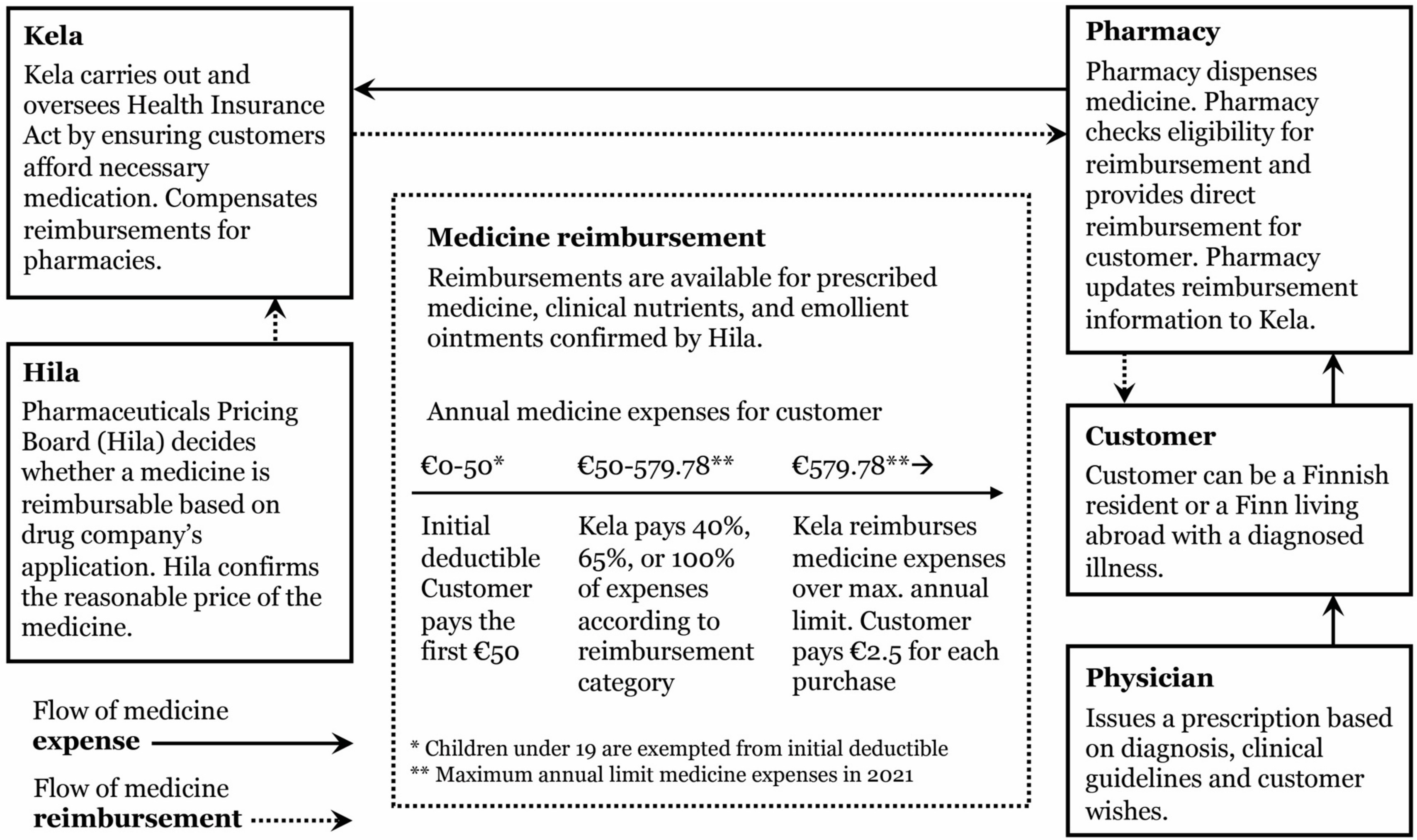

Figure 1: Medicine expense and reimbursement stakeholders.

1.3 Prescription feedback service

To raise awareness of the medicine expenses among physicians, Kela created a prescription feedback system in the 1990s. In the beginning, Kela sent physicians paper letters once a year, which included data about their prescriptions. The feedback was well-liked since it allowed physicians to reflect on their past year and compare their prescriptions to those of other physicians in the same field (Lahnajärvi, Klaukka, and Martikainen, 1997). The prescription feedback system has evolved over the years due to digitalization and user feedback. In 2022, the prescription feedback system includes three independent parts:

1. Public digital reports

Anyone can access the public records through Kela's website. The reports contain data on prescribed medications, and the user can select which area, physician specialty, and drug category to show in the report.

2. Personal feedback report

The original paper feedback letter was replaced by the digital version in 2016. The personal feedback report includes information about the number and price of prescribed medications. Physicians can examine their personal prescriptions and compare them to a table containing the average prescriptions made by physicians in the same field. Physicians can log in to the feedback system using strong identification methods, such as banking codes. The information is updated once a year.

3. Targeted feedback letter

The targeted feedback letter is sent to selected physicians with changing themes once a year. The feedback includes an information letter from an expert from the field. The targeted feedback letter aims to draw physicians' attention to possibly problematic prescription habits and encourage desired practices. For example, the letters have addressed the disadvantages of issuing large opioid prescriptions to new patients (Ahomäki *et al.*, 2020). The selection of target physicians is made based on the same prescription data used in the public digital records and personal digital feedback.

The data in the prescription feedback system contains outpatient care prescription purchases made in pharmacies, meaning any medications used in hospital care are excluded from the system. The data does not show the original prescriptions. In addition, each prescription can create multiple data inputs since prescription drugs are often purchased on various occasions.

The public digital records and personal digital feedback have minimal usage rates, less than 500 visits per year (Ministry of Social Affairs and Health, 2018b). The service has clear limitations, such as confusing labels for data points, an outdated interface, and data is not processed into actionable knowledge. Moreover, few physicians know about the existence of the service.

1.4 Research objectives and questions

The rational pharmacotherapy action plan (Ministry of Social Affairs and Health, 2018b) states that improving Kela's prescription feedback service is desirable to promote physicians' knowledge-based prescribing habits. The aim is to create a service that is a regular part of physicians' work. Ideally, the service would be accessible and offers customized feedback. Kela has defined the following goals for the service:

- Making physicians more conscious of medicine expenses and encouraging them to prescribe more affordable drugs. Physicians should have a more holistic view of patients' medicine expenses.
- Physicians are more aware of the societal effects of their work, and their work relates to other professionals in the same field.
- Decreasing problematic prescribing. Access to information and guidance for better prescription habits is more accessible than now. Increasing the safety of prescribing.

The aim of this thesis is to identify factors that would encourage physicians to use the prescription feedback service and present them as improvement suggestions for Kela. By achieving this aim, the thesis lays the ground for further research on the topic.

This thesis answers the following question and sub-questions:

> **RQ1:** How could the adoption and use of the prescription feedback system be enhanced?
>
> **SQ1:** What does physicians' information environment look like regarding drug prescriptions?

SQ2: What is the value of the prescription feedback service for a physician?

SQ3: What are the current obstacles to adopting the prescription feedback service?

The original research plan was to organize co-design workshops with physicians to plan the content of the feedback service. However, the recruitment of individual physicians turned out to be difficult, and there were hardly any responses to interview invitations. The research plan was adjusted, and the data collection process of this thesis resorted to interviews. The research examined the possibilities Kela might have with physician associations to better reach individual physicians and how social networks could be enhanced to raise awareness of the feedback service.

1.5 Aalto Thesis project

This thesis is written as a part of an Aalto Thesis project. Aalto Thesis is a project model where two to four Aalto University students from different disciplines write their master's theses for the same client organization. In this project, the three theses provide a multidisciplinary approach to a client organization's problem and form a holistic view of possible solutions.

This Aalto Thesis project includes Annukka Laine's master's thesis from the Visual Communication Design programme and Erika Natunen's master's thesis from the Information and Service Management programme. Laine's topic is "How to market the feedback service to physicians via imaginative posters", and Natunen's topic is "How knowledge management can help physicians access and share prescribing information". The three theses, in combination, paint a picture of how to reach individual physicians better and enhance a network effect. Figure 2 illustrates how our theses are connected.

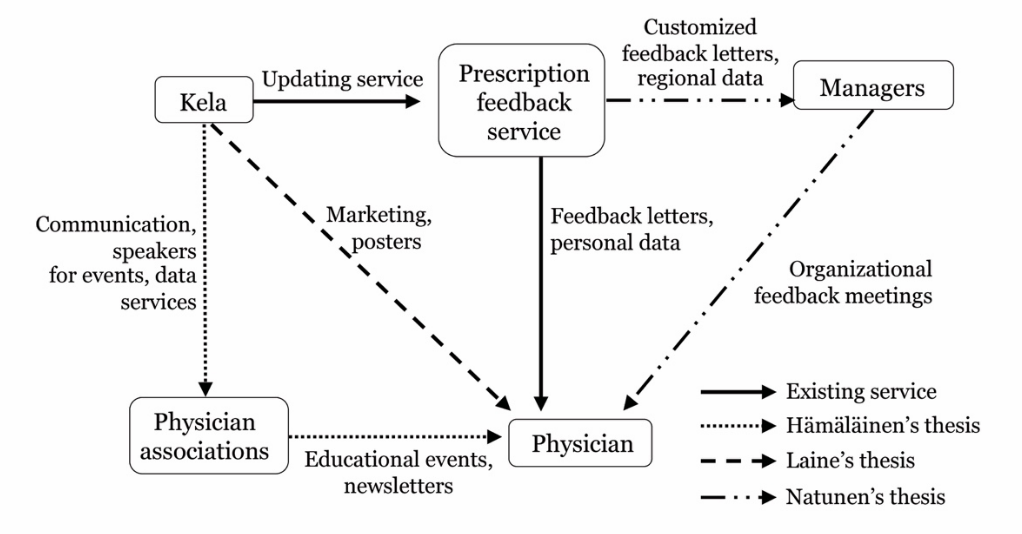

Figure 2: The connection between the three Aalto Thesis papers

1.6 Structure of the thesis

The following section presents the theoretical background of the research. Section 2 goes through factors affecting physicians' prescribing habits and how various interventions have impacted them. Section 2 also illustrated how design methods and stakeholder perspectives had been used in healthcare. Section 3 follows with research approach and methods used in this thesis. The thesis results are displayed in Section 4, and the research questions are answered and discussed in Section 5. Finally, the conclusions and contributions of this research are presented in Section 6.

2 Literature review

This chapter presents a brief overview of earlier research related to the thesis topic. Understanding the problem's background is crucial to utilize best practices and avoid known pitfalls while creating viable improvement suggestions on Kela's feedback solution. The earlier research is divided into three sections: physicians' prescribing habits and influencing them, design approach in the healthcare context, and impact of stakeholders and social networks in healthcare.

2.1 Influencing physicians' prescribing habits

This section presents the factors physicians base their prescription decisions on (2.1.1) and why physicians' autonomy is important to notice (2.1.2). The rest of this sector (2.1.3-2.1.5) presents research on interventions and their effect on prescribing habits.

2.1.1 Physicians' prescription habits

Physicians have to consider multiple factors, which often leads to a complicated decision-making process. These considerations are combined with the outside influence of the healthcare environment, which are not necessarily consciously acknowledged. Based on a systematic literature review, Jaakkola (2007) identified eight categories of factors that affect the prescription decision:

- Drug-related factors (effectiveness, side effects)
- Physical condition of the patient (age, sex, symptoms)
- Physician characteristics (level of training)
- Patient preferences (asking for prescription)
- Cost factors (reimbursement factors, insurance, price of drug)
- Information sources and guidance factors (colleague guidance, care guidelines, commercial information)
- Organizational and administrative factors (budget, prescription restrictions)
- Conventions (personal habits, social norms).

In addition, Jaakkola (2007) explains that the factors affecting decision-making relate to a broader organizational, market, and institutional environment. The affecting factors merge and are affected by each other, and the decision-making process is not done in a vacuum. Patients, organizations, and marketers influence the final prescription, and the factors are often situational. For example, time pressure, media coverage, and social expectation can influence decision-making, yet they are challenging to monitor. Mäntyranta and Helin-Salmivaara (2002) list numerous misconceptions which add pressure to make a prescription. These include that prescription would prove illness or physicians' level of interest in the patient. The factors affecting physicians' decision-making are illustrated in Figure 3.

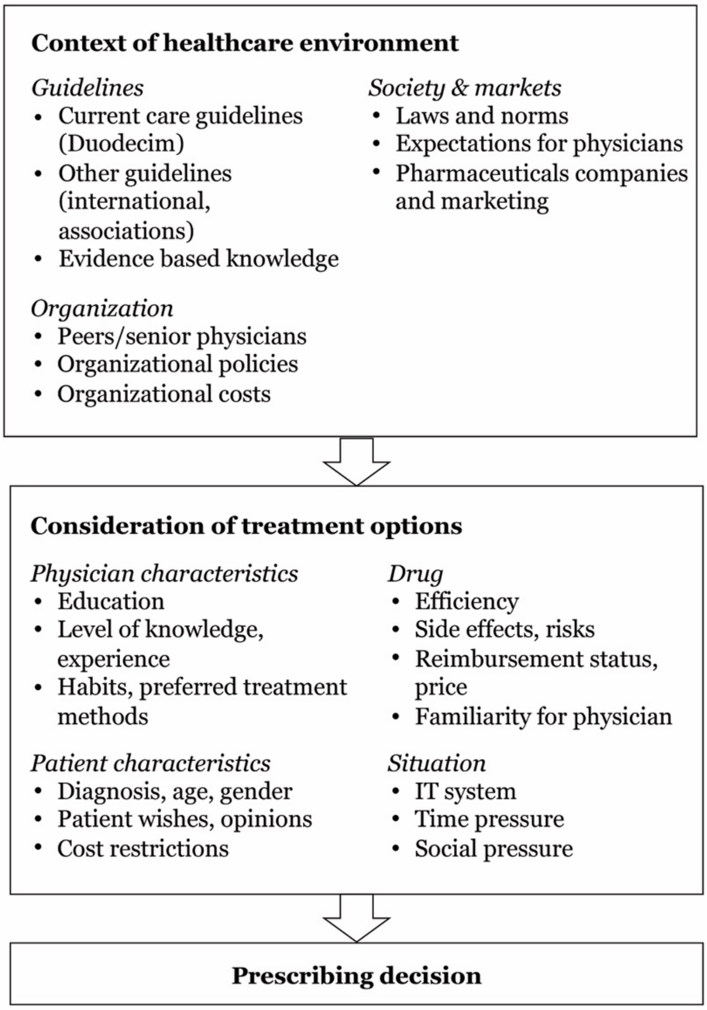

Figure 3: Factors affecting physicians' decision-making. Based on Jaakkola (2007) and Mäntyranta and Helin-Salmivaara (2002).

Physicians develop a selection of preferred drugs, which they prescribe for conditions familiar to them (Mäntyranta and Helin-Salmivaara, 2002). It is unclear how the selection is formed precisely, but it seems to be relatively stable. The size and content of the selection depend on the physician's specialty. The above-listed factors have also influenced the preferred drug selection.

The Finnish Medicines Agency (Fimea), Kela, and the Finnish Medical Association made a survey study for physicians operating in Finland about the factors affecting their prescription decisions (Ruotsalainen *et al.*, 2021). The three most important factors based on the survey were the drug's effectiveness, the familiarity of the drug to the physician, and the current care guidelines. The patient's preferences were also considered important, and most physicians reported that their patients were interested in discussing and affecting the prescription decision. The price for the patient was seen as more important than the price for society.

Rokkila (2012) received similar results in his survey study. The most critical factor for physicians was current care guidelines, followed by personal experiences with the drug and scientific evidence of its effectiveness. However, the survey in this study was much more constricted than the survey conducted by Kela, Fimea, and the Finnish Medical Association. For example, the survey asked if the patient's socio-economic situation affected the prescription decision but not about the patient's opinions.

2.1.2 Physicians' professional autonomy

Physicians' professional autonomy means the right of physicians to independently work as an expert and treat patients with care that is best for the patient without restrictions (Wahlman-Calderara, 2020). The restrictions include:

- clinical restrictions (limitations on prescriptions, tests, and examinations, reporting)
- social and economic restrictions (limited control on workload, hours, priorities, tasks)
- limited organizational influence (the way the organization functions) (Salvatore, Numerato, and Fattore, 2018).

The level of autonomy given to physicians varies between countries and even healthcare units. Yet, it most commonly falls in the middle of the scale from total autonomy to a totally controlled work environment (Wahlman-Calderara, 2020).

Physicians appreciate autonomy and tend to have more negative reactions toward factors limiting their autonomy (Salvatore, Numerato and Fattore, 2018). Concerns of restricted autonomy can lead to perceiving aids, such as clinical decision support systems (CDSS) or outside feedback, as useless or even a threat (Walter and Lopez, 2008). Physicians state that using different interventions decreases their autonomy, giving a minor influence for both the physician and patient, thus leading to poorer quality of care (Britten, 2001).

However, physicians' autonomy and interventions do not have to be contradictory. Pälve (2016) writes that autonomy as a physician is a privilege, and it is based on the trust placed in the physicians' profession by society. Thus, physicians' responsibility is to maintain that trust by keeping themselves educated and ensuring an even distribution of costs and resources to the best of their ability. Constant change is a defining feature of the profession of physicians. This happens in cooperation with other stakeholders, such as authorities, and interventions are tools for physicians. The perceived threat is usually more significant than the actual effect on the level of autonomy (Britten, 2001). This issue of misconception simply has to be addressed when introducing, e.g., a new CDSS to physicians to create shared goals and dismantle preconceptions (Walter and Lopez, 2008).

2.1.3 Impact of audit and feedback

Jamtvedt et al. (2006, p. 4) define audit and feedback as "any summary of clinical performance of health care over a specified period of time, given in a written, electronic or verbal format". The purpose of audit and feedback is to enhance the quality of healthcare provision. Even though audit and feedback is a widely used practice and has potential, it has received vastly varying results in research, mainly from poor to mediocre (Foy *et al.*, 2005; Jamtvedt *et al.*, 2006; Payne and Hysong, 2016). Furthermore, there are no clear implications of how audit and feedback are designed to be most effective.

However, there are suggestions on which factors might relate to positive audit and feedback results. Ivers et al. (2014, p. 1538) list the following elements of feedback based on a systematic review:

- It is delivered by a supervisor or respected colleague
- It is presented frequently

- It includes both specific goals and action plans
- It aims to decrease the targeted behavior
- Focuses on a problem where there was larger scope for improvement.

Veloski et al. (2006) highlighted the importance of providing feedback systematically over a long time and that an authoritative and credible source increases the acceptance of feedback. The paper also points out other factors, such as education and physician's involvement in the process, but the research on the interventions independently is lacking, and thus it is difficult to separate different factors.

In addition to the factors mentioned above, Payne and Hysong (2016) list patient-level data and understandable measurements as positive features for audit and feedback. Noteworthy was that feelings of content and embarrassment caused by audit and feedback increase the probability of action. The paper also points out that the healthcare environment affects the response of physicians since a high volume of patients and insufficient resources can diminish the opportunities to take action.

Despite the conflicting results audit and feedback has received in literature, Kela impacted physicians' opioid prescribing with their targeted letter in 2017 (Ahomäki *et al.*, 2020). The letter aimed to reduce large paracetamol-codeine prescriptions for new patients. The letter reduced the probability of prescribing by six percentage points even after a 12-month follow-up period.

2.1.4 Impact of educational outreach

Educational outreach means face-to-face visits where trained educators meet with physicians (Thomson O'Brien *et al.*, 2000). The purpose of the visits is to improve healthcare outcomes. Educational outreach visits can vary in length, frequency, size of the group, and form of education. Educational outreach has been used mainly to influence prescribing practices of physicians. In their systematic review, Thomson O'Brien et al. concluded that interventions had had positive, yet moderate effects, but the impact of educational outreach alone is difficult to evaluate since it is usually combined with other interventions such as audit and feedback. There is no clear indication of which features make educational outreach most compelling. (Thomson O'Brien *et al.*, 2000)

Nilsson et al. (2001) combined audit and feedback with educational outreach visits and successfully affected the prescribing habits of physicians. The interactive educational outreach visits occurred three times and lasted for an hour. During the visits, feedback and educational material were handed out and discussed. Midlöv et al. (2006) arranged two educational outreach visits for health centers, where prescribing of benzodiazepines and antipsychotic drugs were discussed. After 12 months, there were apparent reductions in benzodiazepine prescriptions but no difference in antipsychotic drugs. Bernal-Delgado et al. (2002) found that handing out supporting materials during outreach visits and giving training to the facilitator of the visits improves the effects compared to the absence of these factors. However, even an educational visit with no supporting material and a facilitator without training led to a slight reduction in unwanted prescribing. All these studies have focused on affecting prescription habits on specific drugs in contrast to improving good prescription practices in general.

2.1.5 Impact of other interventions

A clinical decision support system (CDSS) is a computer program designed to help clinical workers with medical work. CDSS is often integrated with electronic patient records, and CDSS uses different health databases to generate suggestions from large amounts of information that are then integrated into the workflow of physicians. The content and purpose of the prompts vary between CDSSs, but they can be roughly categorized as follows: patient safety, clinical management, cost containment, administrative function/automation, diagnostics support, imaging and laboratory reminders, patient decision support, better documentation, and workflow improvement. (Nilsson *et al.*, 2001)

The positive effects of using CDSS and timely, relevant feedback have been reported in multiple different studies (e.g., Walton *et al.*, 1997; McMullin *et al.*, 2004; Kawamoto *et al.*, 2005), which include time savings, cost savings, improved patient safety, and reduced number of errors. However, CDSS can also cause alert fatigue and clinical burnout (e.g., Kawamoto *et al.*, 2005; Bresnick, 2017; Sutton *et al.*, 2020). Despite CDSS intervention being highly effective, Kela does not have the authority to modify the design of the currently used CDSSs in Finland.

Financial incentives have been used to reward physicians for desired practices, for example, in the US and the UK (Scott *et al.*, 2011). Physicians may be paid for performing specific services or after reaching a certain level of quality. In a broad sense, financial benefits include monthly salary, as well. In their systematic review, Scott et al. (2011) found that financial benefits had positive but moderate effects on the quality of care. However, the included studies lacked research design and thus did not provide sufficient evidence on behalf of or against using financial benefits. Chaix-Couturier et al. (2000) came to similar conclusions and further highlighted the risk of conflict of interest and the necessity to disclose incentives to the public.

General cost-restriction policies affect physicians' prescription habits, as well. The most commonly used cost-restriction interventions are budgets, price controls, volume controls, and market structure policies (Stadhouders *et al.*, 2019). Specific restrictions are, for example, hospital drug budgets, reduced reimbursements. The cost-restriction policies can be very effective, but occasionally loopholes and ways to go around the restrictions are found over time.

Jaakkola (2007) points out that interventions that are targeted at physicians on their own most likely do not have permanent effects in the long run. Society and especially patients should be part of the actions taken to affect healthcare costs. Unfortunately, this means that the measures taken to restrain societal costs sometimes contradict the benefits of individual physicians and patients.

2.2 Design in healthcare context

2.2.1 Defining design terms

Sanders and Stappers (Sanders and Stappers, 2008) define *co-design* as a collaboration of designers, users, and other stakeholders throughout the design process. Co-design is a form of *participatory design*, a more general term for incorporating users in the design process. In co-design, designers and non-designers are equals, and non-designers have as valuable input in decision-making as designers. Co-design exploits the expertise and knowledge users and customers possess.

Another widely used design approach is *user-centered design*, where users are put in the focus of design and observed (Norman, 2013). ISO 9241-210:2019 standard presents practices and premises of a user-centered approach, including that users' knowledge should guide the whole design process (ISO, 2019). User needs and thoughts are discovered through designers collecting data through interviews and observation, then producing different design artifacts and again collecting opinions from users in testing situations (Abras, Maloney-Krichmar, and Preece, 2004). Users' role as active partners in the decision-making process is not emphasized as strongly as in co-design, but users serve more as data sources. However, for both co-design and user-centered design, it is essential to participate users throughout the design process.

Service design is used as an umbrella term for design activities. Service design can combine co-design and user-centered aspects, and Stickdorn and Schneider (2015) list that service design thinking is user-centered, co-creative, evidencing, sequencing, and holistic. Notably, the holistic point of view is vital for service design since it notices how services are organized and systems need to be developed "behind the scenes". As an emerging field, knowledge-building and design methods and documentation practices have evolved for service design, as exemplified by, e.g., customer journey maps and service blueprints.

2.2.2 Design in healthcare and public sector

Design practices have slowly made their way into the public sector since they are seen to provide tools for the increasing demand to deliver quality services (Leinonkoski, 2012). Also, there has been a shift and citizens are seen more and more as co-creators of services (Vaajakallio and Mattelmäki, 2015). Vaajakallio and Mattelmäki (2015) studied co-creation and service design in public sector service creation, and concluded that design methods engage people, visualize alternatives, and help develop prototypes. Co-creation and service design can provoke innovation and novel ideas outside the initial project scope, too. Service design has also increased inter-organizational communication in the public sector domain (Trischler *et al.*, 2018).

Design research has gained increasing attention also in the healthcare context and has received promising results (e.g., Donetto *et al.*, 2015; Prendiville, 2019). Reddy et al. (2019) list three significant reasons why co-design is beneficial in healthcare intervention design:

- the design maintains its relevancy when users have input on things that are important to them

- transparency is created between users and designers, which in turn increases users' ownership and the likelihood of accepting the final design
- stakeholder network is strengthened, and possibly new projects stem from increased partnerships

In the healthcare domain, Experience-based Co-design (EBCD) has been used both in academic and commercial settings. EBCD stems from co-design methods to participate patients and healthcare professionals in improving service experiences (Donetto *et al.*, 2015). An EBCD toolkit is available online for anyone interested in developing healthcare quality, making design practices accessible for people outside of the design profession (The Point of Care Foundation, no date). The toolkit includes practical advice and instructions for carrying out EBCD projects independently.

Design research in the healthcare context has utilized a range of different methods, which are used in different phases of the process depending on the research design. For example, the early stages of design draw from the social sciences and interviews, observations, and surveys are commonly used methods as a part of the design process (Koskinen and Krogh, 2015). Design artifacts can function as *boundary objects* which aim to bring different disciplines closer together (Islind *et al.*, 2019). Islind et al. utilized personas and co-designed goals as boundary objects to create ownership and communication for patients and staff. Miettinen and Alhonsuo (2019) found that benchmarking impacts the developing management practices of a hospital design. Visualizing tools help create a shared understanding of complex entities, and workshops are good forums for idea creation and meetings (Boyd *et al.*, 2012; Miettinen and Alhonsuo, 2019). Prototypes allow different shareholders to participate in idea-sharing and decision-making (Reddy *et al.*, 2019).

Despite the benefits of design activities, especially the public sector faces challenges in adopting design practices (Vaajakallio and Mattelmäki, 2015). Utilizing design methodologies requires organizational changes, which can be a resource and management issue. One concrete barrier between designers and public sector employees is a lack of common vocabulary. This can cause misunderstandings and friction, even if both parties have the same intentions. Boundary objects have offered better communication opportunities and partly tackled these issues (Islind *et al.*, 2019). Also, Boyd et al. (2012)have found that encouraging organizations to participate users as early as possible reduced the feeling of receiving hollow results. Overall, practicing co-design in improving healthcare needs to be done correctly because meaningless co-design projects can diminish participants' eagerness to be involved in future co-design projects.

Often in the public sector and the healthcare domain, consultant designers conduct design research. Implementing the results is left for the client organization, which can be tricky without a thorough hand-off. Almqvist (2019) suggests that designers should use user roadmaps as a knowledge-sharing tool to overcome miscommunication barriers. The base of the roadmap is customer journey map of the current situation. On the same map, the designer presents the goals of the service and lists the actions the client organization needs to take to reach those goals. This allows creating a shared understanding of the project's next steps after the designers leave the development process.

2.3 Stakeholders and social networks in healthcare

Both stakeholders and social networks examine the relationships between different operators. The stakeholder perspective focuses on the "big picture", and social networks handle people's personal relationships. This section first describes why cooperation with stakeholders is important for implementing new solutions and how that could be done (2.3.1). Then, the possible effects on the social networks among the different stakeholders are discussed in section 2.3.2.

2.3.1 Stakeholders

Pouloudi (1998) defines a *stakeholder* in healthcare as any individual, group, organization, or institution who can affect or be affected by healthcare service. All these stakeholders affect the adoption of IT systems, and for this reason, it is essential to identify different stakeholders and their roles in the context (Mantzana *et al.*, 2007). Pouloudi (1998) highlights that it is important to notice the following factors when identifying stakeholders: the number of stakeholders in context and time-dependent, stakeholders are interrelated, stakeholders may have multiple roles/viewpoints, and they can change over time, stakeholders may be unable to realize their wishes, and different stakeholder may have different perspectives and desires. This means that the stakeholder map of, e.g., the Finnish healthcare system, can look different depending on the purpose chosen for examination. Mantzana et al. (2007) propose the following model for identifying healthcare stakeholders:

1. Choosing a static definition as the basis of identification. Mantzana et al. propose using "any human or organization that provides, controls, supports, or accepts a healthcare service".
2. In the dynamic phase, the above definition is used to detect stakeholders through collecting data (e.g., interviewing, literature review).

The benefits of stakeholder considerations are avoiding unpleasant surprises in the development and implementation of IS and avoiding stakeholder conflicts (Pouloudi, 1998). Also, McAdam, Hazlett, and Casey (2005) state that public sector success is defined by stakeholder satisfaction, and thus it is crucial to take their opinions seriously. Stakeholder satisfaction goes hand in hand with stakeholder engagement, which creates ownership over projects (Sadler *et al.*, 2019). Norris et al. (2017, p. 9) studied how different stakeholders define engagement in healthcare quality improvement projects and what factors are considered necessary. The study concluded that engagement happens through:

- active participation of willing stakeholders, with levels ranging from information sharing to decision-making
- shared decision-making-process about meaningful change for those who are most impacted
- two-way interactions that begin early in the change process.

Frow and Payne (2011) suggest that stakeholders often have conflicting views of what is valuable based on their goals and context. For this reason, it is essential to be very critical when analyzing and managing stakeholders. If value promises are not relevant for the stakeholders, it is complicated to build engagement. Value in a stakeholder network is co-created and requires knowledge sharing and communication.

Kela has been examined from the stakeholder cooperation point of view. Turkia (2021) studied the cooperation development between Kela and municipalities in the South Karelia Social and Health districts during a reform of the social assistance structure. The reform required new forms of interaction between Kela and the municipalities. Turkia found that the biggest struggles, in the beginning, were related to the structures of the organizations. For example, the contact information was unavailable, IT systems were complicated, and the division of work tasks was unclear. Lack of communication and understanding can lead to reserved attitudes, which hurry and hustle only increase. Kela's internal problems with customer service and solution unit complicated the relationship with the municipalities and end customers. Turkia concludes that naming contact people and forming explicit collaboration structures that are not dependent on individuals were central for cooperation. Also, creating encounters where people could learn about other work and overcome preconceptions was vital.

2.3.2 Social networks

Social network can mean a group of personal relationships at a workplace or other professional network, where peers can be from any hierarchical level. Social networks have been shown to affect the prescription habits of physicians.

Rattray et al. (2019) found that peers' social influence, especially senior physicians, affected physicians' prescription behaviors and attitudes. Habits are transmitted directly through discussion and consultation and indirectly through comments and attitudes interpreted between the lines. Similarly, Fattore et al. (2009) found that group discussions facilitated by local health authorities in Italy made physician practices more homogeneous, indicating that even informal idea-sharing can shape practices. The local health authorities were also able to facilitate the conversation to encourage better prescription practices. Keating et al. (2020) discovered that the probability of a physician using a new imaging technology within years of approval was increased if the physician's peers included an early adopter of the technology. This indicates that opinion leaders may have a significant role in spreading new practices.

The influence of social networks has been studied in the spread of healthcare IT systems. Zheng et al. (2010) studied how social networks affect the adoption of electronic health records among healthcare professionals. They found indications that personal relationships and friendships strongly influence how individuals start to use new IT solutions. Zheng et al. (2010) found implications that opinion leaders should be paid attention to while launching a new IT system. An opinion leader can be a "super user" or a cluster person in a social network. Li et al. (2013) also found the social influence to be a critical factor in adopting IT systems in healthcare. The support and recommendation from peers and managers increase the likelihood of acceptance, and the subjective norm of using the system creates pressure for utilizing new technologies.

2.4 Summary of literature review

Prescription decision-making is a complex process. Physicians need to consider multiple factors when they make a prescription decision, for example, the effectiveness of the drug and risk factors compared to patient characteristics. Physicians are also influenced by the healthcare environment, even though they might not always recognize it. However, the factors affecting the prescription process transform over time. The physician's profession requires constant change and adaptation to healthcare innovations. This flexibility is a good trait for the purposes of Kela, even if there are known obstacles such as physicians' autonomy.

Multiple types of interventions try to modify the prescription habits of physicians. Audit and feedback and educational outreach visits are the most notable interventions for this thesis. Both of these interventions have received inconsistent results in research, and it is unclear which factors make these interventions most effective. Nevertheless, the changes caused by these interventions have been positive, even if moderate. Consequently, it is better to do something than nothing and learn advanced practices for interventions. Likewise, Nilsson et al. (2001) suggest that combining different interventions and approaching physicians from multiple perspectives might be more effective.

As Yuan, Pronovost, and Marsteller (2018) suggest, the design field can contribute to the healthcare context. Planning solutions and interventions that physicians accept requires the involvement of physicians as co-designers. In addition, it is essential to understand how physicians' social networks work and how they can be utilized to spread new habits. Considering physicians and their stakeholders as assets can lead to innovations that fit their context and users. Based on this literature review, Kela should strive to create stakeholder engagement to utilize physicians' knowledge and expertise.

Physician associations are a stakeholder group that has not been discussed in literature to the researcher's knowledge. However, the associations are active in Finland, and many physicians belong to at least one association. The physician associations offer professional training and seminars for their members, and educational outreach visits would be logical to arrange in collaboration with associations.

The implications of the literature review are discussed in more detail in the Discussion.

3 Methodology

The previous chapter presented earlier research related to the thesis topic. This chapter continues to describe how that knowledge is utilized in this work and how the research is conducted. Section 3.1 explains the research approach of this thesis and Sections 3.2 and 3.3 discuss how data is gathered and then analyzed.

3.1 Research approach

The aim of this research is to understand how the medicine expense feedback could be incorporated into physicians' lives as a permanent tool. To reach this aim, it is vital to understand physicians' motivations, attitudes, and the context of their everyday life. The following research question and sub questions were presented in 1.4:

> **RQ1:** How could the adoption and use of the prescription feedback system be enhanced?
>
> **SQ1:** What does physicians' information environment look like regarding drug prescriptions?
>
> **SQ2:** What is the value of the feedback service for a physician?
>
> **SQ3:** What are the current obstacles to adopting the prescription feedback service?

Since this research is focused on subjective themes and understanding topics in detail is crucial, a qualitative research approach is chosen. Qualitative research means collecting and analyzing non-numeric data, and it is best used for studying opinions or experiences (Silverman, 2009). Furthermore, qualitative research is flexible and allows responsive changes based on findings along the research process.

This thesis has been influenced by the participatory design approach used in the healthcare context, a topic presented more in detail in 2.2. The key to design practice is to participate users in the research throughout the process. This thesis has given great importance to the views of physicians. However, due to changes in the research plan (see 3.2), this research could not utilize co-design practices to the intended extent.

3.2 Data gathering

The qualitative data for this thesis was collected from multiple sources. At the beginning of this research process, the service designers of Kela were conducting user research related to the prescription feedback service. The notes and summary of that research were available and worked as a starting point for this thesis. Also, Kela provided other materials about the larger context of Kela as a service provider and medicine expenses and reimbursements for the society.

The data was gathered through interviews, as well. The interviews were conducted in three separate parts, with three different target groups: first health center GPs, second pharmacists, and third medical associations. Previous interview rounds guided the design of the following interviews so that new data supplemented the existing knowledge.

Initially, the research plan included holding co-design workshops with health center GPs following the good results others have received earlier in healthcare context (see 2.2). The focus of the workshops would have been on defining the information content and filters of the feedback service together with physicians. However, during the recruitment process of the first interviews, it became apparent that it was difficult to get physicians to participate in interviews. Presumably, it would be even more difficult to recruit physicians for resource-intensive workshops. Thus, the research plan was adjusted, and the workshops were replaced with the medical association interviews. Kela employees had wished for direct suggestions on the content of the personal feedback report, but they were intrigued about the new research plan after a short discussion.

Kela had not previously considered cooperation with medical specialty associations, even though they have a meaningful role in the information environment of physicians. Kela has previously communicated about the feedback service to the Finnish Medical Association and Duodecim and asked for topic suggestions for the targeted letter from Duodecim. As 2.3 describes, engaging stakeholders in design process is beneficial for the results of development. This research provides Kela with new perspectives on reaching physicians better through their stakeholders. This research creates new communication possibilities with associations, and it is easier to start the recruitment process for research activities in the future.

3.2.1 Kela documentation

During the first months of the research, there were multiple meetings with Kela employees. The sessions were held to give the whole Aalto Thesis team an understanding of Kela as an organization, the context of medicine expenses, and the functionalities of the current feedback service. The specific research topics were iterated and discussed with Kela employees. In addition to background knowledge, notes and presentation slides from these meetings functioned as initial data for deciding on specific research questions.

At the beginning of this research process, Kela's service designers were doing user research on physicians. The goal of their study was to give Kela insight into the needs of physicians regarding the feedback service. They interviewed two dentists and eight physicians from various specialties. The interviews lasted for 45-60 minutes and were held via Teams and Skype. First, the interviewees were asked general questions about their work and everyday life, and then the interview moved to an observation and testing part. The interviewees were asked to share their screens and navigate to the feedback service in their browsers. They were then asked to perform a few tasks, such as accessing their own information and filtering the data with their preferred specialty. Interviewees were prompted to think aloud about their thinking process, and at times, the service designers asked additional questions, such as "Why did you click that button?" and "You paused for a moment, what did you think about?".

The observations from the interviews were documented with online post-it notes on Miro platform. Due to confidentiality, the interview notes were anonymized and available for access only for a limited time. Analyzed and summarized findings were also presented on presentation slides, which were introduced in Kela's internal briefings. These materials were used for note-taking and as a comparison for interviews conducted independently for this thesis.

3.2.2 Interviews

Interviews were chosen as a research method since interviews are flexible and allow depth to the research topic (Gillham, 2005). Because the interviews aim to understand the thoughts and opinions of interviewees, it is beneficial that the interviewees can lead the conversation to topics they feel are important. For the same reason, the semi-structured interview was chosen for the interviews. The topics are determined beforehand in semi-structured interviews, but the questions are open-ended, and there is room for additional questions (Gillham, 2005).

All interviews started with the interviewer's introduction, explanation of the research and topics of the interview. The anonymity of the interview was explained, and the interviewees were asked for permission to record the sessions. The interviewees were also asked whether they had any questions regarding the interview or the research. After this, the interviews began with simple questions about the occupation to start the discussion smoothly.

All of the interviews were video calls due to the COVID-19 situation and time management purposes. They were conducted via Microsoft Teams or Zoom. The interviews with health center GPs lasted from 45 minutes to 60 minutes, and the rest of the interviews were a bit shorter, from 30 minutes to 40 minutes. For convenience, the language of the interviews was Finnish. The interview structures in Appendix A-C are thus translated to English. The interviews were recorded and transliterated afterward.

The interviews were conducted in three parts: first, health center GPs, then pharmacists, and finally, medical specialty associations. The GPs were selected as the initial target group mainly because they prescribe an extensive range of different medications. Thus, giving feedback to health center GPs might have significant effects on a large scale. In Kela's service designers' user research, health center GPs were interested in how the feedback service could summarize their work and show trends in medicine prescriptions.

Health center GP interviews

The interview invitation was sent to four different health center email lists. In addition, the invitation was sent to 44 individual GPs who were randomly picked all around Finland. Later they were sent reminders of the invitation. In the end, no one answered these requests, and all the recruited GPs were found through social networks. This is reflected in the ages and locations of the interviewees: most of them were freshly graduated and worked in south Finland. In addition, two medical students who already had health center experience were recruited for pilot interviews. The results of these interviews were considered only while planning the interviews with graduated physicians.

The goal of the interviews was to get a complete picture of the everyday life of health center GPs and their attitudes towards medicine expenses. The topics of the interviews were job descriptions, motivations, used IT systems, prescription habits, and medicine expenses. The health center GP interviews were conducted in cooperation with Laine, for whom the motivation aspect was the focus point. The interview structure used with health center GPs is presented in Appendix A.

Pharmacist interviews

Two pharmacists were recruited based on the results from interviews with health center GPs. The GPs repeatedly mentioned that pharmacies exchange the medication for a more affordable option and play an important role. Thus, the goal of the interviews was to find out the perspective of pharmacists on medicine distribution and their daily work. Topics covered the process of selling prescription medication, opinions on physician habits, and medicine expenses for society. These interviews were done with Natunen. The interview structure is presented in Appendix B. The pharmacists were recruited through social networks.

Physician association interviews

Lastly, physician associations were interviewed. There are 50 medical specialty associations in Finland that accept members who prove they are involved in a specific specialty. The purpose of the associations is to provide training for members, support research, and be part of writing current care guidelines. In addition, there are the Finnish Medical Association and the Finnish Medical Society Duodecim, which are associations targeted at the whole physician population.

This group of interviews was selected because it was difficult to reach individual physicians without connection. Physician associations are a significant information source for physicians, among others. Physicians actively attend training sessions organized by associations. The earlier interviews also suggested that Kela is a distant bureau to physicians, so it was important to find ways to get closer to physicians. Physician associations are regularly in contact with their members. Furthermore, the interviewed physician association employees were experienced professionals in their specialty, which balances the inexperience within the earlier group of interviewees.

Invitations were sent to Duodecim, the Finnish Medical Association, Young Physician Association (*Nuorten Lääkärien Yhdistys*, NLY), and a selection of medical specialty associations mainly based on how central medicine treatment is in their field. Out of 17 invitations, there were ten responses, and seven agreed to the interviews. Details of the arranged interviews are in Table 1.

Since physician associations have practical information-sharing channels with physicians, the goal of the interviews was to find out what kind of cooperation possibilities there could be between Kela and the associations relating to the feedback service. Since most of the interviewees were physicians themselves, the interview included similar prescription habit questions as the earlier interviews. The structure of the interview is presented in Appendix C.

Table 1: Interviews

Interview groups	**Number of interviews (total 17)**
Medical students	2
Health center GPs	6
Pharmacists	2
Physician association board members	7

3.3 Data analysis

The data was analyzed using thematic analysis. Thematic analysis offers a flexible and systematic way of collecting and analyzing qualitative data (Braun and Clarke, 2006). Thematic analysis consists of five phases: familiarizing yourself with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Coding means assigning descriptive labels to pieces of data, and themes help find the connections between codes and meaning overall in the dataset.

The transcribed interviews were read repeatedly and the coding of the interviews was started immediately after the interviews. The interviews were first coded line-by-line, and then the codes were examined and combined throughout the dataset. New codes were added whenever existing codes did not match the quotes at hand. Codes were merged, split, and later organized into themes. This process was iterative, and the themes and codes were modified continuously, especially after starting a new round of interviews. The themes were reviewed against the research questions and the literature. Finally, themes were named.

The interviews were transcribed and analyzed by the researcher alone to ensure anonymity of the interviews. Qualitative data analysis software Atlas.ti was utilized throughout the coding process.

3.4 Ethical considerations

This research followed the ethical guidelines listed by Silverman (2009) to the best of the researcher's ability. These guidelines include:

- voluntary participation and the right to withdraw
- obtaining consent
- confidentiality must be preserved
- special attention is required when researching vulnerable groups

The interviewees did not have any necessities or compulsion to participate, and they were allowed to stop the interview if needed. The interviewees were not paid or otherwise compensated for their participation. The interview invitation described the purpose of the study and usage of data, and they were repeated at the beginning of the interviews. The interviewees were also asked for consent to record the interviews.

The anonymity of the interviewees was preserved by the interviewer transcribing the recordings herself, and the identifying information was excluded from this research. The contact information of the professional association interviewees was shared with Kela with the permission of the interviewees. The contact information was shared to progress the relationships between Kela and the professional associations.

During this research, individual patients' records were not accessed, or other personal medical histories or prescriptions were not examined. Since vulnerable groups were not directly studied, a research permit was not applied.

The researcher signed a non-disclosure agreement (NDA) with Kela. The NDA obligates the researcher to withhold any confidential information, including sensitive personal records, prescriptions, patient records, system architecture descriptions, and IT reports.

4 Results

In this section, the results of the interviews are presented. The results are grouped based on the themes that emerged during the data analysis process. Further, the results are categorized according to the three sub-questions. Table 2 illustrates the structure of the Results section. First, section 4.1 describes the most essential aspects of physicians' information environment related to prescribing. It is essential to understand the context of prescribing to design a feedback solution fitting the service environment.

Table 2: Structure of Results section

4.1 SQ1: Information environment related to prescribing	**4.2** SQ2: Value creation with prescription feedback service	**4.3** SQ3: Issues hindering prescription feedback service adoption
4.1.1 Motivational factors at work • Motivations • Hurry and lack of resources • Attitudes towards technology • Lack of feedback **4.1.2 Social networks as information source** • Colleagues and mentors' advice • Physician associations and professional training **4.1.3 Prescription habits** • Patient opinions • Refilling prescriptions • Redundant prescribing • Guidelines	**4.2.1 Current state of the feedback service** • Personal digital feedback • Targeted feedback letter **4.2.2 Need for reliable performance data** **4.2.3 Untapped potential of stakeholders** • Quality registers and other projects • Physician associations	**4.3.1 Communicational issues** • Misconceptions about Kela • Misconceptions about Current Care guidelines • Misunderstandings between physicians, patients and pharmacies • Misunderstandings between physicians and managers **4.3.2 Preconception barriers** • Perceptions of Kela • Medicine expenses are not discussed • Reputation of unsuccessful IT projects

Then, section 4.2 explains the current and potential value of the prescription feedback service from the physicians’ perspective. Section 4.2.3 continues to rationalize what collaboration possibilities Kela might have regarding the feedback service. Finally, section 4.3 goes through some of the barriers and issues hindering Kela from reaching the potential of the feedback service.

The interviews revealed rich and detailed data about the interviewees' motivations, opinions, and habits. It is difficult to make generalizations from the interview results, and it is not necessary, either. In this Results section, direct quotes have been included to support the authenticity of the text. To increase the understandability, some of the quotes have been modified, but the tone of the comments has been tried to maintain.

4.1 Information environment related to prescribing

4.1.1 Motivational factors at work

Motivations

The motivations of the interviewed physicians can be divided into four categories: Providing quality care for patients, developing professional skills, work community, and having an impact through work. The four categories were emphasized in different proportions, and they were interrelated. For example, it was important for one physician to develop their professional skills to provide better care for their patients.

The most often mentioned motivation was providing quality care for patients. Six physicians said they received joy in their work when they were able to improve the health of their patients' health by creating trust and helping with medical problems. For some, even encounters with patients make their day.

> “What makes work meaningful is seeing the results of my work. Seeing the effect of the care I’ve given and creating value for the patient through better health or quality of life.”

Developing professional skills was mentioned four times as a source of motivation. This is related to problem-solving and utilizing their education and information in daily work. Since the profession of physicians is changing continuously, developing professional skills is a must for physicians. Three of the interviewees mentioned directly that having an impact motivates them at work. Physicians described the feeling of succeeding when they found new ways to solve situations:

> "I do think that I take great pride in my professional development. [...] Continuous learning is a big part of every physician's work, and fortunately, I like learning and expanding my knowledge."

Even though physicians' work is independent, many talked about how their work community was a big reason they manage the difficult times at work. Further, some mentioned they did not feel connected to their colleagues, which made them feel lousy sometimes.

> "I have a great work community, and it's a big emotional resource for me. [...] We also have very understanding management and [...] it really encourages to be more active at work and take the initiative if something is bothering."

Hurry and lack of resources

Being in a hurry shadows the work of a physician, especially GPs. Six interviewees mentioned they have to work under time pressure. Furthermore, the specialized physicians from the professional associations were concerned about the number of physicians in their field and that there were not enough physicians entering the domain. The advances in medicine allow treating even more patients, but it results in a distorted patient-physician ratio. One GP even mentioned that it is impossible to have a lunch break during a workday:

> "Well, what is a challenge is that we constantly have to work under strict resources. It demands creativity when there's too many patients, too few doctors, too few nurses, little time, and even the pay could be better."

The time pressure has direct effects on prescription habits as well:

> "I have to say that if I'm on a night shift at the emergency room, the level of detail I think about the prescription is lower than a regular appointment."

Attitudes towards technology

IT is a crucial part of physicians' work. Physicians must learn at least the basics of the systems their organization uses. Three physicians said that there are many functions they just are not aware of since the systems are so illogical and difficult to use. “On top of this, most of us doctors aren’t very good with IT, it gets the worse the older the physician is”, one interviewee describes. Some organizations have designated physicians who went to the system training twice and are now IT support people for their colleagues.

Two interviewees pointed out that IT systems improve patient safety. Many actions require active input, which reduces the risk of error. In addition, systems offer interventions when they detect interactions between different medications and reminders of laboratory exams.

The physicians liked the way their different IT systems summarized information (mentioned four times) and made patient records accessible in most cases:

> “I like it that all the patient records from the same health care district are available for me. It makes information flow more continuous. [I] don’t have to search, making my work faster.”

However, the beneficial interventions do not work when the information is outdated. The outdated and lacking patients’ medication lists caused frustration. Also, the amount of information on IT systems is often overwhelming, challenging to navigate, requires a significant amount of clicks, and the systems crash. Overall, physicians consider IT systems to be a burden and slowing their work considerably:

> “I’m apologizing [to patients] all the time because I click on my computer the first ten minutes of an appointment. ”

The IT recommendations guide prescription decisions, too:

> “Sometimes there’s a lot of different options, let’s say, for example, what blood pressure medication to choose. Then I just pick something the IT system offers me.”

Lack of feedback

In general, physicians do not receive feedback on their prescription habits. The exception is specializing physicians, who are assigned mentoring physicians to offer guidance and help:

> “It varies [how much I receive feedback]. It’s not regular. It’s easier if you are specializing.”

One physician points out the difficulty of giving and receiving feedback in the physicians' profession:

> "There could be more feedback, but it's difficult. [...] The only parts others usually see are the reports and statistics of the number of patients or something. And those aren't really the key of my job."

Most often, physicians receive feedback when a mistake has been made. The feedback can come from patients, colleagues, or even Valvira (National Supervisory Authority for Welfare and Health). Due to this, physicians have learned to assume that everything is going well if no one has complained:

> "If you don't get feedback, that's good feedback."

> "Physicians love to point out others' mistakes. So, you get feedback afterward if another physician spots your mistake."

4.1.2 Social networks as information sources

Colleagues and mentors' advice

Most interviewees said it was common for them to ask for another opinion for prescribing or other decision-making, especially if they were unsure what to do. There is a "learning by doing" attitude in the physicians' profession, and consulting others when facing new challenges is common. Usually, they also received the help they were after, and they felt their colleagues were eager to help each other:

> "I often ask the opinion or help of more senior physicians. Fortunately, we have a great mentoring system at work."

However, two physicians did not conversate their prescription habits with their colleagues. These were health center GPs and this fact related to the routine nature of their work. They felt there wouldn't be much to discuss since everyone was focusing on their own work:

> "No, I don't [discuss] my prescription habits with my colleagues. I don't think anyone really does, I don't know what would be interesting in that."

For others, exchanging experiences and ideas with colleagues is a way to stay on top of new trends and to compare ideas:

> "I'm quite aware of the common habits in my specialty. We actively share information and experiences about what drugs work and so on."

The communication with colleagues continues after work. Three younger physicians mentioned they follow social media groups for doctors and like to scroll through consultations:

> "I follow different doctor groups on social media and the conversations. Sometimes I even ask for opinions. [...] I've picked up a few habits from there."

Physician associations and professional training

Physician associations function as meeting places for physicians of the same specialty. The purpose of the associations is to provide professional training and in some cases lobbying. The associations collect topics associated with the specialty and arrange supplementing training to correspond to the changes in the medical field. Here one association employee talks about arranging training:

> "We try to produce value with the trainings. We have a committee that selects the topics, and we always collect feedback. We follow actively what is going on in the medical field and pick up interesting subjects to focus on."

Five interviewees mentioned that they actively attend different professional training sessions and that it is common for physicians. Usually, employers allow allocating 1-2 days a month for attending professional events. The interviewees felt they had learned relevant skills during training. However, one interviewee reflected that often he attended training without a proper learning plan, and thus the benefits of the training were a bit weak.

Further, two interviewees talked about the role of pharmaceutical companies in professional associations. Companies sponsor events and appear in seminars. One interviewee spoke about the benefit of giving pharmaceutical companies the spotlight:

> "Most effective way to learn about new drugs is through pharmaceutical companies at training events. For example, they tell which drugs are approved in international training events."

4.1.3 Prescription habits

The results in this section are consistent with the factors gathered from the literature in section 2.1. For this reason, this section highlights only the most important aspects related to the research questions of this thesis.

Furthermore, the work and social contexts meaningfully influence the prescription habits of physicians. However, since they are already discussed in the previous section (see 4.1.1 and 4.1.2), they are not examined in depth here. During the interviews, factors such as colleague or mentor recommendations, training and education, and organizational guidelines and costs were repeatedly mentioned. Through these factors, Kela might have a chance to influence the prescription habits of physicians. This section concentrates more on the physician's own thinking process.

The most clearly emphasized factors were the diagnosis and patient characteristics, the effectiveness of the drug, and different guidelines. The price of the drug was taken into account, but primarily out of the patient's request. The interviewed physicians also recognized that the marketing efforts of pharmaceutical companies most likely have affected their decision-making, even if unconsciously. Patients' opinions were taken seriously and appreciated. Sometimes, physicians felt pressure to make a prescription to keep the patient happy. Other situational factors, such as time pressure, guided the decision-making process as well. Personal experiences and habits considerably affected decision-making, and physicians preferred familiar drugs.

It is noteworthy that these results reflect how physicians think about their prescription habits. There might be an alteration between the actions taken during a workday and what is said in an interview.

Patient opinions

Five physicians felt it was important to listen to the patients' views on deciding the prescription. Many had noticed that their patients were quite aware of different options and had opinions concerning their treatment. The physicians mainly had a neutral or positive attitude towards including patient opinions in their prescription process:

> "I always explain why I'm prescribing a drug and what that means for the patient. [...] Especially when there are different options, I discuss them with the patient."

> "Yeah, yeah, my patients have sometimes requested a specific drug. [...] If it isn't like a heavy drug, I usually am okay with it."

Four physicians had experiences when they prescribed because it was easier for the social situation. They felt they were expected to prescribe a drug even though the patient could do as well without the medication, in their professional opinion. Sometimes the patients even demanded a prescription. Here on interviewee explains the pressure:

> "It happens that physicians write a prescription [...] because it is easier. The patient feels they have received care even though the drug plays a tiny role in their healing process."

Refilling prescriptions

As described in 4.1.1, physicians have a busy schedule at work. A time-consuming task health center GPs are required to perform is refilling prescriptions. The refill requests are distributed randomly, and the GPs, most of the time, have not met the patient whose prescription they are refilling. If the prescription is for a harmless drug or it is obvious what the need for the refill is, the GPs trust the decision made by another physician and make the refill.

> "If there's something a bit weird about the request, like I'm not sure what would be the benefit of refilling or it's some hardcore stuff, I like to call the patient for a checkup. But in truth, a lot of the requests get only a glance from me because it saves me time."

Redundant prescribing

The two previously mentioned factors, patient opinions, and refilling prescriptions result in redundant prescribing. It is challenging to evaluate the true extent of redundant prescribing, but it undoubtedly repeated during these interviews. One physician talked about prescribing lotions and ibuprofen and the lack of restrictions:

> "If the patient asks for a prescription and it's not a heavy drug, then why not. Sometimes I roll my eyes, but I don't think it is forbidden anywhere."

Guidelines (Current Care)

Seven of the interviewees said that guidelines lead their prescription decision-making. Particularly the interviewees mentioned The Finnish Medical Society Duodecim's Evidence-Based Medicine Guidelines (EBMG) and Duodecim's Current Care (CC) guidelines. Both databases are used almost daily by the interviewed physicians. Some mentioned other international databases as well.

During this research, one physician worked with the CC guidelines. The general opinions of the CC among physicians are very positive, on a scale of 1-5, physicians rate the trustworthiness of the guidelines as 4,7-4,8. In general, the guidelines are followed quite well, but the controversiality of a topic can diminish the endorsement. During the interview, the reasons behind the high acceptance rate were discussed, and the interviewee had the following answer:

> "The guidelines are written together with practicing physicians, usually with the help of physician associations. This means that physician opinions are reflected in the guidelines. [...] There is no reason not to follow the guidelines since they help physicians perform their job better. Because of this, professional autonomy is not an issue."

4.2 Value creation with prescription feedback service

The purpose of this section is to evaluate the current state of the prescription feedback service, what might be the potential of it, and what kind of changes are required to make the service relevant for physicians. The topics examined in this section are:

- Current state of the prescription feedback
- Need for reliable performance data
- Untapped potential of stakeholder collaboration

4.2.1 Current state of the prescription feedback service

Personal feedback report
Most of the interviewees had not heard of the digital version of personal feedback. The ones who had heard of it had used it only a couple of times or had not used it at all. More people were familiar with the paper version, which was sent to physicians once a year. Many also wished that the personal paper feedback would be returned. Some wondered why Kela does not send links to the digital feedback via email, but the same people mentioned in a different

context that their email inbox is full, and they rarely read emails sent from email lists.

Four physicians found the data to be interesting. Some mentioned that it is a good way to summarize and examine the past year. Many remembered reading the paper feedback fondly. One physician describes the paper feedback:

> “I think it was intriguing. You could recognize when you were working at a hospital, for example, when the numbers got up. [...] In some ways, you get blind to your work. So this [feedback] gives a little indication of your direction.”

Physicians considered it to be positive that such feedback was collected and distributed. Especially they highlighted the importance of giving feedback when they described the work of other physicians. For example:

> ”Maybe because I work in a large center, I approximately know what others are doing [...]. But I think that it is crucial for physicians from smaller units to see what others are doing and reflect their own prescribing if something is surprising.”

However, the interviewees found it hard to make the feedback actionable. Plain numbers do not increase the motivation to change prescription habits, and it is not clear what kind of actions should be taken. One interviewee explained:

> “No, I don’t think I have changed my habits [based on the feedback]. Mainly it has verified my actions and shown that I’m on the same page with others. [...] Sometimes numbers have been up, but it has been most likely because of the type of patients I’ve had at the time.”

Three of the GPs stated that the data used in the feedback service does not feel relevant or relatable. A considerable part of GPs’ workday is refilling prescriptions. Often, the refilling process is a routine task, and it is not paid much attention to. The GPs do not feel responsible for the prescription decision, even though there is no distinction between refills and original prescriptions in the data. This makes the physicians think the data does not fully describe their actions. On the other hand, this issue raises wishes for more detailed feedback regarding the refills:

> "Would there have been indications that [...] at some point I should have known that some refill is unnecessary or even harmful? There's a lot of refills where I just trust that someone smarter has made this prescription."

There were altering opinions of how often the feedback should be given. One interviewee stated that spotting trends in the data would be the most interesting thing about the feedback, and thus the minimum gap between two feedbacks should be a year. Another interviewee felt the data should be updated much more often:

> "When information reaches us a year later, it's no longer relevant for managing everyday work."

Targeted feedback letter

The targeted feedback letter raised differing opinions, too. The physicians who hadn't received the letter had the most positive feelings toward the letter. It was seen as a step in the right direction and an important part of regulating prescription habits. One interviewee described the letter as follows:

> "I think sending [the targeted letter] is a really good procedure, and this should be done even more. Especially if it's presented as educational and as a reminder rather than a [negative] note. [...] Of course, it then remains for the professional to assess whether they have been in a position where they have had to use medicines more than normal or otherwise deviate from the usual [practices], or is there something wrong with their operating models."

Three of the interviewees either directly stated that they do not take the targeted letter seriously, or it could be inferred from their responses concerning the letter. Their attitude mainly was neutral or dismissive:

> "Haha, oh the feedback that comes once a year. I've gotten it twice. I don't think it has affected my actions. It feels disconnected [to my everyday work], and I don't completely agree that I would have done what the letter says."

Receiving the targeted letter was seen as a little embarrassing. The letter was called, for example, "the nanny letter". One physician thought about whether they knew anyone who had received the letter:

> “I don’t know anyone who has received the letter. Maybe no one would confess even if they received the letter.”

The physicians pondered the interval of sending the letters. They felt that getting the letter too often would be a burden. On the other hand, it is difficult to relate to the feedback if the unfavorable action happened a year or even a few months ago. One interviewee who received a targeted letter from Kela reflected the effect:

> “Maybe the delay is too long. I just don’t remember the cases that cause the alert. It should be more in real-time, even during the prescription process.”

In two cases, the targeted letter seemed to awaken very negative feelings and even offend the receiver. In these cases, the physicians stated they know their patients better, and Kela does not understand their context. They felt that on top of their very demanding job and outsider critiqued their way of performing their tasks:

> “Kela should really think about whom they send those letters to. [...] I mean, I treat patients who need stronger medication. [...] I threw the letter away on the spot. [...] I know what kind of patients I treat. But in a way, the idea [of the feedback letters] was good, but the execution was poor.”

4.2.2 Need for reliable performance data

Physicians said they do not have meaningful ways to measure and track their performance. Interviewees mentioned Kela’s personal letter as the only data source on their performance. They knew that their organization counted the number of patients and free appointments they had in a month, but none felt that those numbers gave them essential information about their actions:

> “No, I don’t have any ways to track my work. [...] I just found out last week that our health center counts the number of available time slots once a month, and that is supposed to say something about our work. [...] Maybe the management can interpret that somehow but for me, there’s no use.”

Two physicians explained that cooperation with pharmaceutical companies gives information that would not be available to them otherwise. Physicians are interested in how new drugs are adopted and used, and the companies can provide that information. However, the interviewees were critical about the legitimacy of getting the information only from companies that have their own incentives:

> "The only – well, probably not the only one but the easiest -- medicine data source is pharmaceutical companies. I always wonder whether the graphs are fully trustworthy."

Physicians would be most interested in measuring the effectiveness of their treatment. Two physicians mentioned they would be keen to see, for example, whether the referrals they issued have been necessary or have their patients take the drugs they were prescribed and with what effects. The medical field is complicated, and physicians have to make decisions to the best of their knowledge. Thus, it would be vital and motivational for physicians to gain a data-based understanding of results. A physician also brought up the financial point of view:

> "At the moment, it is somewhat a guessing game to evaluate how new practices have affected the effectiveness. [...] Getting data about the value created with the money or other resources would be the most relevant information."

Another use for collecting data would be to illuminate the structure of physicians' work, which was mentioned three times. This included the practicalities of a physician's work but also what kind of patients they treat and how. A couple of the physicians said it would be interesting to see in detail what constitutes their week:

> "It would be interesting to see how my work hours are divided [...] between different tasks. Maybe it would help me adjust my attitude and structure my day."

The evaluation of treatment practices was mentioned both in the context of examining the performance of one physician compared to the average and comparing the performance of different regions in Finland. This subject was mentioned four times. Performance information would be vital in self-regulation. On the other hand, it was not explicit what should be the comparison group while discussing the performance of individuals. Even inside the same specialty, there are variances, which makes physicians doubt whether they belong to the comparison group: differences in patients, region, physicians' expertise, and so on.

4.2.3 Untapped potential of stakeholder collaboration

There are multiple stakeholders in the healthcare field. Most of these stakeholders have the same goals about encouraging rational treatment practices, and some have interesting resources (access to physicians) or projects where Kela could co-create value. In this section, the most relevant stakeholders which emerged during the interviews are presented.

Quality registers

A quality register is a database for information on patients and the treatment results. Quality registers aim to provide organized knowledge and comparisons of different treatments (Jonsson and Pikkujämsä, 2019). There are no nationally available quality registers at the moment. However, some of the interviewees reported that they were involved in developing local or decease-specific quality registers. The physicians were seemingly excited about the possibilities the quality registers can provide:

> "With this quality register, we can evaluate our treatment results much more accurately. [...] This provides physicians crucial information, and we can treat our patient even better."

The most significant mentioned projects were a national quality register project run by THL and Duodecim's EBMEDS which is CDSS. The THL project is aimed to provide tools for monitoring health care services and advancing research. Duodecim's CDSS is mainly a decision support system but also offers preventive screening. For example, the system was used during the COVID-19 pandemic to invite people with predisposing conditions to get vaccinated.

Physician associations

The key function of the associations is to provide training for their members. The associations have from two to ten training events a year, even though the COVID-19 pandemic has reduced the opportunities to organize events. The professional associations also reported the training sessions to be their most effective way to contact their members. The associations also have an email list, and some have a magazine.

Overall, the professional associations interviewed were open-minded about collaboration with Kela. None of the associations had currently contact with Kela. Some were even excited about the better communication shared projects could enable. Especially the training events the associations organize were seen as a good channel for Kela to contact members of associations:

> "Absolutely, Kela would be welcome at our events. [...] The more collaboration between different parties, the better, and Kela is a mystery for many at the moment."

On the other hand, one of the interviewees was skeptic of the content Kela would produce:

> "Kela should consider what the experience is like for physicians and respect our time. I've had experiences with other bureaus that extend a 10-minute topic into a whole hour."

Other forms of collaboration were difficult to comment on. The interviewer briefly asked if they had wishes or needs for Kela's medicine data and what kind of indication items would be interesting. The interviewees were curious mostly about examining trends and introducing new drugs by region. Understanding a detailed requirements list for the associations would need a more focused interview round. The interviewees were open to talking more about their involvement in planning the targeted feedback letters, but this was not discussed in depth.

Two of the professional associations said they had quite a close relationship with Kela in the past. The relationship was based on individual personal relationships between the association and Kela employees. The communication between Kela and associations faded once the Kela employees had changed their workplace. One interviewee described the benefits of getting customized information and communication from Kela:

> "Actually, when the person still worked at Kela, we wrote an article about the use of medicines in our newsletter, I think."

Stakeholder analysis

This research followed the stakeholder identification process (described in 2.3.1) suggested by Mantzana et al. (2007):

1. Static phase: Stakeholder identification process starts with choosing a definition for stakeholders. Here was used "any human or organization that provides, controls, supports, or accepts a healthcare service" provided by Mantzana et al.
2. In the dynamic phase, the above definition was used to detect stakeholders through interviews. The physician associations were

explicitly asked about their stakeholders while interviewing, while the physicians described their key stakeholders without prompting. The found stakeholders are summarized in Figure 4 in Discussion.

4.3 Issues hindering adoption of prescription feedback service

Multiple communication and preconception issues might prove to stand in the way of integrating the prescription feedback service into the lives of physicians. Most stakeholders tend to think that the responsibility of medicine expense management belongs to someone else, and the responsibility moves in a loop. The importance of effective communication practices is highlighted. Further, this section shows factors which might reduce the motivation of physicians to start using the prescription feedback service, such as the unflattering brand of Kela, unfamiliar topic of medicine expenses, and bad reputation of failing IT systems.

4.3.1 Communication issues

This section provides examples of where communication disconnections have happened between different stakeholders. It is safe to assume that these are not the only misunderstandings but only the ones that emerged during interviews. As a disclaimer, it is not realistic to think it would be possible to tackle all miscommunications. During the interviews, there was a general trust toward other stakeholders and the effectiveness of communication channels. For example, this quote describes the attitudes well:

> “I trust that if there’s a big change, someone lets me know. I don’t have to follow what’s happening [with reimbursement statuses]. But actually, now that I think about it, maybe there’s an email list where all the information is updated. Well, I don’t follow it if there is one.”

Misconceptions about Kela
Three interviewees were frustrated with Kela because of the confusing ways of changing the reimbursement statuses and not communicating about them. However, Kela is the executor of the reimbursements, and Hila makes the decisions on the reimbursements.

> “Kela makes us [physicians] look bad with their habit of arbitrarily changing the reimbursement. I wish they let us know.”

In addition, some physicians seem to think that Kela actively monitors medicine expenses or irrational prescribing. This is not the case, Kela does not monitor this type of data. The misconception is understandable since medicine expenses is not a thing that physicians actively follow, they do not evaluate the role of Kela in the context. This misunderstanding, combined with the idea that “no feedback is good feedback” (see 4.1.1), is for physicians to assume they are performing well with the expenses their work creates.

Misconceptions about Current Care guidelines

All the physicians said the Current Care (CC) guidelines, Terveysportti, and other organizational and international guidelines significantly guide their prescription habits. The CC guidelines are written by the Finnish Medical Society Duodecim with practicing physicians to offer tools for rational prescribing. The physicians trust CC guidelines and feel that they are generally a good indication of how a patient should be treated. They thought that following the guidelines is a good guarantee that their treatment was sensible and cost-effective. However, two critical about national guidelines since they are not always up to date compared to the latest advancements in the medical field.

> “Terveysportti is great, you can check the descriptions of deceases, and there’s a medicine database. [...] At times of uncertainty, everything is available for a small effort.”

A few physicians assumed that forming the current care guidelines automatically included cost-effectiveness considerations. When asked about the expenses of care, one interviewee said:

> “I prescribe as instructed in the guidelines, so I don’t really think about the expenses besides that because the guidelines got that covered.”

Duodecim’s CC guidelines are undergoing a reform aiming to consider the financial aspects. This means that Duodecim pays attention to new guidelines, re-evaluates existing ones, and adjusts them to be more sustainable financially. At the moment of the interview, the current care guidelines also included guidelines that were written without information about the expenses. The reform is challenging since it is difficult to extract reliable information on the cost-effectiveness of drugs. The pharmaceutical companies do some research, but the drug is usually compared to old drugs or even a placebo.

Misunderstandings between physicians, patients, and pharmacies
Physicians trust that the prescribed drug is exchanged for a cheaper option at pharmacies. For this reason, physicians do not have to pay attention to which exact medication they prescribe.

However, in the interviews with the pharmacist emerged that the prescriptions are not always exchanged. Sometimes it was because the price difference was small between the prescribed drug and the cheaper option. Usually, when a drug has multiple substitutes on the market, the prices are lower and the price differences might be smaller. Not all drugs have a substitute on the market, or they only have one, making the prices higher. One pharmacists talked about their habits regarding drug exchange:

> "I don't know anyone who would always ask [does the customer want to exchange the drug.] The difference is so small sometimes. Of course, if the difference is dozens of euros, I recommend choosing the cheaper option."

Furthermore, the patient occasionally does not want to exchange the drug for a cheaper option because they think the physician meant to prescribe that specific drug for a reason. For this reason, the pharmacists hoped that the prescriptions would be made for general substances. The patient does not always understand the somewhat randomness of prescribing, that that the drug exchange is possible for drugs with similar effects:

> "It'd be great if physicians prescribed the cheapest drug... Or based on the effective substance. Sometimes the patient doesn't believe that there's no harm in exchanging the drug."

Another phenomenon that pharmacists encounter is that people afraid to go to a physician's appointment. Then these people seek help from pharmacies and explain that they do not want to bother a physician with their symptoms. Then the health problems pile up, which is a problem the physicians reported as well. Here one pharmacist explains the situation from their point of view:

> "It's really typical that a client had an experience with a physician where the client was left with a feeling the appointment was unnecessary. And then they think that every pain is the same, and

> then they don’t want to see a physician and ask a pharmacy what should I do with these wounds that haven’t closed for a month.”

Misunderstandings between physicians and managers

The comparison of the Aalto Thesis team discoveries revealed disconnections inside organizations, too. Natunen interviewed managing physicians from various medical organizations, and they believed that their staff paid attention to medicine expenses. However, in the interviews conducted for this research it has been apparent that physicians do not focus on the expenses of prescribing (see 4.3.2).

4.3.2 Preconception barriers

Perceptions of Kela

The interviewees described Kela mainly as a distant bureau. The premise was that the attitude towards Kela is more negative than positive. One interviewee had a neutral opinion of Kela, and ”my perception [of Kela] is not as bad as generally people have”. The perception of Kela varied from negative to neutral. However, there are also good experiences related to Kela. One interviewee described their relationship with Kela:

> “I think most physicians have a love-hate relationship with Kela. [...] There are situations when I know that the patient will die if the medicine reimbursement application is not approved, but the patient is not inside the common criteria for reimbursement. [...] On the other hand, sometimes Kela surprises positively when a chief physician from Kela calls and [...] promises to fix the reimbursement guidelines for that particular case.”

A topic that was repeated during the interviews was the communication difficulties and information barriers with Kela. Two interviewees mentioned feeling they did not have existing communication channels with Kela, and they felt that information was difficult to find from Kela’s website: “You are in a deep jungle when you try to navigate on Kela’s website, so it’s a challenge if you want to find the reimbursement information”. The communication challenges also manifested when physicians talked about reimbursement applications and other statements they conducted for patients:

> “Well, it’s an unbearable situation when we [physicians] make statements on behalf of the patient, and the [decision]

> information never reaches us back. Then the patient has to tell us whether the application was approved. And no one knows why [the application was declined].”

In three cases, the interviewees wanted to share their frustrations about Kela, even though the frustrations did not relate directly to the interview topics. This implies that the physicians lack proper feedback channels (or are not aware of such channels) and that there is some friction toward Kela. For example, one interviewee talked about how difficult it is to reach Kela through official phone lines.

Medicine expenses are not discussed

Only one interviewee listed the drug's price as an important factor on their own. When they were explicitly asked about the price, they accepted that it had a moderate effect. Mostly it was in the context of their patient having difficulties affording medication, and the patient started the conversation. In addition, four physicians did not feel that thinking about the price was necessary since pharmacies are required to substitute generic medicine for the least expensive option:

> “The price affects to some extent. If the patient doesn’t have the option of paying for expensive drugs. [...] But in the end, it doesn’t really matter which specific drug I choose because pharmacies exchange it to a cheaper option.”

The reimbursement status was important, especially if physicians were prescribing an expensive drug such as an inhalable drug. The difficulty of knowing and finding out the reimbursement status was a source of irritation for the physicians. Many wished that, for example, Kela would communicate more actively about the changes made in the reimbursement statuses. It is sometimes crucial for the health or staying alive of the patient that the reimbursement is available.

> “It would be important to know the reimbursement status of drugs. It’s sometimes quite difficult to find out. There are sometimes expensive drugs, or the patient has financial constraints.”

Three reported that their organization had affected their prescription decisions. Physicians mentioned that expenses were discussed at an organizational level by their managers. This did not seem to have a large effect, but some organizations had a limited drug supply and certain guidelines for treating specific conditions.

> "Of course, hospitals follow budgets. So, at times it affects my decisions. [...] The best for the organization is if someone else pays for the medicine."

Medicine expenses for the society are not a general topic of discussion among physicians. There were a couple of exceptions, but the expense discussion was dependent on individuals or small work communities as opposed to having the discussion throughout the medical profession. One interviewee said that the expense discussion appears once in a while:

> "Money is tight, so the conversation goes in cycles, it pops up and then is forgotten. The Finnish Medical Journal has published some articles, and I've seen emails about new reimbursement statuses [...]. Sure, it could be discussed more, especially how to save money because I bet there are a lot of redundant actions that could be cut."

Two said that they lack the understanding and tools to act on controlling medicine expenses. The general attitude toward expense management was positive, and there was a clear interest to learn more. One interviewee explained that they understand the need for physicians to be active and participate in cutting expenses, but it is difficult to identify the opportunities to make a difference:

> "We [physicians] affect how public funds are used, but that's not a subject taught at school. [...] I think about expenses quite a lot, but especially medicine expenses is an unfamiliar topic, and I don't know what my possibilities are to influence."

Despite the lack of general discussion of medicine expenses, five of the physicians perceived the role of physicians to be significant:

> "Physicians have a major role in reducing medicine expenses. As the saying goes physician's pen is the most expensive instrument in healthcare. For example, if physicians prescribed more biosimilars [instead of biological drugs], the effect would be massive."

On the other hand, one interviewee also questioned whether expense management is included in the physician's job description. The interviewee thought the responsibility should be on the shoulders of someone else. They explained that they have to consider so many medical aspects to perform their job well that adding the expense discussion on top of that can be too much:

> "Then comes the question of whether it's even a physician's job [...]. I think I have enough on my plate when I have to consider what drug, how much, for whom and when."

Reputation of unsuccessful IT projects

The interviewed physicians had experiences of different IT projects where the software implementation has been weak. "We [physicians] are always someone's guineapigs and have to suffer from all kinds of arts and crafts projects", as one interviewee said. For this reason, among others, another interviewee urges Kela to evaluate the rationale behind the developing the prescription feedback service:

> "It comes down to motivating the usage of the system. Why should we use it, what is the benefit for us?"

One interviewee was critical about collecting data without an apparent reason for utilizing the data:

> "Something like the number of patients or referrals would be easy to track, but I don't see how that would be useful. The usefulness would be the thing I would be interested in. [...] Collecting data just for the sake of data is not relevant for me."

5 Discussion

5.1 Physicians' information environment regarding prescriptions

When physicians were asked about their work, the lack of resources, especially time, was one of the first things the physicians mentioned. There are not enough staff, and money is tight. A big part of physicians' work is performing under pressure created from multiple directions. In addition to organizational demands, physicians need to match the expectations of their patients and society. Due to the time pressure, physicians sometimes cut corners, for example renewing prescriptions on loose grounds or making a new prescription because it is sometimes easier than not prescribing.

Currently, physicians do not have good opportunities to collect feedback or measure their performance. These are considered unfortunate things. Especially young professionals who feel uncertain about performing their job wish for more guidance in their decision-making.

The quality of IT systems burdens the workday of a physician. Even though IT systems summarize information and make it easier to search for information, the implication is often inadequate. The IT systems are difficult to use, they crash, they are illogical, and no one knows how to use all their features. For example, Apotti was supposed to offer possibilities for measurements and statistics, but many have been disappointed by the reality.

Physicians' profession is constantly changing due to innovations in the healthcare field, and thus physicians are required to educate themselves continuously about new medications and treatments. Even though it is challenging, physicians take pride in keeping up with the change, and professional development is a source of motivation for physicians. Other motivations for physicians are providing their patients with quality care and working with a supportive work community, which also increases the will to update physicians' expertise.

The learning process reflects the values of physicians. Learning happens mostly by doing, and challenging patient cases make physicians spend their free time looking for better answers. Colleagues and mentors constitute a significant source of new information. Most physicians regularly attend different seminars and professional training and find them a good source for the latest information. For example, professional associations arrange these events, and they are popular among their members. Also, most physicians in Finland belong to at least one physician association.

All in all, physicians' work is a complex profession and the prescription process is affected by external factors on top of the medical components. In Figure 4, the different stakeholders of physicians' profession are illustrated in the different layers of the healthcare environment. All stakeholders can have different roles in physicians' work depending on the situation. For example, Kela can be "a friend or a foe" based on how the interaction goes. These stakeholders influence physicians' information environment and offer support, control, and demands for physicians.

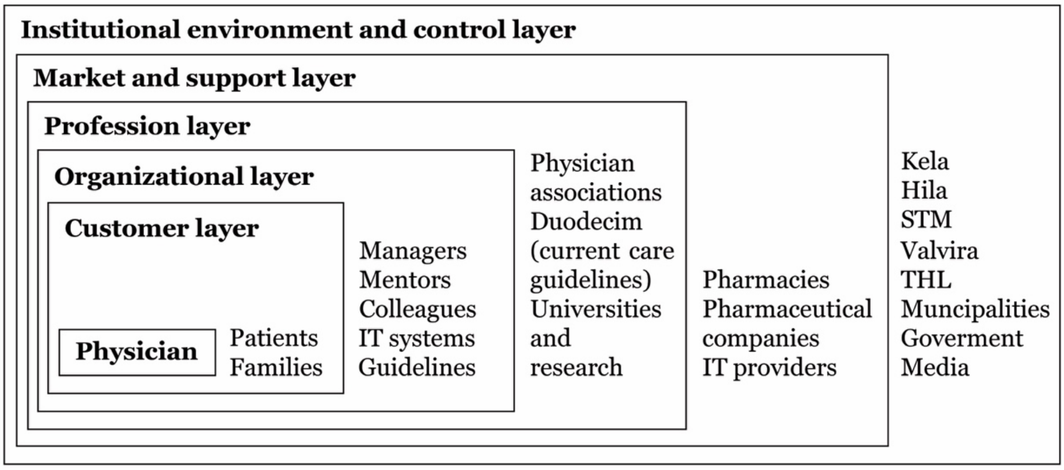

Figure 4: Stakeholders of physicians.

5.2 Value of the prescription feedback service for physicians

At the moment, the value of the prescription feedback service, especially the personal feedback report, for physicians is relatively minimal. The knowledge the service provides is restricted by the ability of the physicians to interpret the numbers since the report does not support processing of the data. The service does not explain the meaning behind numbers. For most individual physicians, the cost of their prescriptions or even the number of prescriptions is not a relevant metric for evaluating their performance. For these reasons, the data remains in the “nice to know” category instead of creating actual value or triggering changes in their actions. Figure 5 presents the customer journey map of the personal feedback report. The journey map summarizes the pain points of the current service.

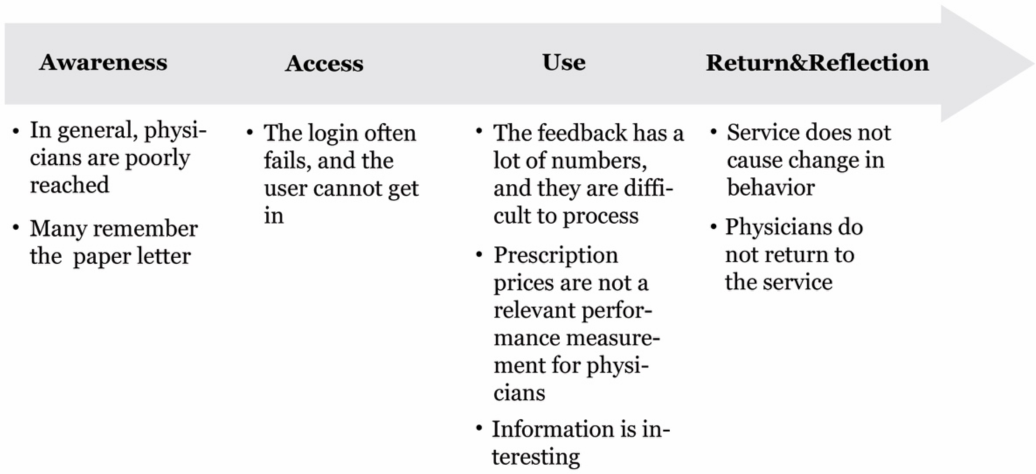

Figure 5: Customer journey map of the personal feedback report.

The main problem of the feedback service is that it either confirms physician’s actions if the numbers look the same as the comparison groups, or it is effortless to explain why the numbers are not applicable to the physician’s situation. For example, a physician can think that the prescription renewals distort the numbers or that they simply treat very different types of patients than others. The service does not offer enough arguments for the physician to reflect on their actions and dig deeper into the data. The service should strive to challenge physicians to change their behavior and also explain why and how they should make the change.

However, physicians have a clear need for ways to track their work, and many are interested in understanding what constitutes their work. The service has potential in summarizing physicians’ work and thus making it easier for physicians to analyze their work and compare their performance to other physicians in the same field. Many mentioned it would be interesting to see how new drugs have been introduced in different regions and what the average physician in Finland is doing. Physicians could make more informed decisions while prescribing when offered reliable information about their actions.

This thesis emphasizes the role of stakeholders in creating value with the prescription feedback service. Since there are identified shortcomings in the service, the weaknesses could be compensated with the help of physician associations. The idea is that through physician associations that already have established relationships with their members, Kela could reach individual physicians better. The benefits of collaboration for Kela would be twofold: physician associations function as marketing channels and co-designers for the content of the prescription feedback service.

During the interviews, other potentially interesting stakeholders surfaced. Duodecim is developing a clinical decision support system called EBMEDS, which allows interventions at the time of decision-making. Also, there are multiple quality register projects that collect information on the effectiveness of provided care. Most notably, THL is developing a national quality register, but there are also specialty and disease-specific registers, such as diabetes registers. It is worth looking into these projects and mapping collaboration possibilities because they answer the problem of delayed feedback and provide meaningful performance measurements.

In order to make the service relevant for physicians, the following changes need to be made:

Content
Goal: Physician understands the big picture of their prescribing habits. The service offers improvement suggestions and arguments based on the data. The service challenges physicians to reflect on their behavior and not to dismiss the feedback.
Features:

- Analyzed content. What do the numbers mean?
    - Filters that allow analyzing topics of interest.
    - Trends in own behavior, trends in Finland, top10 lists.
- Suggestions. What needs to change, how to change it and why.
- Comparison to a relevant group.
    - Based on specialty, region, level of expertise, work hours.
- Themes physicians are interested in:
    - Summaries of their work.
    - Examining their treatment practices and do they match guidelines.

    - Examining the effectiveness of their treatment and the results in patients' health.
    - Medicine information, such as how new medications have been used around Finland.
- Home page needs to give information to the physician at first glance to keep the physician interested.

Format

- The paper version of the feedback was well liked and got the attention of physicians. A paper letter with a summary of prescription feedback and a request to visit the digital service should be sent to physicians once or twice a year.
- The data in the service needs to be updated more frequently, for exampl,e quarterly.
- The tone of the feedback has to be respectful and claims well argumented.
- Physicians need to be able to comment on the feedback and discuss it with Kela. When physicians feel there is a dialogue with the source of the feedback, it is not a threat to their autonomy.

5.3 Current obstacles to adopting the prescription feedback service

This research has identified obstacles that might make it more difficult for Kela to reach physicians and motivate the purpose of the prescription feedback service. This section presents the obstacles that were discovered during the analysis, but most likely there are more of them. Realistically, it is not possible to overcome all of the obstacles, but their existence is good to acknowledge while designing the feedback service and marketing efforts.

As mentioned earlier, the service is unknown to physicians. Physicians are more familiar with the old paper personal letter and the targeted letter, but physicians are unaware of the digital version. Further, the targeted feedback letter is often laughed at or otherwise ridiculed. Kela does not have the best reputation, either. Kela is seen as a big, boring bureau, and the thought of contact with Kela makes many people a bit nervous. These brand issues hinder the will to use the service. Since Kela is a large organization with various functions, there is confusion around what different responsibilities Kela has and what services Kela offers. Since the whole healthcare environment is complex, there is confusion even between different bureaus about how responsibilities are divided.

The societal expense perspective of healthcare is not a topic of interest for many individual physicians. The discussion around the topic is minimal. Some physicians recalled the media writing about the subject or their manager speaking about the expenses for their organization. Even if physicians were interested in expense management, they were unsure how that should be reflected in their daily work. Physicians lack the proper knowledge or tools to be more conscious about expenses while prescribing or providing other types of treatments.

Since the subject of medicine expenses from the societal point of view is not generally discussed among physicians, it can be challenging to motivate the use of the feedback service if the number and cost of prescriptions are the only selling point. Why should individual physicians care? Even when the physicians recognize the role of physicians in the expense paradigm and say, "physician's pen is the most expensive instrument in healthcare", it is a different thing to take actual steps in the direction of change. Physicians are already occupied with multiple issues, it can feel overwhelming to take responsibility for yet another thing.

The poor attitudes towards IT most likely diminish the eagerness of physicians to adopt any more IT services. Because physicians are not required to use the prescription feedback service, they most likely do not want to spend time to learn using it. Additionally, the use of the service would happen outside of work since the workday of a physician is full of the necessities of the job.

In addition, obstacles to the development of the feedback service come from legal issues. The usage of data in the healthcare field is highly regulated. The possibilities for Kela to, for example, collaborate with other data providers are limited. Making such quality and effectiveness analysis which physicians most want, is tricky legally.

5.4 Suggestion for enchasing the adoption and use of the prescription feedback service

Based on the research and analysis of it, this research suggests the following for Kela:

1. Implementing the feedback improvements listed in section 5.2 and using them as a starting point for future development.
2. Continuing collaboration with physician association and arranging lectures at their events.
3. Utilizing the connections with physician associations to reach physicians and facilitating co-design sessions to define detailed requirements of the feedback service.

The purpose of all these actions is to make the value of the feedback service more apparent for physicians and motivate them to use the service when they are able to be part of the value creation process. The collaboration with physician associations allows Kela to reach physicians and understand their needs even better. The design activities with physicians help to create a shared understanding of short and long-term goals.

The adjustments found in the answer for SQ2 need to be made to show physicians the value of the service. To better understand how those changes should be made and to overcome the obstacles listed above, this thesis suggests a collaboration with physician associations. As explained in section 2.3, stakeholder engagement has positively resulted in increasing IT adoption and improving prescription habits. Since this research has already contacted physician associations and shown interest in collaboration with Kela, the barrier of first contact is lowered. Hopefully, the collaboration sparks more established partnership structures, most importantly named contact people.

A natural form of collaboration would be lectures at association events. The associations already organize professional training sessions and seminars, and the associations were keen to have Kela as a lecturer at their events. Kela had also planned to lecture at the Finnish Medical Convention. The lectures function as educational outreach visits, which have been found to be effective in changing physicians' prescription habits (see section 2.3). Because Kela already conducts audit and feedback through the feedback letter, the combination of the two might lead to more extensive results, as Nilsson et al. (2001) suggest. The lectures are also a way for Kela to improve their brand

and make Kela and their services more desirable. Here are summarized guidelines for the educational outreach visits:

- The lectures can be used for both raising awareness of the prescription feedback service and its importance and, in combination with the targeted letters, to point out specific prescription behaviors.
- These events are an opportunity for Kela to tackle some of the barriers presented section 5.3. Kela should aim to diminish preconceptions about Kela and to explain what services Kela offers and what are Kela's responsibilities. The lectures are also an opportunity to boost the image of Kela and make the brand more approachable.
- The lectures should be interactive and allow discussion. The physicians interviewed for this research had an apparent need to give feedback on Kela's actions and have their opinions heard. Further, interactive educational outreach visits have had better results (see 2.1.4) and the possibility to comment on given feedback makes it easier for physicians to accept (see 2.1.3).
- The better the lecture's content fits the context of the attending physicians, the better the physicians stay focused and interested. Since the training happens at a specialty event, Kela should explain how the topic of the lecture fits the context of that specialty.
- The effect of the lectures can be expanded by handing out learning material, especially if the lecture is about targeting problematic prescribing. Multiple training sessions would further advance the effect, but it probably would be difficult to arrange. At least a reminder of the topic could be sent to physicians after a few weeks from attending the training.
- Collecting feedback or other success metrics after the lectures.

Another form of collaboration recommended by this thesis is using design practices with the physician associations, first to identify detailed requirements for the feedback given to physicians. Using co-design practices with professional associations have potentially three major advantage points. First, the associations are more likely to collaborate with Kela than individual physicians without any ties to Kela. Second, this would mean Kela would better understand the needs and wants of physicians, thus creating together with physicians solutions suited for their context, making the adoption of the solution easier. Third, being closer to physicians makes it easier for Kela to decrease the barriers listed in 4.3, such as lack of conversation about medicine expenses for society and preconceptions about Kela. Co-design could even lead to new and innovative projects, which Kela cannot even imagine. It is also beneficial to facilitate a conversation with different medical fields since physicians treating cancer patients and physicians working at health centers might have very different needs.

Figure 6 illustrates the goal of the prescription feedback service and how the above-mentioned suggestions contribute to an improved service. As Almqvist (2019) proposes, a design hand-off should include a roadmap that is a customer journey map combined with improvement steps. It summarized the most essential aspects of future development work.

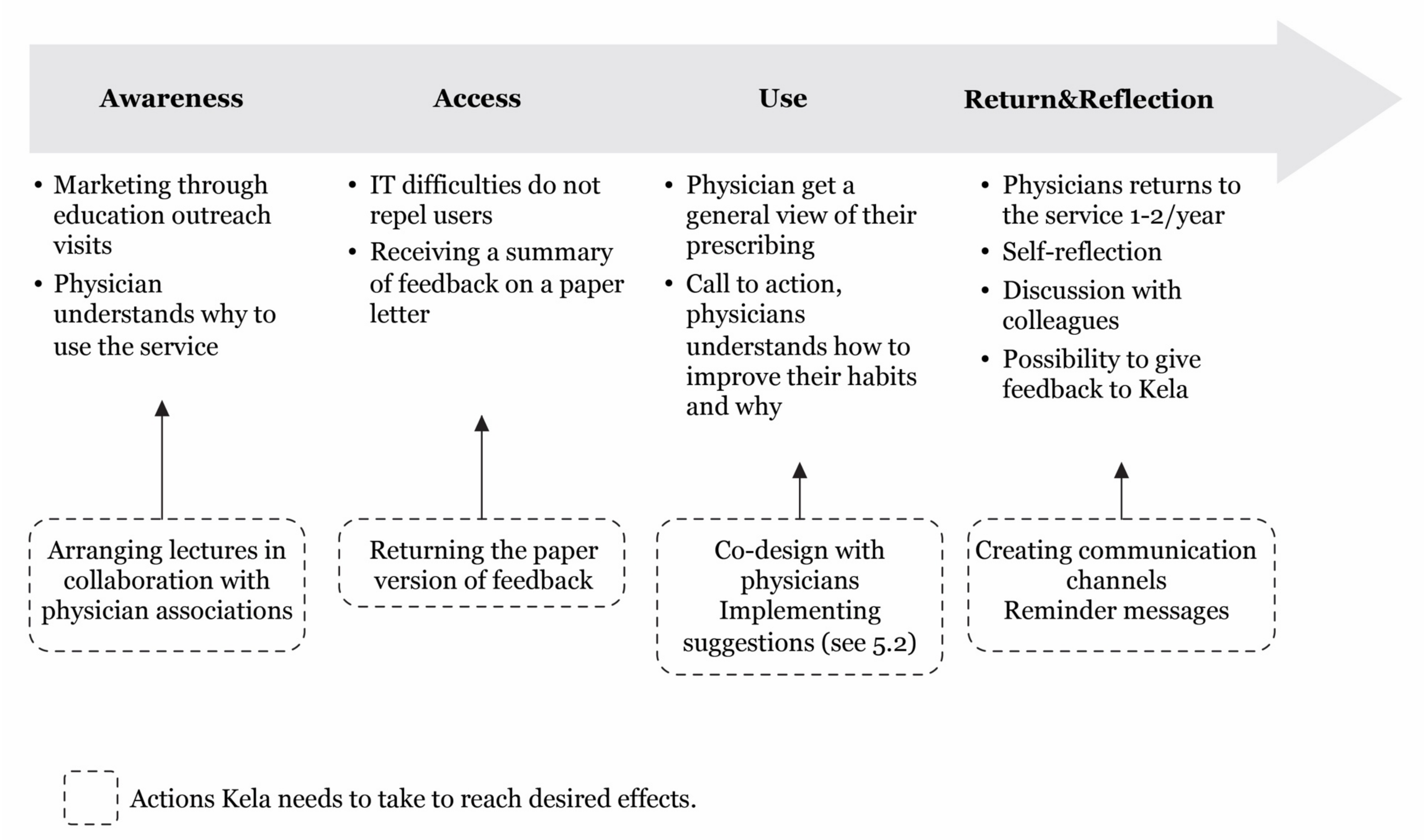

Figure 6: Roadmap of the prescription feedback service improvements.

6 Conclusion

6.1 Contribution

This thesis offers Kela practical guidelines and next steps for developing the prescription feedback service. Through the analysis of the experiences of physicians and physician associations, improvement targets are identified. These include, for example, offering more analyzed content. Based on the comparison of literature and the interviews, suggestions are made to match the improvement needs. The discussion provides singular propositions such as updating the content of the service more often and assembling top10 lists of most prescribed drugs. Hopefully, this thesis also encourages Kela to experiment with collaboration possibilities with physician associations. The benefits of co-design practices and educational outreach visits have been underlined.

Together with the Aalto Thesis team, the three theses form together a comprehensive starting point for promoting the prescription feedback service from multiple perspectives. In addition to this thesis about design practices and physician association collaboration, Natunen's thesis offers innovative ways for Kela to distribute the prescription feedback to physician managers, and Laine designed a captivating poster series to raise awareness of the prescription feedback service.

This thesis contributes to the larger societal discussion of medicine expense reduction as the development of the prescription feedback service was listed as one objective for the pharmacotherapy action plan for 2022 (Ministry of Social Affairs and Health, 2018c). Even though there is still work to be done, the first steps towards meaningful prescription feedback and rational prescribing have been taken.

6.2 Research evaluation and limitations

This thesis succeeded in answering the set of research questions. The aim was to provide Kela with improvement suggestions, and that goal has been met. This thesis has deepened user understanding, displayed the larger context around the service, and found new marketing channels. Also, the results of this research have corresponded to the literature, and there have not been contractions. It can be assumed that the conclusions of the research are reliable. This research adds to the discoveries Kela made when the personal feedback letter was first sent in 1997 (Lahnajärvi, Klaukka and Martikainen, 1997). The letter raised similar opinions among physicians back then, and even physician associations' training events were suggested as a source for additional information.

Even though this thesis emphasizes the importance of co-creation, the analysis and suggestions were made mainly by the researcher alone. Kela nor physicians were included in the drafting of improvement solutions for this thesis. The conclusions of this research are based on the researcher's interpretations, and further validation of e.g. content of educational visits might be needed. Also, it is good to notice that interviews bring out only what the interviewees are willing to tell and it might be favorable to show interest in medicine expense reduction.

Due to the limited time and resources of a thesis, this research concentrated only on a narrow part of the topic. The interviews exhibit only a small group of physicians, and the association interviews partook one person per organization. Moreover, this research did not participate many other stakeholders of the healthcare context, most notably patients. Actors such as Fimea and Valvira were considered for the interviews, but they were left out to keep the research concise. These stakeholders might be interesting to participate in the next steps of the development process.

Even though the researcher was not an employee of Kela nor a physician, the topic of the thesis raises opinions. To the best of the researcher's ability, objectivity was maintained during interviews and analysis. However, the views and background of the researcher may have influenced the course of the research, for example the interpretation of interview answers.

6.3 Further research

There is a need for more detailed research on what features or filters the feedback service needs from the physician's perspective. For this purpose, co-design workshops with physicians might be an effective way to gather information and create value with the users. Further, it is important to understand what means would motivate physicians to pay attention to medicine expenses and what kind of marketing is effective. Based on this research, design practices as even more established research methods could offer Kela ways to extend the conversation with physicians and stakeholders since design can be used as a continuous knowledge building tool. Most likely, the development process of the feedback system will carry on and iterate for years since the project is related to a large societal theme. For this reason, it is vital to create sustainable communication and collaboration structures and continue knowledge sharing actively.

As section 6.2 explained, this thesis focused only on a narrow part of the stakeholder map. There are still left many possible collaboration opportunities. The different quality registers presented in section 4.2.3 might offer exciting opportunities for impact. Collaboration and influencing with different IT providers could be productive since IT has potential to influence physicians' prescribing significantly (see 2.1.5). Further, it has been evident that patients have a strong influence on physicians' decision-making, taking notice of their opinions can be worthwhile. An interesting perspective is that patients probably want the best treatment available, and the cost created for society is not more important than getting better, and how this shapes physicians' decision-making.

Another question this research raised was why the targeted feedback letter about opioid prescribing was so effective. Based on the answers in the interviews, physicians considered it to be mostly annoying. However, the letter led to a reduction in opioid prescribing. It would be important for Kela to understand what made it so effective to repeat the results with other topics.

Lastly, this thesis has commented very little on what other ways there might be to reduce medicine costs with the help of physicians. Most of the interviewed physicians admitted they occasionally prescribed drugs even if there was no medical need to make a prescription. This was commonly caused by time pressure, patient expectations, or lack of knowledge while refilling a prescription. It would be relevant on a larger societal scale to examine how redundant prescribing could be diminished and replaced with promoting healthier habits.

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Appendix A: Interview structure for health center general practitioners

Introduction

- Interviewers were introduced, the aim of the interview and the study was presented, what themes were going to be discussed
- The interviewee was explained how the interview results would be used and asked for permission to record

Background information

- Where do you work?
- What are your responsibilities?
- What did you do at work yesterday?
    - Was it a typical day?

Motivations

- What makes your job interesting?
- What motivates you in your work?
- Does your job have unpleasant sides?
    - What are those?
- What is a good physician like? What about a bad physician?

IT systems

- What IT systems do you use at work?
- On a scale of 1-5, how difficult it is to use them?
    - Why?
- How does using them affect your work?
- When have you last started to use a new IT system?
    - What was it?
    - How did it go?
    - What kind of training or other support did you receive?
- Where do you search for information?

Feedback

- Do you receive feedback on your work?
    - What kind of feedback?
- Do you think feedback is/would be useful?
    - Why?
- Do you track your work?
    - How/Why not?

- Does your employer use metrics to evaluate performance?
- What would you like to measure about your work?
- Would you like to see how you perform compared to other physicians?

Training and learning

- When is the last time you have educated yourself about a work related matter?
- Does your employer offer training?
- Have you used your personal time for learning?
- When has new information changed your work habits?
    - Why and how/Why not?

Medicine expenses

- What factors affect your prescription decision-making?
- Where do you get information related to medications?
- Do you pay attention to the price of medicine?
    - Has the price affected your decision-making?
- Are medicine expenses discussed at your work place?
- Have you noticed the topic somewhere else?
- How could physicians made to be more conscious of medicine expenses?
- How could physicians participate in reducing medicine expenses?
    - Is there issues related to this project?

Kela

- What is your perception of Kela?
- What you received prescription feedback from Kela?
    - What did you think about it?
    - Have you visited the digital version of it?

Appendix B: Interview structure for pharmacists

Introduction

- Interviewers were introduced, the aim of the interview and the study was presented, what themes were going to be discussed
- The interviewee was explained how the interview results would be used and asked for permission to record

Background information

- Where do you work?
- What are your responsibilities?

Distributing medicine

- Please describe the process of distributing drugs
- What IT systems do you use relating to prescriptions and drugs?
- Does your pharmacy follow distribution of drugs?
- Do you see any statistics about your work or drug distribution in general?
- Do you recommend a cheaper option to your customer?
    - Does the customer accept the exchange of drug?
- What kind of guidelines are there for drug exchange?
    - Laws?
    - Pharmacy specific?
    - Is the exchange followed somehow?
    - How well are the guidelines followed?

Connection to the prescriber

- How detailed information about the diagnosis or the patient does the prescription contain?
- Are you in contact with the prescriber?
    - What is usually the reason for contact?
- Have you ever wondered about the need or correctness of a prescription?
- What is the communication like between pharmacies and health centers or other healthcare units?
- How familiar are you with physicians' prescribing process?
    - What factors while making a prescription?
- What should physicians pay more attention to while prescribing or renewing prescriptions?

Communication between Kela and pharmacies

- Do you receive information from Kela?
    - On what kind of topics?
    - What did you think about it?
- Is the cooperation between pharmacies and Kela functional?
- What other stakeholders do pharmacies have?

Expenses for the society

- Have you heard of rational pharmacotherapy? Nationally provided medical treatment that is effective, safe, cost-effective, equal, and of high quality.
    - How does this show at your workplace?
    - How well does rational pharmacotherapy actualize in general?
- Have you noticed the topic of medicine expenses for society being discussed somewhere?
    - Where was it, and what was the discussion like?
- Who should have responsibility for medicine expenses?

Appendix C: Interview structure for physician associations

Introduction

- Interviewers were introduced, the aim of the interview and the study was presented, what themes were going to be discussed
- The interviewee was explained how the interview results would be used and asked for permission to record

Background information

- Where do you work?
- What are your responsibilities?
- What is your role in your association?

Association

- Please describe the functions of the association.
- What kind of services do you provide for your members?
- How do you interact with your members?
- What are your training events like?
    - How do you decide on the content of the trainings?
- Whom does the association cooperate with?
    - Is the cooperation functional?
- What kind of challenges does your association or specialty face currently?
- Does the association follow the trends and development of the specialty?

Prescribing medicine

- How large is the scale of different medications in your specialty?
- How often do the guidelines and recommendations change?
    - How do you keep up with the change?
- What factors affect your prescribing decision?
    - Where do you search for information?
- Do you know the price of the drug you are prescribing?
    - Does the price affect your decision-making?
- Do you follow your prescribing habits?
    - Does your organization follow prescribing habits?
- Would it be useful or interesting to follow prescribing habits?
    - Why?
    - What would be interesting in that?

Kela and the feedback service

- Have you received prescription feedback from Kela?
  - What did you think about it?
  - Have you visited the digital version of it?
- What do you think about Kela giving feedback to physicians?
  - Who should rather do it?
- What would need to change for you to use the service?
- What is your perception of Kela?
- In what kind of situations are you in contact with Kela?
- Would Kela be welcome at the association’s events as a lecturer?
- Other types of collaborations
- Is there communication between Kela and your association?
  - Should there be?

Expenses for the society

- Have you heard of rational pharmacotherapy? Nationally provided medical treatment that is effective, safe, cost-effective, equal, and of high quality.
  - How does this show at your workplace?
  - How well does rational pharmacotherapy actualize in general?
- Are medicine expenses discussed at work or at your association?
- What kind of role does an individual physician have in the reduction of medicine expenses?
- How could physicians be made more aware and participate in the reduction of medicine expenses?
  - Would these actions have an effect on you? Why?