

KRISTIINA SEPP

Competency-based and person-centred
community pharmacy practice –
development and implementation
in Estonia



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UNIVERSITY OF TARTU

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Institute of Pharmacy, Faculty of Medicine, University of Tartu, Estonia

The dissertation is accepted for the commencement of the Doctor of Philosophy (in Pharmacy) degree on January 18th, 2023, by the Council of the Faculty of Medicine, University of Tartu, Estonia.

Supervisors: Associate Professor Daisy Volmer, PhD
Institute of Pharmacy, Faculty of Medicine
University of Tartu, Estonia

Associate Professor Afonso Miguel Cavaco, PhD
Faculty of Pharmacy,
University of Lisbon, Portugal

Professor Ain Raal, PhD
Institute of Pharmacy, Faculty of Medicine
University of Tartu, Estonia

Reviewed by: Associate Professor Džamilja Safiulina, PhD
Department of Pharmacology, Institute of Biomedicine and
Translational Medicine, Faculty of Medicine
University of Tartu, Estonia

Researcher in Epidemiology Kaja-Triin Laisaar, PhD
Institute of Family Medicine and Public Health, Faculty of
Medicine
University of Tartu, Estonia

Opponent: Associate Professor Susanne Kaae, PhD
Department of Pharmacy
University of Copenhagen, Denmark

Commencement: March 31st, 2023

ISSN 1024-395X (print) ISSN 2806-240X (pdf)
ISBN 978-9916-27-141-4 (print) ISBN 978-9916-27-142-1 (pdf)

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University of Tartu Press
www.tyk.ee

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LIST OF ORIGINAL PUBLICATIONS

- I. Volmer, D., **Sepp, K.**, Veski, P., & Raal, A. (2017). The Implementation of Pharmacy Competence Teaching in Estonia. *Pharmacy (Basel, Switzerland)*, 5(2), 18. <https://doi.org/10.3390/pharmacy5020018>
- II. Volmer, D., **Sepp, K.**, & Raal, A. (2021). Students' Feedback on the Development of a Competency-Based Pharmacy Education (CBPE) at the University of Tartu, Estonia. *Pharmacy (Basel, Switzerland)*, 9(1), 45. <https://doi.org/10.3390/pharmacy9010045>
- III. **Sepp, K.**, & Volmer, D. (2021). Use of Face-to-Face Assessment Methods in E-Learning-An Example of an Objective Structured Clinical Examination (OSCE) Test. *Pharmacy (Basel, Switzerland)*, 9(3), 144. <https://doi.org/10.3390/pharmacy9030144>
- IV. **Sepp, K.**, Cavaco, A. M., Raal, A., & Volmer, D. (2021). Profession Driven Improvement of the Quality of Pharmacy Practice-Implementation of Community Pharmacy Services Quality Guidelines in Estonia. *Healthcare (Basel, Switzerland)*, 9(7), 804. <https://doi.org/10.3390/healthcare9070804>
- V. **Sepp, K.**, Cavaco, A., & Volmer, D. (2022). The principles of person-centredness in quality patient care – Evaluation of the Community Pharmacy Services Quality Guidelines in Estonia. *The International Journal of Health Planning and Management*, 37 Suppl 1, 101–114. <https://doi.org/10.1002/hpm.3567>
- VI. **Sepp, K.**, & Volmer, D. (2022). Experiences and Expectations of Ethnic Minorities and Majorities towards Community Pharmacy Medicines-Related Services in Estonia. *International Journal of Environmental Research and Public Health*, 19(8), 4755. <https://doi.org/10.3390/ijerph19084755>
- VII. **Sepp, K.**, Kukk, C., Cavaco, A.M., & Volmer, D. (2020) How involvement of community pharmacies improves accessibility to and awareness about flu vaccination? – An example from Estonia. *Expert Review of Vaccines*, 19(10), 983–990. <https://doi:10.1080/14760584.2020.1825949>

In the current thesis Roman numerals (I–VII) refer to the above original publications.

Contribution of Kristiina Sepp to the original publications:

Paper I: participation in study design, data collection and revision of the manuscript.

Paper II: participation in study design and data analysis, co-writing the manuscript.

Paper III: participation in study design and data collection, organizing the collected data, performing data analysis, writing the first draft of the

manuscript and finalising the manuscript in collaboration with the co-author.

Paper IV: participation in study design and data collection, organizing the collected data, performing data analysis, writing the first draft of the manuscript and finalising the manuscript in collaboration with the co-authors.

Paper V: creating a study design, performing data analysis, writing the first draft of the manuscript and finalising the manuscript in collaboration with the co-authors.

Paper VI: participation in study design, organizing the collected data, performing data analysis, writing the first draft of the manuscript and finalising the manuscript in collaboration with the co-author.

Paper VII: participation in study design, data collection and analysis, writing the manuscript in collaboration with the co-authors.

ABBREVIATIONS

CBE	competency-based education
CBPE	competency-based pharmacy education
CPD	continuous professional development
CPE	continuous professional education
CPSQG	Community Pharmacy Services Quality Guidelines
EAFP	European Association of Faculties of Pharmacy
ECTS	European Credit Transfer System
EPCF	European Pharmacy Competence Framework
EU	European Union
FIP	International Pharmaceutical Federation
GDP	gross domestic product
GP	general practitioner
GPP	Good Pharmacy Practice
IT	information technology
MUR	Medicines Use Review
n.d.	no date
OECD	Organisation for Economic Co-operation and Development
OSCE	objective structured clinical examination
OTC	over-the-counter (medicine)
PCC	person-centred care
PGEU	Pharmaceutical Group of the European Union
PHAR-QA	Quality Assurance in European Pharmacy Education and Training
POM	prescription only medicine
UK	United Kingdom of Great Britain and Northern Ireland
US	United States
UT	University of Tartu
WHO	World Health Organization

1. INTRODUCTION

Health care systems face increasingly complex challenges such as population aging, multimorbidity along with more demanding and costly health care needs, as well as the growing expectations of society towards high quality services. New community-based care models with the involvement of different health care professionals are needed to ensure the effectiveness and efficiency of provided care.

One way to enhance the health care team is to include pharmacists who would significantly increase the quality of the primary care practice. Here it is important to agree in advance on the tasks and responsibilities of the pharmacist's professional role.

In recent years healthcare trends have shown a certain shift in professional activities, and pharmacists have increasingly contributed to health promotion and disease prevention. This principle also coincides with the concept of the need to move healthcare services closer to the community. Community pharmacies, being the most easily accessible healthcare facilities, can support this principle well. However, care must be taken to ensure that pharmacists do not deviate from their core competency – medicines – and are also able to offer other services at a high professional level.

The professional role of the pharmacist and the content of the professional knowledge acquired at the university must also be harmonized. This may be challenging to achieve, as the expectations of different stakeholders regarding the competencies of entry-level pharmacists and their readiness to apply them immediately after graduation may differ. In order to unify understandings, pharmacy education has increasingly been described in terms of professional competences to be acquired, while transferable skills are no less important.

As mentioned in the above paragraph, the entire health care is moving closer to the community with its services and applying the principles of person-centred care. However, if this remains only in plans and on paper, it will not benefit the patients. A person-centred approach is more successful when both healthcare workers and patients are more aware of the competencies of various specialists and how this knowledge can be used for the benefit of the patient. In order to increase awareness about pharmacists, their own activity and greater integration into health care would certainly be beneficial.

The thesis assesses the impact of various factors on the development of competency-based and person-centred pharmacy practice in Estonia as a holistic approach. More specifically, the development of competency-based pharmacy education, the impact of the use of the quality framework on the implementation of existing competencies at community pharmacies, and the experiences and expectations of patients towards traditional and extended services at community pharmacies are examined.

2. LITERATURE REVIEW

2.1. Contemporary health care

2.1.1. Key principles and challenges

A core principle for the contemporary health system is to provide high-quality and accessible care for the whole population, disregarding their socio-economic background. Ensuring the described principle is complex for various reasons, such as the aging population, multimorbidity, and scarcity of financial resources and workforce. The spread of COVID-19 has made the health care situation even more complicated and challenging to manage (Organization for Economic Co-operation and Development (OECD), 2021a). Person-centred, interdisciplinary, and competency-based health care in an integrated form can be seen as one solution to demonstrate benefits for people and health systems by building universal health coverage and improving health status (World Health Organization (WHO), 2015).

People want to be more involved in their health decision-making process, access their health data, and use technology to maintain their health (Betts et al., 2020). The relationship between health care professionals and patients has been, for decades, paternalistic and hierarchic, with the patient maintaining a passive role (Institute of Medicines, 2001). The transformation of the patient-provider relationship empowers the patient to take a more significant role in their care and develop an equal partnership with their caregiver (Meskó et al., 2019).

Efficient patient-provider contacts also require seamless team functioning, which is more characteristic of a team consisting of members from diverse professional backgrounds with integrated expertise, communication, and collaboration (Moncatar, 2021; OECD, 2021a). Despite this knowledge, cooperation between health professionals is currently insufficient, and its potential is not being exploited. Several factors include a lack of common understanding among the professions, different funding systems, and existing hierarchies decreasing the ability for coordinated teamwork (Moncatar, 2021; Rawlinson, 2021). In the health care system dominated by physicians and with fragmented collaboration, it might be complicated to use other views and experiences for added insights and information (Institute of Medicines, 2001). Studies have shown that collaboration requires various efforts from health care professionals, depending on their occupation, setting, and subsector in which they operate (Schot et al., 2020).

To deliver high-quality health care and meet changing care demands, it is important to follow the evidence-based practice to make informed patient care decisions (Institute of Medicines, 2001; Wilson & Austria, 2019). “*Evidence-based practice refers to the integration of best research evidence, clinical expertise, and patient values in making decisions about the care of individual patients*” (Institute of Medicines, 2001). Therefore, decision-making without sufficient attention to evidence may lead to poorer health outcomes and a lack of fairness in the health care system (Im & Kong, 2017; Oxman et al., 2009). World

Health Organization (WHO) strategy supports the application of research evidence in health policies (WHO, 2021a); however, a complexity of this nature is self-evident, being challenging to think with evidence for clinically, socially, and politically relevant decisions (Lancaster & Rhodes, 2020).

Overall, health care organizations must be dedicated to delivering evidence-based care and supporting health care professionals to acquire the skills and knowledge essential for evidence-based practice (Lehane et al., 2019; Li et al., 2019a). In addition, digital transformation should be applied to ensure that future health care users' needs are met. COVID-19 accelerated digital innovations in health care and brought along new health care delivery models across the continuum of care. The need for more information technology (IT) knowledge and skills in the health care workforce and their mixed attitudes towards IT is a challenge for health care systems. Health workers as experts must be encouraged to participate in the development process of eHealth solutions(Li et al., 2019b).

2.1.2. Competencies in health care

The social responsibility of health education is to deliver practitioners who are competent in a wide range of knowledge, skills, and attitudes (Thibault, 2020). There are no agreed-upon definitions for competence and competency in health professions education and practice (Albarqouni et al., 2018; Gruppen et al., 2012; Yaqoob Mohammed Al Jabri et al., 2021). A lay definition of competence is the ability to do something successfully or efficiently. This requires knowledge, skills, and standards – what is agreed upon and measurable. Competency is often described as skill or knowledge applied accurately, using appropriate behaviours and attitudes (Mills et al., 2020). In other words, competence describes what people can do, while competency focuses on how they do it. Competencies are non-transferable and based on person-specific actions and behaviours (Torres, 2021). In both terms, knowledge and skills are intertwined; therefore, these are often confused with each other (Table 1) (Mills et al., 2020; Rowe, 1995).

Table 1. Differences between competence and competency (Rowe, 1995).

COMPETENCE	COMPETENCY
Skilled-based	Behaviour-based
Standard attained	Manner of behaviour
What is measured	How the standard is achieved

Competencies can be divided into different categories: core, professional, clinical, leadership, etc. Core competencies in health care have been defined as the essential minimal set of a combination of attributes, such as knowledge and skills in a specific subject area and those shared across the health professions (e.g., person-centred care concept). In other words, a specialist in the current health care system should be able to deliver “*patient-centred care as a member*

of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics” (Knebel & Greiner, 2003, p. 45). Different competencies may be part of a competency framework model developed to describe and cover a particular profession’s educational or practical needs (Mills et al., 2020; Yaqoob Mohammed Al Jabri et al., 2021).

In the real world, the principles described might not be sufficiently covered in the education and training of health professionals. In light of changing patient profiles (e.g., aging, increased number of chronic diseases, increased access to health information), the health care landscape should change accordingly as the level of competence of health care professionals has a crucial impact on the quality of provided care (Kak et al., 2001; WHO, 2013). Health care professionals should be digitally advanced, able to meet patients’ different expectations and values, provide coordinated and ongoing patient care across teams and settings, and support patients’ efforts to change health behaviours and lifestyles (Figure 1) (Calabretta, 2002; Directorate-General for Health and Food Safety of the European Commission, n.d.; Mansell et al., 2000).

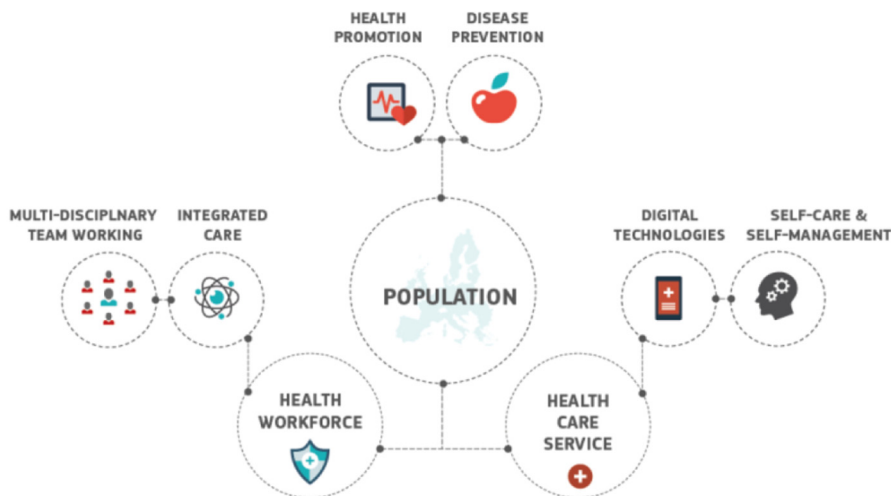


Figure 1. Future competencies and skills of health care professionals (Directorate-General for Health and Food Safety of the European Commission, n.d.).

It has been reported that a limited number of instruments are available for evaluating competencies needed for quality improvement, safety, communication, or health information technology of health care professionals (Yaqoob Mohammed Al Jabri et al. 2021). The committee on the Health Professions Education Summit of the United States suggested a list of core competencies that all health care professionals should own:

- **provision of patient-centred care** – consider respectful well-being of the patients (including health promotion, disease prevention, and treatment in a coordinated, continuous care manner);

- **collaboration in interdisciplinary teams** – integrated cooperation in teams to ensure continuous and reliable care;
- **application of evidence-based practice** – a joint concept of research outcomes, clinical skills, and patient expectations and values to optimize patient care;
- **improvement of care quality** – identification and implementation of patient safety principles in the care process to improve treatment outcomes, and;
- **use of information technology** – communication channels and decision tools to support collaboration and quality treatment process of patients (Knebel & Greiner, 2003)

In addition to the described competencies, Yaqoob Mohammed Al Jabri et al. (2021) presented an extended list of core competencies for health care professionals in professionalism, ethical and legal aspects, personal and professional development, leadership, and management. It is essential to understand that leadership and management competence are needed in health care to drive change, cultivate positive behaviour, and perform in the best possible way to deliver quality and integrated care (Blanck-Köster et al., 2020; Sfantou et al., 2017). In order to be competent, maintain professional competency and ensure high-quality and integrated care, it is required participation in continuous professional development (CPD) (Yaqoob Mohammed Al Jabri et al. 2021). CPD is an essential element in health care that closes existing gaps at the level of practitioners, patients, and teams and at the system level (Sherman & Chappell, 2018). Moreover, health care organizations should focus on a positive working environment to facilitate health care professionals to advance their competencies as this contributes to positive performance at the organizational level (Flinkman et al., 2017; Konttila et al., 2019).

2.1.3. Person-centred care

Person-centred care (PCC) enhances the prospect of patient-centred care by considering the patient's entire life (Eklund et al., 2019). It is a multidimensional concept emphasizing the human as a unique individual by considering people's desires, values, family situations, social conditions, and lifestyles. Furthermore, seeing them as an expert and involving them in the decision-making process improves the person's health outcomes and general well-being but also is a cornerstone for value-driven health care (Marzorati & Pravettoni, 2017). Previous research has identified key principles of person-centred care: shared power and responsibility of individuals and caregivers; open communication; individual approach to one's needs and values; fast access to care, etc. (Figure 2) (Picker Institute, n.d.). Person-centred care also has been shown to lead to greater satisfaction of health care providers and care receivers' loyalty to them (Wolf et al., 2017).



Figure 2. The Eight Picker Principles of Person-Centred Care. The figure is made by the author of the dissertation, K. Sepp, based on information obtained from Picker Institute (Picker Institute, n.d.).

Health care providers face increasing pressure to implement the person-centred care concept, thus addressing health care challenges, improving the quality of provided care, and ensuring health care sustainability (Eklund et al., 2019; Hower et al., 2019). Hawkes has stated that there are more “evangelists” than “real” practitioners of PCC (Hawkes, 2015). It is often easier to declare than to implement person-centred care in practice, as it requires redesigning and restructuring the services and roles within the health care system (Santana et al., 2018; Stollenwerk et al., 2019). Although the importance of person-centredness in health care has been emphasized for a long time, no well-known standardized tools have been proposed to ensure or evaluate these principles uniformly (De Silva, 2014; International Alliance of Patients’ Organizations, 2012; Louw et al., 2020; Santana et al., 2018). Adoption of PCC varies across Europe, being more developed and adapted into practice in the United Kingdom of Great Britain and Northern Ireland (UK) and Ireland and less in Eastern European countries (Rosengren et al., 2021). The implementation of the PCC concept can vary depending on the health care setting, professionals’ beliefs and attitudes, the population, their socio-economic, ethnic, and cultural background, how the care is delivered, and how the receiver and their providers interact (Santana et al., 2019). Santana et al. have created a PCC framework, providing a stepwise roadmap for health care systems to implement the PCC concept considering activities at the health care

system level, health care professional, and patient level and gradually reaching a result to achieve PCC (Santana et al., 2018). Nevertheless, to fully implement PCC principles into practice, there is a need to overcome barriers at all three levels: micro-, meso- and macro-level (Kuipers et al., 2021). Micro-level refers to person-centredness at the patient-provider level, where health care professionals play a central role in ‘filtering’ knowledge for use and commitment to delivering person-centred care (Moore et al., 2017). Knowledgeable, well-trained, and dedicated professionals are one of the keys to implementing PCC. Current health care education tends to focus more on the biomedical model. However, to use this knowledge in practice better, the psychosocial aspects and communication should be taught, as well as support continuous personal development to provide high-quality health care (Moore et al., 2017; WHO, 2007). It is essential to understand that CPD is needed to support health care professionals in acquiring the knowledge, skills, and attitudes necessary to create and sustain a culture of collaboration and PCC (Lown et al., 2011; Wong et al., 2021). Meso-level indicates activities on the organizational level, whereas the results can be strongly influenced by the organizational culture, including attitude and support by managers (Smith et al., 2019; Waters, 2019). Consistent and clear leadership encourages and supports implementing the PCC concept in practice (Moore et al., 2017). Macro-level refers to categories that describe person-centredness on health policy or system levels (McCormack et al., 2017; Waters, 2019). The person-centredness at the policy level is paradoxical because it is a non-material policy output and cannot be directed into existence by the government or state institutions (Waters, 2019). It can be categorized as a ‘magic concept’ as theorized by Pollitt and Hupe (2011): broad, positive connotation, creates consensus, and is marketable. Thus, it explains why and how policymakers are increasingly addressing it.

2.2. 21st century patient

2.2.1. The unique position of patients in health care

Patients hold a unique position in health care, as they embody a steady component throughout the care (WHO, 2016a). Thus, patient engagement is an integral part of health, a cornerstone for quality care and better health outcomes (Bombard et al., 2018). However, patients’ new role as co-designers of health care requires adjustments on patients’ and health care professionals’ sides to implement truly person-centred care (Gustavsson & Andersson, 2019; Hwang et al., 2019).

As individual responsibility increases, health perceptions and behaviours are increasingly intertwined with a person’s consumeristic nature. Patients are taking a more active role in their health, and the paternalistic approach by health care providers is less tolerated. Also, the use of information technology and access to their electronic health record has empowered patients’ knowledge and made them active partners in their care (WHO, 2016a). The spread of COVID-19 has affected

patients' consumeristic behaviour and self-made decisions in health care even more – convenience, choice, accessibility, communication, and customer-centred approach are some factors that have facilitated such a trend (Chiariello, 2021; Loo et al., 2021).

2.2.2. Population aging and multimorbidity

Worldwide, people are living longer; by 2030, one in six people will be over 60 years old (WHO, 2021b). To illustrate the aging trend in Estonia, in the years 2005–2022, the share of the elderly (65+ years) in the total population has increased by 5%, reaching 20.4% by now, and it will increase even more in the coming decades (Eurostat, 2020; Statistics Estonia, 2022a).

In the presence of a chronic disease, the simultaneous occurrence of several conditions is common. It makes the treatment and counselling of a patient complex and challenging for any health care professional, including pharmacists. The prevalence of multimorbidity depends on various factors, but the leading cause is age (Lefèvre et al., 2014). According to a recent study, the prevalence of multimorbidity in the Estonian population is 28.3% (2017), being different in different age groups (up to 24 years old 3.4% vs. 85+ years old 81.6%) and men and women (22.3% vs. 33.6%). The study also outlined a four times higher prevalence of depression in people with multiple illnesses (7.3%) than those without multiple illnesses (Elm, 2019). Coping with multiple illnesses requires an interdisciplinary approach and more frequent and consistent contact with the patient (WHO, 2016b). More focus should be given to mental health problems, which are a growing problem in all age groups in Estonia.

Person-centred pharmaceutical care services have proven to help elderly patients, particularly those with chronic diseases, to increase patients adherence to recommended treatment and thus to control or improve their condition (Rotta et al., 2015; Swieczkowski et al., 2016; Volmer et al., 2009). However, focusing on providing preventative care, e.g., lifestyle interventions, showed positive effects on reducing the evolvement of diabetes and diabetes-associated micro-vascular complications in later life (Sathish, 2019). Better elder care should be accessible and affordable, and multiple risk-management methods should be implemented, e.g., minimizing inappropriate prescribing, medication management, and comprehensive geriatric assessment (Lavan & Gallagher, 2016; Võrk, 2018; Xue et al., 2021; Yang et al., 2021).

2.2.3. The importance of socio-cultural aspects in delivering care to the patient

Social and cultural determinants of a patient's health, such as socio-economic status, race/ethnicity, gender, age, and income, can influence perceived care and the degree of patient involvement. Health inequalities between different social groups may emerge due to the individualistic nature of modern health models, which are not accepted in different cultural contexts (King et al., 2009).

Therefore, understanding the values of cultural context is critical to the health and well-being of people of different socio-economic and ethnic groups (Napier et al., 2017). For example, the Russian-speaking population in Estonia is characterized by greater trust in institutional measures related to doctors and biomedicine than Estonians. They have less willingness to deal with their health individually and autonomously, whereas younger Estonians see the importance of their role in health-related topics (Vihalemm et al., 2017). Other studies have also revealed significant differences in patient-provider communication due to patients' ethnic backgrounds. Both care receivers and providers behave more passively, while ethnic minorities are also less verbally expressive and assertive (Schouten & Meeuwesen, 2006). Ethnic minorities with limited knowledge of the local language may feel embarrassed, which further hinders the ability to communicate and build strong relationships with a health care professionals (Maura & Weisman de Mamani, 2017). The language barrier and access to care are considered key contributors to poor care outcomes (Chauhan et al., 2020). Overall, to improve the experience and increase the satisfaction of ethnic minority groups, a better understanding of the expectations and additional needs of ethnic minority patients is required (Pinder et al., 2016).

2.3. Community pharmacies and pharmacists in primary care

Community pharmacies are an essential part of the primary health care frontline as the most accessible health care setting with long opening hours and no need to book an appointment beforehand (El-Kholy et al., 2022; Kelling, 2015; WHO, 2019a). Studies have shown that community pharmacies, being in the heart of the community, are ideally positioned to ensure person-centred, professional, quality, and trustworthy health care services (Krug, 2019). All the previous features make community pharmacies a valuable health care hub, offering pharmaceutical and patient care services (OECD, 2020; Pharmaceutical Group of the European Union (PGEU), 2019; Picton, 2015). By specifying the wider roles of community pharmacies combined with local health care needs, the population will gain maximum benefit from the community pharmacy (WHO, 2019a). The Organisation for Economic Co-operation and Development (OECD) report *Realising the Potential of Primary Health Care* (2020) emphasized the need to expand the role of the community pharmacist in primary healthcare, as they play an essential role in providing urgent primary health care for patients with minor self-limiting illnesses, but also are able to carry out vaccinations, educate patients, support chronically ill patients, and deliver preventative care services, as they possess a broad range of knowledge and skills and know the communities. In many countries, the COVID-19 pandemic accelerated and strengthened new innovative roles for community pharmacists in primary health care to ensure the continuity of care and access to medicines and ease the workload of general practitioners (GPs) (OECD, 2020; PGEU, 2020).

2.3.1. Pharmacy education and continuous professional development

Changes within pharmacy profession competencies include moving from product- to patient-oriented knowledge and skills. International Pharmaceutical Federation (FIP) (2020) has emphasized that more attention must be paid to person-centred pharmaceutical care services. Pharmacy education should ensure a skilful and knowledgeable workforce to meet the needs of society and evolve the ability to thrive positive change in daily practice (Bzowyckj & Janke, 2013; Nash et al., 2015). Therefore, competency-based pharmacy education focuses on outcomes linked with real-world needs (Pengsuparp & Muangsiri, 2012) and is characterized by person-centred care, which also requires the pharmacy to adapt to the needs of people in providing services and involving the patient as an active partner in their care. This vision, in turn, requires a rethinking of the roles of teachers and students, implementing new learning and teaching methods, re-designing assessment tasks (e.g., objective structured clinical examination (OSCE)), and adding new innovative learning activities (Koster et al., 2017; Pengsuparp & Muangsiri, 2012).

Implementation of the competency principles in pharmacy education and training is essential to overcome the challenges of healthcare and to ensure qualified personnel who are able to work in a highly regulated and constantly changing environment (Albanese et al., 2010; Hirvonen et al., 2018). To change traditional education with competency-based education (CBE) is beneficial but, in many ways, challenging. Several studies have outlined the importance of institutional leadership, team-based training for faculty members, but also appropriate and a thoroughly prepared curriculum blueprint (Katoue & Schwinghammer, 2020; Koster et al., 2017). Furthermore, it is essential to develop practice-based competency standards to support continuous professional development activities, quickly adapt to new situations, and ensure quality service on a daily basis (Khamis et al., 2020; Nash et al., 2017).

The European Association of Faculties of Pharmacy (EAFP) has launched several projects to survey the situation of pharmacy education and training in Europe. The PHARMINE project mapped the existing structure and competencies of pharmacy education and training, and the PHAR-QA (Quality Assurance in European Pharmacy Education and Training), project was planned to produce a competence framework for pharmacy education and training. The PHARMINE project demonstrated extremely varied structural aspects of pharmacy education and training in Europe, and very little is based on competence learning (Atkinson, 2014). The European Union (EU) directive *the Recognition of Professional Qualifications* (Directive 2013/55/EU) on harmonizing the sectoral pharmacy profession provides recommendations for pharmacy education and training, focusing on professional activities and course subjects, and a very general description of competencies is presented. Thus, creating a harmonized European system was necessary to implement and evaluate competency-based learning and training in pharmacy (Atkinson, 2017).

In 2022 FIP launched 21 development goals to advance pharmacy practice, science and education, one of the goals of which is CPD (FIP, 2022a). Therefore, investing more effort into implementing the CPD system is relevant to ensure more qualified and motivated personnel, as it offers pharmacists an effective way for individualized, ongoing learning and personal improvement (Wheeler & Chisholm-Burns, 2018). As pharmacists take on more complex roles in providing care, there is an urgent need to demonstrate and maintain professional competencies.

In many countries, the continuing pharmacy education model focuses on attending training sessions and collecting points (Micallef & Kayyali, 2019). At the same time, CPD models require from the learner more input, self-reflection, active participation, teamwork, etc. (Wheeler & Chisholm-Burns, 2018). The latter has shown increased practice outcomes compared to continuing professional education (CPE) (Micallef & Kayyali, 2019). For many pharmacists, the concept of CPD is novel and therefore more robust organization-level support and encouragement are required to ensure pharmacist dedication to CPD (Owen et al., 2020). In addition, life-long learning and self-assessment skills should be integrated into the pharmacy curriculum to ensure a strong foundation for CPD (Nash et al., 2016). It is recommended that interactive and various learning formats should be used to engage more efficiently different adult learners. Despite the preference for face-to-face learning (Micallef & Kayyali, 2019), distance learning allows for engaging a wider audience and gives the learners more flexibility, which in some cases may increase activation and participation, as the distance of CPD events is considered a physical barrier (Buxton, 2014; Gallegos et al., 2021).

CPE and CPD system vary across EU countries, being stated in legislation and controlled by the state institution or organized by a professional body with voluntary participation. For example, in Serbia and UK, CPD is required to renew the professional pharmacist's license (WHO, 2019b). In the case of Moldova, the community pharmacy may lose the activity license in the absence of CPD certification for staff members (Order Nr 489 (ROU), 2010). A commitment to CPD improves the quality and safety of patient care and is considered by supervisory authorities an important quality indicator for the service provision of community pharmacies.

2.3.2. Quality community pharmacy services

Constant improvement of the quality of community pharmacy services is critical in developing contemporary patient care. Professional pharmacy organizations worldwide have developed good pharmacy practices (GPP) guidelines for defining the scope of community pharmacy services and describing the standards for providing quality care (Eesti Proviisorapteekide Liit, 2021; General Pharmaceutical Council of Spain, 2013; Pharmaceutical Society of Australia, 2017). The latter can be mandatory, integrated into legislation, or taken as a recommendation (WHO, 2019b). Mainly the FIP/WHO joint standards of GPP are used as the basis

(WHO, 2011), but other guidelines by international umbrella organizations are employed, e.g., *Pharmacy 2030: A Vision for Community Pharmacy in Europe* (PGEU, 2019). Existing practice standards differentiate, considering local needs, legal aspects, etc., and may be focused on specific aspects of the practice, e.g., patient counselling (Bundesapothekerkammer, 2019; WHO, 2019b). For example, in Belgium, the GPP guideline is legally binding, whereas pharmacists are acknowledged as pharmaceutical care providers who compound and dispense medicines, monitor treatment, and offer preventative care (Lelubre et al., 2019). In Romania, GPP is more oriented to organizational aspects, i.e., premises, quality, and legal aspects of compounding and dispensing, with no focus on person-centred care (Chertes & Crisan, 2019).

To evaluate the quality of the pharmacy service, specific metrics are needed, which include several aspects, e.g., operational and clinical, contributing to the harmonization and improvement of the quality of the service provided (Inch et al., 2017). Thus, appropriate and measurable indicators or standards are necessary to ensure consistency between provided quality care. Furthermore, person-centredness is considered a key component of quality of care and a core competency of all health care professionals (Institute of Medicines, 2001; WHO, 2007). This has also indicated the need to develop and implement person-centred quality indicators (Santana et al., 2019). Traditionally, the PCC concept has not been integrated into GPP guidelines (WHO, 2019b).

In Europe, most community pharmacies provide traditional, i.e., core pharmacy services such as dispensing and compounding of medicines and night services. Over the past decades, an increasing number of extended pharmaceutical care services have been offered to patients (Figure 3) (FIP, 2021a; PGEU, n.d.; Thomson et al., 2019). For example, in 13 EU countries, medicines use review service is offered to improve medicines adherence and health outcomes. In several EU countries, disease management programs, e.g., diabetes and asthma management, are provided to deliver person-centred care to individuals with certain chronic conditions (PGEU, n.d.). Also, several services with the aim of health promotion and disease prevention are offered at community pharmacies with positive intervention effects on health outcomes: smoking cessation, weight management, needle exchange, and vaccination (Thomson et al., 2019). The latter pharmacy-based vaccination service has improved vaccination coverage and reached people who would not otherwise have gotten vaccinated (Burson et al., 2016).



Figure 3. Pharmacy-based services offered in community pharmacies in the European Union. Permission to use the figure obtained from the Pharmaceutical Group of the European Union (PGEU, n.d.).

Furthermore, pharmacists are essential in advocating for and assisting individuals and families with self-care, as pharmacists are at the forefront of health care. Pharmacists can support individuals in making healthy lifestyle choices and improving their well-being, counsel them about the most suitable over-the-counter (OTC) medications, food supplements, medical aids, etc. They also share relevant health information, such as self-protection, healthy eating, and providing people with psychological and social support (Bell et al., 2016; FIP, 2022b; Sepp et al., 2022; Watson et al., 2021). In more severe cases, pharmacists are competent to recommend a visit to a doctor or even an emergency department (Bell et al., 2016). PGEU emphasizes several aspects of making better use of pharmacies: promoting pharmaceutical services, involving pharmacists in collaborative care models, establishing a regulatory framework and sustainable funding models, support innovation and digital uptake at community pharmacies (PGEU, n.d.).

The COVID-19 pandemic has expedited the use of e-health solutions in community pharmacies, e.g., social communication mobile platforms, remote

pharmacy services, drug shortage surveillance, and early warning systems (Liu et al., 2020). Digital solutions will affect the provision of traditional pharmacy services, thus encouraging the development and implementation of innovations, including pharmaceutical care. Moreover, eHealth solutions offer new ways to engage people in daily practice (Betts et al., 2020).

2.3.3. Collaboration with other health care professionals

Building a collaborative relationship between community pharmacists and other health care professionals is crucial in high-quality person-centred care to enhance patients' drug therapy and improve health outcomes (Lake et al., 2020; Rayes & Abdulkarem, 2016; Siaw et al., 2017). With the use of electronic prescriptions, the role of pharmacies and pharmacists in monitoring the patient's treatment has even increased because chronically ill patients can renew their prescriptions over the phone, increasing the time gap between GP visits (Bond et al., 2000). Although there is a common interest in optimizing medicines' use and improving patients' health outcomes, pharmacists and GPs still work separately (Bradley et al., 2006; Lake et al., 2020). Improved collaboration has been shown when the pharmacy and the GP practices are located together. Physical proximity promotes communication and the exchange of knowledge (Bonciani et al., 2018).

Interprofessional and interorganizational collaboration in health care is affected by several aspects, such as division of clear roles, communication, task characteristics, respect, working environment, etc. (Karam et al., 2018). Furthermore, the negative perception of community pharmacies seems to be the major reason why they are often not included in the integrated care models. Since the financing of pharmacy services in many countries is linked to the mark-up of medicines, it is very convenient to connect the dispensing of medicines to economic rather than health care activities. Also, other health care professionals often lack knowledge about the professional competence of pharmacists that could be applied in providing person-centred care (Lake et al., 2020). In addition, differences in cultural, bureaucratic, and organizational aspects were considered to be the reason for the low involvement of pharmacies, although creating partnerships and using the same communication channels would improve it (Chouinard et al., 2021; Maruthappu et al., 2015; Rathbone et al., 2016). Nevertheless, there are good examples of collaboration, e.g., *the netCare program* in Switzerland, where pharmacists offer preliminary triage and non-urgent primary health care, and more severe cases are directed to GPs (Erni et al., 2016). The support of other stakeholders, such as state institutions, health care professional organizations, different patient groups, etc., is needed in developing and implementing person-centred and integrated care in community pharmacies (Gyllensten et al., 2022; Marinkovic et al., 2022).

2.3.4. Patients' perception of community pharmacy and pharmacist

People visit pharmacies the most often of all health care facilities, which provides pharmacists frequent opportunities to interact with patients in the community (Berenbrok et al., 2020). For example, in the United States (US), patients visit a pharmacy an average of 35 times per year (Gebhart, 2019), and in Australia, 14 times a year (Pharmacy Guild of Australia, 2018). However, building a trusting relationship with patients in the community pharmacy is hindered by a lack of privacy, noise, and sometimes long waiting times (Lyra et al., 2007; McKeirnan et al., 2021). Furthermore, low public understanding of the role and pharmacy services is prevalent (Ekenga et al., 2018; Perrault & Newlon, 2022; Rodgers et al., 2016). Often pharmacists are perceived as medicine dispensers, counselling mainly about therapeutic or administrative information about the medicines and less about patient needs and emotional-rapport building behaviours (Chong et al., 2014; Olsson et al., 2014). Also, patients' belief that "*I already know about my medicines*" or that the medicines prescriber has shared all the relevant information are causes explaining why little or no interaction between patient-pharmacist takes place (Perrault & Newlon, 2022). However, if they experience any problems with medicines, they will turn to the pharmacy (Alssageer et al., 2021; Rodgers et al., 2016;), although a significant proportion of patients still prefer a GP because they do not believe that a pharmacist can help them (Rodgers et al., 2016). Pharmacists also focus on providing evidence-based information in the counselling process, while patients emphasize the relevance of the emotional aspects of the consultation (Ng et al., 2020). Patients' involvement in communication with pharmacists is determined by patients' knowledge, beliefs, previous experiences, demographic characteristics, and the pharmacy environment and pharmacist's responses (Qudah et al., 2021). Patients with higher education and confidence about used medicines are less willing to share information with pharmacists (Perrault & Newlon, 2022; Watson et al., 2014). In Estonia, those who trust their knowledge about medicines would like a faster service and the possibility of self-selection in the case of OTC medicines (Volmer, 2010).

Nevertheless, patients' positive experiences with received pharmacy services provide an opportunity to build long-standing patient-pharmacist relationships, resulting in increased awareness about the pharmacy services, more engaged patients, and improved health outcomes (Bajorek et al., 2017; El-Kholy et al., 2022; Rodgers et al., 2016). In addition, it allows pharmacists to widen the scope of practice (El-Kholy et al., 2022). However, patients should be more involved in developing medicines-related services and counselling, as often these do not meet the patient's expectations and needs (McMillan et al., 2013; Rodgers et al., 2016). Patient satisfaction is essential in delivering quality care and building a solid and trusted relationship (Ilardo & Speciale, 2020).

2.4. Health care system and principles in Estonia

With a population of 1.3 million, Estonia is the smallest country in the three Baltic States (Statistics Estonia, 2022b). As a post-Soviet country, Estonia, over the past 40 years, has built up a new health care ecosystem, including the pharmaceutical sector (Habicht et al., 2018). The structure of Estonian health care is decentralized and multidimensional, with a single public health insurance fund (Habicht et al., 2018). It is divided into primary medical service, specialized medical care, and nursing care (Estonian Health Insurance Fund, n.d.). The first contact point for a patient is the GP, whose responsibilities, in addition to identifying and solving patients' health problems, are health promotion and disease prevention, coordination of assistance, and connection of different services (Sotsiaalministeerium, 2022). GP nurses have independent appointments to provide vaccination, health promotion, and care for patients with chronic illnesses. Upon completing the required training, they also have the right to extend prescriptions for chronic diseases (Eesti Haigekassa, n.d.(a)).

In order to improve accessibility to other primary care services (e.g., midwifery, physiotherapy, home care services), a primary health care centres reform was carried out in 2016 (Eesti Haigekassa n.d.(a); OECD, 2019). The integration and modernisation of services helped to ensure that health care is provided in the right place, i.e., where it is the most optimal to provide a service and where it best meets the needs of the patient, but also delivering care in multidisciplinary teams contributes to better care and health outcomes of people and to facilitate the transfer of services from specialist to GP (De Maeseneer, 2016; Lukka, 2015). In Estonia, the need for uncovered health care services is the highest in the EU and mainly due to long waiting lists (in 2019, Estonia 15.5%, the EU 1.7%) (OECD, 2021b). The waiting list is more common in specialist medical care, although to some extent, Estonians are dissatisfied with the access to GP services as well – 16% of Estonians get an appointment with the GP within 4-5 days, while 9% of the population the waiting times is longer than a week (Kantar Emor, 2021). During the COVID-19 pandemic, 19% of Estonians reported unmet health care needs, but due to the fast adoption of eHealth solutions, this was lower than the EU average (21%) (OECD, 2021b).

As one of the solutions to reduce long queues for health care services, the forecast analysis of Estonian health care up to the year 2035 sees the possibility of dealing more with the prevention of health problems and involving people in taking care of their health (Arenguseire Keskus, 2020). *The Estonian National Health Plan 2020–2030* also emphasizes the person-centred care approach to ensure safe and high-quality health and social services that meet people's needs and expectations, help reduce premature mortality, increase healthy life years and support living with chronic illnesses (Sotsiaalministeerium, 2021a).

At the same time, different indicators of the health care system make it challenging to implement the proposed principles. For example, the share of gross domestic product (GDP) allocated to cover health care costs is significantly lower in Estonia (6.7%) compared to the EU average (9.9%) (Eurostat, 2022). Two-

thirds of the health care is publicly funded, mainly through solidarity-based mandatory social tax. However, more than half of the insured population is not contributing, e.g., children and pensioners. The continuous decline of the working-age population makes the sustainability of the described funding system questionable (OECD, 2019). Private expenditure consists mostly of out-of-pocket payments for medicines and dental care, which are significantly higher (23.9%) than the EU average (15.4%) (OECD, 2021a). The share of the population with health insurance in Estonia is also lower (95.2% in 2020) than in most EU countries (an average of 98% in 2019) (OECD, 2021a), which increases the health inequality of the population, causing delayed care and higher costs.

Another problem is an insufficient number of qualified and competent health care professionals. The number of vacant GP positions has quadrupled since 2015 (OECD, 2021a). In Estonia, 45% of all health care workers are over 50 years old, and 40% of GPs are over 60 years of age (Mets & Veldre, 2017). There is a shortage of nurses, and thus there must be ways other health care professionals can contribute to the provision of care (OECD, 2019). Investing in the co-operation of different health care specialists is necessary, but also evolving individual level communication, technology use, and leadership and cooperation skills (Mets & Veldre, 2017).

2.5. Pharmacy education and practice in Estonia

2.5.1. Community pharmacy sector

The restructuring of the Estonian community pharmacy sector began immediately after regaining independence in 1991. The Medicinal Products Act, passed in 1996, regulates community pharmacies' establishment, management, and service provision (Medicinal Product Act (MPA), 2022). However, neither this nor any other legislation defines pharmacies as health care institutions. Insufficient regulation of the establishment of pharmacies has influenced the rapid growth in the number of community pharmacies: from about 250 in 1993 (population of 1.5 million) to 475 in 2022 (1.3 million) (Ravimiamet, 2022a; Statistics Estonia, 2022b). From the second half of the 1990s until 2020, vertical (retail and wholesale distribution of medicines linked through the same owner) and horizontal (pharmacy chains own community pharmacies) integration of the pharmacy sector has been in effect. To increase the professional independence of pharmacists as health care professionals and to reduce the impact of horizontal and vertical integration of professional activities, the Ministry of Social Affairs enacted the ownership reform on the 1st of April 2015 (with a transitional period of five years), allowing only pharmacists to act as the owners of a community pharmacy (MPA, 2022; Sotsiaalministeerium, 2020).

The community pharmacy network in Estonia, especially in cities, enables fast and convenient access to pharmacy services. There is an average of one pharmacy per 2700 inhabitants, which places Estonia among the countries with the high

pharmacy density in Europe (OECD, 2021a). To 84% of the Estonian population, the nearest pharmacy is within 15 minutes of their residence by public transport or on foot (Figure 4), and 94% visit a pharmacy at least once per half a year (Eesti Uuringukeskus OÜ & Norstat Eesti AS, 2019).

Although the ownership reform was expected to cut the number of pharmacies in cities, it remained nearly the same, as most pharmacies continued to operate after the legislation changed (Ravimiamet, 2022a). Most new owners signed a franchise agreement with the former pharmacy chains to use their brand and to receive support in managing the pharmacy and recruiting staff (Apotheka, 2022; Benu Apteek, 2022; Euroapteek, 2022; Südameapteek, 2022). For pharmacy customers, nothing changed in the appearance of pharmacies or the provision of services. In March 2021, the Supreme Court of Estonia stated that according to the Medicinal Products Act, the formal control of ownership is insufficient for granting an activity license to a pharmacy. However, it must be determined that the pharmacist had a controlling influence over the pharmacy (Riigikohus, 2021).



Figure 4. Map of Estonian community pharmacies (01.11.2022) (Ravimiamet, 2022b).

Even though pharmacists were invited and encouraged by the government to own existing community pharmacies or establish new ones, no direct financial support was offered. Also, the effect of the change in pharmacy ownership on the operation of community pharmacies and the quality-of-service provision was not assessed (Luik-Tamme, 2020). Currently, four pharmacy franchise chains operate in Estonia, involving more than 4/5 of the community pharmacies with franchise agreements (Apotheka, 2022; Benu Apteek, 2022; Euroapteek, 2022; Südameapteek, 2022). The high number of community pharmacies using franchise

business models can be explained by the need for capital – it allows to secure economic sustainability and maintain care delivery. Also, organizational issues are easier to handle, as many functions are undertaken by the pharmacy chains, e.g., lease negotiation, marketing, human resource functions, and accounting.

The existing national funding model for pharmacies has not changed since 2005 (Ravimite hulgi- ja jae..., 2011). The reimbursement system of community pharmacies is based on fixed mark-ups of medicines (on average 12.8%) (Sotsiaalministeerium, 2021b) and free mark-ups for pharmacy goods. The total turnover of community pharmacies in 2021 was 461 million euros (share of medicines 70%), and it increases on average by 5% annually. The turnover of medicines includes OTC, prescription, and veterinary medicines. The turnover of other pharmacy goods (medical devices, nursing supplements, food supplements, natural products, etc.) was 138 million euros in 2021 (Ravimiamet, 2022a).

At the governmental level, the principles of renewing the financing of pharmacies have not yet been addressed. As a result, pharmacy owners and franchise chains must find ways to develop pharmacies in the current economic situation. One way forward is to expand the nomenclature of various pharmacy products, which can increase the image of pharmacies as business establishments in the eyes of the public and other health care professionals.

The problems described above may also be related to a large number of professional organizations and the absence of an umbrella organization. In 2022 nine professional organizations were operating in Estonia (Table 2), four representing community pharmacies or pharmacists. The fragmentation of the pharmacy sector and lack of common understanding in itself hinders the development of the field and cooperation between different parties in healthcare.

Table 2. Pharmaceutical professional organizations in Estonia (Sepp et al., 2021).

Organizations of community pharmacists	Other organizations
Pharmaceutical Society of Estonia	Estonian Academic Society of Pharmacy
Estonian Pharmacists Union	Estonian Society of Hospital Pharmacists
Estonian Pharmacies Association	Pharmaceutical Society of the University of Tartu
Estonian Pharmacists Chamber	Association of Pharmaceutical Manufacturers in Estonia
	Association of Pharmaceutical Wholesalers in Estonia

2.5.2. The quality and development of community pharmacy services

The Medicinal Products Act defines pharmacy services as “*retail sale or other dispensing of medicinal products together with related counselling for the appropriate and rational use of medicinal products as well as provision of information to the user on the correct and safe use and storage of medicinal products; the preparation of medicinal products as magistral formulae and officinal formulae*”

and dividing-up into retail packaging” (MPA, 2022). Under the latter, community pharmacies in Estonia have focused on providing traditional services such as compounding and dispensing medicines as well as drug information to pharmacy customers (Volmer et al., 2019). Similarly to other post-Soviet countries, the implementation of pharmaceutical care services has been low or inconsistent (Sepp et al., 2021; Merks et al., 2014).

At the beginning of the 2000s, the initiative of professional organizations to participate in the development of the quality of pharmacy services increased, but there was no systematic cooperation in this regard. There was also a lack of interest and support for the development of service quality at the governmental level (Volmer, 2010). The development of Community Pharmacy Services Quality Guidelines (CPSQG) published in 2012 serves as a good example of collaboration of professional organizations and other stakeholders towards a structured development and standardization of pharmacy services to expand pharmacists’ role in health care and improve the quality of provided services (Eesti Proviisorapteekide Liit, 2021; Sepp et al., 2020). The CPSQG enables professionals to self-assess the service quality and different operational aspects of community pharmacies in Estonia. The CPSQG is not legally binding for community pharmacies and could be seen as supporting guidance for pharmacists. The CPSQG has been constantly updated, with a recent version published in 2021 (Eesti Proviisorapteekide Liit, 2021). The guidelines have been used in a nationwide survey three times to evaluate the quality of community pharmacy services (Sepp et al., 2020). Several events introducing the guidelines were held in 2012-19 to raise awareness about CPSQG and to initiate the adoption of the guidelines in practice (Meditšiiniuudised, 2019).

In recent years, the development of extended services and their integration into primary health care has been explored mainly by professional pharmacy organizations and academia to meet the needs of society better and also make better use of the knowledge and skills of pharmacy professionals (Sepp et al., 2021; Kruus & Paat-Ahi, 2013). In 2022, a detailed description of extended services such as measuring health indicators (e.g., blood pressure, haemoglobin), vaccination, smoking cessation, and harm reduction (e.g., needle exchange, provision of information on safer drug use) has been included in the CPSQG (Eesti Farmaatsia Selts, 2021b, Eesti Farmaatsia Selts, 2021c, Eesti Farmaatsia Selts, 2021d, Eesti Farmaatsia Selts, 2021f; Eesti Proviisorapteekide Liit, 2021). The addition was related to the need to standardize extended services that were already offered or were planned to be offered in the near future at community pharmacies in Estonia. From the currently provided services, various point-of-care tests such as blood pressure, blood glucose, cholesterol, haemoglobin, triglycerides, bone density, and body composition have been available at community pharmacies for a decade (Sepp et al., 2021). Pharmacy-based vaccinations against influenza, COVID-19, and tick-borne encephalitis have been introduced recently but are offered by other health care professionals than pharmacists (Eha et al., 2021; Rootslane, 2021; Sepp, 2018). Smoking cessation and medication review services are currently under development (Saapar, 2019; Tuula et al., 2021). The introduction of extended

services has mainly been profession-driven and mostly provided without remuneration or for out-of-pocket payments to patients (Sepp et al., 2020; Sepp et al., 2021). Perception towards extended services has varied, and other health care professionals or policymakers have not always welcomed these services. The reasons for the low integration of the services in primary care can also be found here (Sepp et al., 2021).

2.5.3. Community pharmacy professionals

Only pharmacists and assistant pharmacists in Estonia registered in the National Register of Health Care Professionals can provide pharmacy services. The person responsible for the operation of a community pharmacy can only be a pharmacist with three years of work experience in a pharmacy setting (MPA, 2022). In addition to pharmacy professionals, community pharmacies employ customer services specialists (dealing with non-medicine pharmacy goods) and other support staff, who comprise 25% of the community pharmacy workforce. On average, 2–5 people work in a community pharmacy (Ravimiamet, 2022a).

The pharmacist profession can be obtained in Estonia only at the Institute of Pharmacy of the University of Tartu. The Pharmacy curriculum is organized as a course based on five years of integrated bachelor's and master's training (300 European Credit Transfer System (ECTS)) following the sectorial profession model and the EU directives on pharmaceutical education at higher education institutions (Directive 2013/55/EU). The Pharmacy curriculum provides the basic theoretical knowledge in pharmacy and addresses the health care system's and the public's needs. It was designed as medical subject-based and pharmaceutical product-oriented, and it is the basis for recognition of professional qualification. The current Pharmacy curriculum was launched in 2007, and the most recent updates were made in 2019, when the curriculum received positive accreditation during the curriculum group evaluation in the field of medical sciences by the Estonian Quality Agency for Higher and Vocational Education (Tartu Ülikool, 2020; Volmer et al., 2019). The main content of the curriculum changes was to increase the analytical and critical thinking of pharmacy students, to develop professionalism and professional identity, and to provide more knowledge and practice of transferable skills. Also, many medical subjects in the Pharmacy curriculum, such as primary care medicine, laboratory medicine, clinical microbiology, clinical pharmacology, communication in health care, and clinical pharmacy were included to prepare future pharmacists for more efficient collaboration in health care teams and cover the concept of patient care. Currently, the Pharmacy curriculum does not offer specialization.

Tallinn Health Care College provides professional higher education (Bachelor of Medicines, three years, 180 ECTS) for assistant pharmacists who are competent in medicines and other medicinal and health products. In 2020 the curriculum was last updated, and more innovative teaching methods were applied with a focus on clinical competences, patient counselling, and e-health (Parts, 2020; Tallinn Healthcare College, 2020). In 2019 a specially developed curri-

culum for assistant pharmacists was opened at the University of Tartu to become a pharmacist within three years (Tartu Ülikooli farmaatsia instituut, 2021a). In the context of a shrinking learning population and the workforce, it has been advised to establish a joint curriculum for pharmacists and assistant pharmacists, dividing the current integrated 5-year study of pharmacists into a study based on the three years plus two years curricula. In contrast, in the first three years, the profession of assistant pharmacist is acquired and continuing the studies for a master's degree, it is possible to become a pharmacist (Mets & Veldre, 2017). The vision document of the Estonian pharmacy service until 2030 also draws attention to the need to find ways to integrate further the two pharmaceutical curricula (Eesti Farmaatsia Selts, 2021a).

After graduation, assistant pharmacists are mainly employed in community pharmacies. However, their knowledge and skills allow them to work in other companies handling medicines, medical products, and health care products (Tallinn Healthcare College, 2020). The same trend also applies to pharmacists, who mainly work in a community pharmacy (circa 70%), but also in state institutions, e.g., the State Agency of Medicines, the Ministry of Social Affairs, as well as in the pharmaceutical industry, medicines wholesale companies, etc. (Volmer et al., 2019).

Table 3 provides details of the numbers and activities of community pharmacists and assistant pharmacists in Estonia. The professional roles of pharmacists and assistant pharmacists at the community pharmacy are closely intertwined, which blurs the distinction between the two professions in Estonia.

Working in a community or hospital pharmacy also requires pharmacy professionals to participate in professional training for 40 academic hours per two years with the aim of ensuring the quality of provided care by developing and improving the competencies of pharmacists and assistant pharmacists. Professional training comprises courses, seminars, conferences, or other similar study days organized by higher pharmacy education institutions or professional organizations. It is the pharmacy owner's responsibility that the required continuing education hours have been completed by the pharmacist (MPA, 2022). The current continuous professional pharmacy education system is the most used (WHO, 2019b) in European countries, but it does not support sufficiently personal professional development, person-centred care, and improved work performance (Micallef & Kayyali, 2019). The vision document of the Estonian pharmacy sector until 2030 highlights the need to create a model for assessing pharmacists' professional knowledge and skills but also to develop a system that essentially links basic and continuous professional training (Eesti Farmaatsia Selts, 2021a).

Table 3. Indicators and professional roles of pharmacists and assistant pharmacists at community pharmacies in Estonia (Sepp et al., 2021; Terviseamet, 2022; Volmer et al., 2019).

	Pharmacists (In Estonian <i>proviisor</i>)	Assistant pharmacists (In Estonian <i>farmatseut</i>)
Number of professionals	876 (01.07.2022), 42% of the total community pharmacy workforce	687 (01.07.2022), 33% of the total community pharmacy workforce
Education	Master's degree at the University of Tartu (5 years)	Professional higher education at the Tallinn Health Care College (3 years)
Professional roles	Pharmacy owner, pharmacy manager, responsible pharmacist, pharmacist	Assistant pharmacist, pharmacy manager only in the structural unit of the main pharmacy
<p>Leading professional roles of both professions are organization and provision of high-quality pharmaceutical care: dispensing and counselling of prescription and OTC medicines; compounding of extemporaneous medicines; point of care testing (e.g., blood pressure measurement, cholesterol); disease prevention and health education; reporting of adverse drug reactions; provision of extended services.</p>		

Similar to other health care professionals, the shortage of pharmacy professionals has also been a severe problem in recent years. An analysis carried out to monitor and forecast the system for health workforce needs in Estonia estimated that an additional 260 pharmacists and 330 assistant pharmacists will be needed in the period 2017–2025, which makes almost 29 pharmacists and 37 assistant pharmacists a year, respectively (Mets & Veldre, 2017). In the last five years, on average, 19 pharmacists and 27 assistant pharmacists have graduated, and not all of them will work in a pharmacy (L. Ruuben, personal communication, February 17, 2022; M. Tiidema, personal communication, February 17, 2022). An insufficient pharmacy workforce is a critical issue; thus, continuing with the current numbers of pharmacy graduates, it is impossible to offer a sufficient replacement for those retiring from or abandoning the pharmacy sector. On the other hand, an opposite trend has started: people who obtained a pharmacy qualification 20–30 years ago but never have worked in a pharmacy would like to continue their career path at the community pharmacy. Depending on which profession was acquired earlier, they must take a professional qualification exam at the University of Tartu or Tallinn Health Care College, (*Proviisori ja farma...*, 2010).

Considering the challenges of health care and the potential of pharmacy services in providing care to those in need, it is important to ensure an adequate number of pharmacy professionals. However, first, a common understanding or vision of the role of community pharmacies in society is needed to make better use of the existing competences of pharmacy professionals.

2.6. Summary of the literature review

There is a growing demand to enhance the quality of provided care. Simultaneous adherence to person-centred, interdisciplinary, and competency-based principles can be considered as one solution for improving health care systems and achieving better health outcomes for patients. Many countries have followed the FIP/WHO joint GPP to establish a national framework of quality standards to improve the quality and evolve the pharmacy practice. However, the content and implementation of these frameworks in practice are not uniform and may be focused on specific aspects of community pharmacy practice. After all, to evaluate the quality of the pharmacy service, specific metrics are needed, including aspects from operational activities to patient counselling. Traditionally PCC principles are not integrated into these frameworks, but the latter is considered by WHO as a key component for providing quality care.

Knowledgeable, well-trained, and dedicated professionals are one of the keys to implementing personalized and high-quality care. It has increased the interest in applying competency-based pharmacy education to prepare high quality professionals, who are able quickly to adapt to the constantly changing health care landscape and meet the societal needs for effective, safe, and efficient health care. Often, when discussing professional competencies, it has not been well determined what competencies should be acquired upon graduation and what during continuing education, nor is the content of different competencies clearly and uniformly defined. Thus, it is difficult to find a standardized tool for evaluating professional pharmacy competencies at the European level. This makes the development of uniform pharmaceutical education in EU countries rather challenging.

In addition to professional competencies, it is important to follow PCC principles. It is expected that community pharmacists, in collaboration with patients and other health care professionals, co-design and -deliver high quality care. Patients' socio-cultural background, beliefs, knowledge, and past experiences also influence their involvement in their care. They embody steady components throughout the care; therefore, their involvement in developing and delivering quality community pharmacy services is an important determinant. Although person-centredness is a frequent topic in health care and is considered an important component in the development of pharmacy services, patients are not sufficiently involved in service design. Because of this, patients' experiences and expectations of pharmacy services can differ significantly.

The insights mentioned above into pharmacy practice outlined a number of aspects that are relevant to the development of contemporary community pharmacy practice. A comprehensive overview gives a further understanding of how to develop community pharmacy services to better respond to future health care challenges and enhance the role of community pharmacies in the health care system.

3. AIMS OF THE STUDY

The main aim of this thesis was to evaluate the development and implementation of competency-based and person-centred pharmacy practice in Estonia.

The specific aims were:

1. to evaluate the development and implementation of competency-based and person-centred pharmacy education at the University of Tartu (Papers I, II, and III);
2. to explore the implementation of quality framework and principles of contemporary pharmacy practice for the development of quality pharmacy services and person-centred care (Papers IV, V, and VII);
3. to learn patients' awareness, experiences, and expectations regarding traditional and extended community pharmacy services (Papers VI and VII).

4. MATERIALS AND METHODS

A multi-method approach has been applied in this research to cover various topics and settings (Gil-Garcia & Pardo, 2006; Morse, 2003). The use of multiple methods enabled the assessment of different pillars of pharmacy practice (education, quality of pharmacy services, patients' perspectives) which are the basis of contemporary and person-centred pharmacy services.

To address the first study objective, i.e., the evaluation of the first steps in developing competency-based pharmacy education at the University of Tartu (UT), a qualitative research project based on the European Pharmacy Competence Framework (EPCF) was undertaken in 2016, followed by implementing competency-based modules in the pharmacy curriculum. To learn the initial impact of described changes, a quantitative survey among pharmacy students was performed in 2020, being a part of the curriculum-based analysis conducted for the first time at the UT. Professional knowledge and communication skills were assessed in a study comparing the results of the OSCE test according to the assessment form (evaluation of students' professional knowledge and communication skills) and the students' feedback on the test content and design as a survey (Paper I, Paper II, Paper III).

To address the second study objective, the indicators of CPSQG were used for service quality evaluation during a quantitative self-analysis of community pharmacies in 2014, 2016, and 2019. PCC principles were identified in the CPSQG indicators based on the international PCC framework as a qualitative document analysis. To evaluate the pharmacists' perceptions of extended services, the pharmacy-based influenza vaccination service was used as an example, and data were collected through a quantitative survey (Paper IV, Paper VI, Paper VII).

To address the third study objective concerning the public's experiences and expectations towards traditional and extended community pharmacy services, two surveys were conducted among pharmacy customers in Estonia, focusing on medicines-related counselling and services and pharmacy-based influenza vaccination (Paper VI, Paper VII).

4.1. Development and implementation of competency-based and person-centred pharmacy education (Papers I-III)

Paper I

Study design and sample

A qualitative assessment of the pharmacy programme at the UT was performed based on the EPCF. The structure of the study was as follows:

- to map the existing curriculum based on 50 EPCF competences and curriculum elements;

- to assess the expected level of competence upon completion of the MSc Pharm degree;
- to detect gaps in the curriculum.

A convenience sampling of different pharmacy stakeholders for qualitative assessment of the pharmacy program was used:

- academia (teaching personnel at the Institute of Pharmacy and pharmacy students),
- representatives of community and hospital pharmacies, pharmaceutical wholesalers, pharmaceutical industry, and national authorities, e.g., the State Agency of Medicines.

Study instrument

The EPCF is an assessment tool for competence-based pharmacy training in Europe (Atkinson et al., 2014). The tool includes personal and patient care competences in 11 domains and 50 particular competences (Table 4). The tool was validated in a two-round Delphi survey by more than 2000 representatives of different pharmacy stakeholders in Europe (Atkinson et al., 2015; Atkinson et al., 2016; Atkinson, 2017).

Table 4. European Pharmacy Competence Framework on personal and patient care competences (Atkinson et al., 2016).

	Domain (number of competences)
Personal competences	Learning and knowledge (6)
	Values (5)
	Communication and organisational skills (8)
	Research and industrial pharmacy (5)
Patient care competences	Patient consultation and assessment (3)
	Need for drug treatment (4)
	Drug interactions (3)
	Drug dose and formulations (5)
	Patient education (3)
	Provision of information and service (3)
	Monitoring of drug therapy (5)

The competency levels were identified based on the outcomes of curriculum elements and evaluators' individual experiences. A five-point scale based on the increase of professional independence was used to evaluate the level of personal and patient care competencies at graduation from the UT (Figure 5) (Haisma & Schalekamp, 2016).

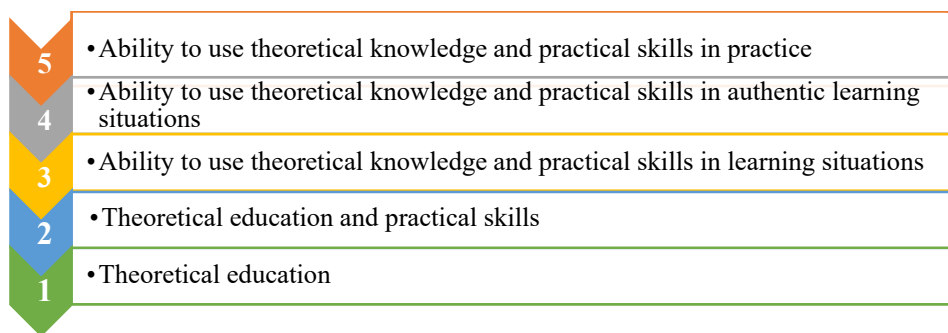


Figure 5. Five-point scale based on the increase of professional independence for assessing the European Pharmacy Competence Framework competency levels.

Data Analysis

The mean values for EPCF 11 domains based on the five-point scale assessment tool were calculated. The results of academia and other stakeholders were compared.

Paper II

Study design and sample

A quantitative survey on curriculum feedback at the UT was conducted in the spring semester of the 2019/2020 academic year for all curricula, including the pharmacy curriculum. In pharmacy studies, feedback was collected from the students of 1st, 3rd, and 5th years (second, sixth and tenth semesters, respectively). All 1st (n=23), 3rd (n=28), and 5th (n=16) year pharmacy students (N=67) were invited to participate.

Study instrument

The Institute of Education of the UT developed the electronic survey instrument. The questions covered four different topics: the coherence and structure of the curriculum (n=6), the organisation and environment of studies (n=6), the development of students' competencies (n=20), and the operation of support systems (n=7). A four-point Likert scale (4 – I agree; 3 – I somewhat agree; 2 – I somewhat disagree; 1 – I disagree) was used to respond. If some statements could not be assessed according to the respondents' curriculum, the answer option "Not valid" could be chosen. Those answers were left out of the results. Respondents also had the opportunity to comment on their answers to clarify their thoughts and substantiate their views.

Data analysis

Mean values and standard deviation were calculated for all responses separately for each statement pharmacy students gave and compared with replies from different study years. In addition, the average results were compared on three

levels: the pharmacy curriculum, the Faculty of Medicine (medicine, dentistry, pharmacy, sports sciences, and physiotherapy), and the UT.

Paper III

Study design and sample

The quantitative study compared the results of three face-to-face (2018–2019) and one electronically conducted (2021) OSCE tests, as well as students' feedback on the performance of the tests. During the OSCEs, six different stations, evaluating the counselling quality of self-medication and OTC medicines were applied. The upper gastrointestinal complaints station was randomly selected to compare the results. The students were in the role of pharmacists and had to counsel the patients about different minor ailments. The stimulated patients were not involved with pharmacy and, thus, required instructions before the OSCE tests. The assessors were lecturers of social pharmacy or practising pharmacists (OSCE assessment team), who also received instructions for the assessment process prior to the test.

Study instrument

The national OSCE assessment team developed the evaluation form for assessors (practising pharmacists in community and hospital settings and representatives from academia) and validated it (face and content validity among ten practising pharmacists). At each station, the student's performance was assessed on seven topics: establishing and ending contact; evaluation of symptoms, concomitant symptoms, comorbidities, and medications used; treatment recommendations; drug information; appropriate language use for the patient; and general health and well-being counselling. Performance was assessed on a four-step scale: 0 – no information received; 1 – information partially provided; 2 – information mostly provided; 3 – all information provided. In addition, the simulated patient could provide three-step feedback (0 – no; 1 – perhaps; 2 – yes) on whether she or he would like to contact this pharmacist in the future. After passing all the stations, the students gave feedback on the test by answering a self-administered and internationally developed questionnaire (Abdi et al., 2017) that was adjusted for use at the UT by OSCE assessment team. The questionnaire covered the following aspects: satisfaction with the OSCE as an exam method (incl. the examination setup and timing), advantages and disadvantages of such a method, most and least favourite station, patient performance, etc.

Data analysis

First, the homogeneity of variances of the sample was checked with Levene's test. The average results of different study years were examined by the One-Way ANOVA test and Post-hoc multiple comparisons. The statistical significance level was set at $p < 0.05$.

4.2. Implementation of quality framework and principles of contemporary pharmacy practice (Papers IV, V, and VII)

Papers IV and V

Study design and sample

Mixed-methods research. Three cross-sectional electronic surveys based on self-assessment of CPSQG indicators were conducted among community pharmacies in Estonia in 2014 (N=478 pharmacies), 2016 (N=493), and 2019 (N=494) to follow up on the adoption and implementation of the CPSQG. To assess the extent to which the principles of person-centred care are included in the CPSQG in Estonia, Santana's person-centred concept model was applied (Eesti Proviisorapteekide Liit, 2021; Santana et al., 2018).

Study instrument

In collaboration with professional and academic organisations, CPSQG was first compiled in 2012 and updated in 2016 and 2021 (Paper IV). CPSQG quality indicators enable self-assessment by pharmacists about service quality and different operational aspects of community pharmacies in Estonia (Sepp et al., 2020). During the self-assessment, 132 quality indicators out of 172 were used in 2014, 137 out of 168 in 2016, and 139 out of 168 in 2019. In this study, only those indicators with results available for at least two years (N=126) were used to identify the implementation of guidelines into practice (Table 5). The self-assessment tool was divided into themes and subthemes with a two-point (1 – yes; 0 – no) or a four-point (0 – never; 1 – occasionally; 2 – mostly; 3 – always) response scale. Pharmacy characteristics were also registered, such as geographical location and pharmacy type (main or branch pharmacy).

The framework developed by Santana was applied in the context of community pharmacy to identify PCC principles in the CPSQG (Table 6). Santana's model is based on a narrative review of the PCC literature, and for classification, the Donabedian structure-process-outcome quality care model for healthcare was used (Santana et al., 2018).

Table 5. Indicators used in the Community Pharmacy Services Quality Guidelines survey (N=126).

Themes (N=3)	Sub-themes (N=10)	Quality items (N=126)
Traditional community pharmacy services	Prescription-only medicines (POM)	Prescription check (3)
		Selection of medicines (7)
		Patient counselling on the use of POMs (14)
	Self-treatment and non-prescription medicines and other pharmacy goods	Evaluation of symptoms (6)
		Selection of treatment method (6)
		Patient counselling on the use of OTCs or other pharmacy goods (9)
	Compounding of medicines	Handling of prescriptions for extemporaneous medicines (4)
		Preparation of medicines (3)
		Quality of extemporaneous medicines (3)
Extended services	Health promotion	Qualification of pharmacists for provision of extended services (5)
		Provided extended services (5)
Pharmacy environment and operation	Premises and technical equipment of the pharmacy	Conditions for private and patient-centred counselling (7)
		Service provision supporting tools (3)
	Handling of medicines and pharmaceutical goods	Procurement and ensuring stock (3)
		Storage and dispensing (5)
		Quality problems/management (4)
	Pharmacy management	Management of customer relations (6)
		Personnel management (2)
		Manager's responsibilities (4)
	Communication	Internal communication (3)
		External Communication (7)
		Communication obligation (2)
		Pharmacist as a lecturer and author of articles (1)
Pharmacists' training	Pharmacists' lifelong learning (6)	
	Pharmacy as a traineeship institution (4)	
Legal requirements	Compliance with legal requirements (4)	

Table 6. Framework for person-centred care (Santana et al., 2018).

Structure	Process	Outcome
S1. Creating a PCC culture	P1. Cultivating communication	O1. Access to care
S2. Co-designing the development and implementation of educational programs	P2. Respectful and compassionate care	O2. Patient-Reported Outcomes (PROs)
S3. Co-designing the development and implementation of health promotion and prevention programs	P3. Engaging patients in managing their care	
S4. Supporting a workforce committed to PCC	P4. Integration of care	
S5. Providing a supportive and accommodating PCC environment		
S6. Developing and integrating structures to support health information technology		
S7. Creating structures to measure and monitor PCC		

Data analysis

Data were tested for normality using the Kolmogorov-Smirnov test. The results of different survey years were compared using the One-Way ANOVA test and Post-hoc multiple comparisons after checking the sample homogeneity of variances with Levene's test. The statistical significance level was set at $p < 0.05$. In the Results section, only significant differences between the three study years will be presented with p-values and the corresponding explanation.

To identify PCC principles in the CPSQG, deductive qualitative content analysis based on the PCC framework by Santana was used (Elo et al., 2014). Firstly, the CPSQG quality indicators were coded under the corresponding PCC categories (structure, process, outcome) and domains (e.g., S1. Creating a PCC culture) (Patton, 2002). Secondly, after individual structuring of CPSQG indicators according to the PCC framework by Santana, the three researchers followed constant comparison and iterative steps to compare the results in two rounds (Schreier, 2012) and developed the final version of the CPSQG indicators in the PCC domains.

Paper VII

Study design and sample

The quantitative survey was carried out in the spring of 2019 among community pharmacists and assistant pharmacists who work at community pharmacies in Estonia. A random sample of pharmacists (N=250) extracted from the professional register (Terviseamet, 2022) received an invitation to complete a survey instrument. In addition, an invitation was forwarded to those pharmacists and

assistant pharmacists working at community pharmacies where flu vaccination service was piloted (n=15).

Study instrument

The questionnaire was designed to assess the opinions of community pharmacists and assistant pharmacists toward pharmacy-based flu vaccination services. The survey instrument consisted of 13 multiple-choice questions: professional knowledge about vaccination; perceived readiness to provide this service; the perceived impact of pharmacists and assistant pharmacists to increase vaccination; the pharmacy as a healthcare setting for vaccination; demographic characteristics of respondents (gender, age, position, work experience) and pharmacy setting data (location, number of professionals, participation in influenza vaccination pilot project). The substantive validity of the survey instrument was assessed by a panel of four researchers and practitioners. The survey instrument was pilot tested among five community pharmacists, resulting in minor changes to the wording of items based on the feedback received.

Data analysis

Descriptive statistics were computed, such as frequencies and central tendency/dispersion statistics. The results were analysed in four age groups ≤ 35 , 36–50, 51–64, and ≥ 65 years. The association with age was evaluated using the Pearson Chi-Square test with a p-value < 0.05 set as a statistically significant correlation.

4.3. Patients' awareness, experiences, and expectations regarding traditional and extended community pharmacy services (Papers VI and VII)

Papers VI and VII

Study design and sample

In 2018–2020 two cross-sectional quantitative surveys (self-administered paper-based questionnaires) were conducted among pharmacy customers. In both studies, convenience sampling was used: in the first study, pharmacy customers purchasing prescription or non-prescription medicines at a community pharmacy in four different regions in Estonia (Paper VI); in the second study, pharmacy customers vaccinated against influenza in five different community pharmacies (Paper VII). Participation was voluntary and anonymous, and the number of pharmacy customers who declined to complete the survey was not recorded.

Study instrument

The questionnaires were developed based on survey instruments from England (Rodgers et al., 2016) (Paper VI) and Ireland (Pharmaceutical Society of Ireland, 2015) (Paper VII); (Table 7). In the first study arm, the questionnaire was also translated into Russian to reach the Russian-speaking population, the largest

ethnic minority in Estonia. The content of the study instrument was pre-tested among a random sample of pharmacy customers: 8 Estonian and 6 Russian pharmacy customers (Paper VI); 10 Estonian pharmacy customers (Paper VII). The wording of the questionnaires was modified, and in the case of Paper VI, a question about monthly income was added. No further validation steps, including statistical measures for the survey instruments, were performed due to the study's exploratory nature.

Table 7. Description of the survey instruments for papers VI and VII.

Paper	Paper VI	Paper VII
Items	16 questions (2 open-ended)	12 questions (7 open-ended)
Demographic characteristics	gender, age, education, employment status, place of residence, language, and income in one month;	gender, age, health indicators (pregnancy, breastfeeding, chronic diseases, smoking), and occupation at healthcare institution (hospital, care home, etc.);
Main themes	health status and regularly used medicinal products;	previous experience with flu vaccination;
	reasons for visiting the pharmacy;	experience with and reasons for attending flu vaccination at community pharmacies;
	received and expected information about medicines' use;	satisfaction with pharmacy-based vaccination and willingness to use it in the future;
	the experience and expectations of medicines-related services;	readiness to use other vaccinations and extended services in the future.
	privacy and waiting time prior to and time of counselling.	

Data analysis

In both studies, a qualitative content analysis was performed on the open-ended questions, and descriptive statistics were calculated on the multiple-choice questions. In the case of Paper VI, to compare the multiple-choice questions replies of non-minorities (Estonians) and minorities (Russians), the Independent t-Test was used after checking the sample homogeneity of variances with Levene's test. The associations of demographic characteristics were evaluated by using the Pearson Chi-Square test. The statistical significance level was set at $p < 0.05$.

4.4. Ethical considerations

Ethical research principles were followed throughout all studies (Beauchamp, 2007; World Medical Association, 2013). All participants were introduced to the aims and methods of the concrete research, including the right to withdraw their participation at any time. Participation in all the studies was voluntary and anonymous. In the case of Paper VI and Paper VII, approval from the Ethics Committee of the University of Tartu was received (284/T-1 and 286/T-9, respectively) (Ethics Committee of the University of Tartu, 2010), as these studies covered aspects of patient's health and medication use related aspects. Data collection, storage, and analysis comply with the Personal Data Protection Act (Isikuandmete Kaitse Seadus, 2019).

5. RESULTS

5.1. Competency-based and person-centred pharmacy education (Papers I-III)

In 2016, personal and patient care competences based on the EPCF were identified in the UT pharmacy curriculum (Paper I). The results outlined that personal competences (4 domains) were covered throughout the pharmacy program, in contrast to patient care competences (7 domains) which were presented in specific subject areas or specific subjects (Table 8). Predominantly the EPCF competences existed in medical and social sciences, pharmaceutical technology, and pharmacy internship. However, some competences were not represented in the pharmacy curriculum (e.g., the business and entrepreneurship competences) or were under-represented (e.g., public health-related aspects, supply chain of medicines).

Pharmacy stakeholders, who participated in the EPCF-based evaluation, were more critical about the level of both personal and patient care competences than representatives of academia (Table 8). Significant differences between these two groups appeared in the personal competence domain, “research and industrial pharmacy,” and in two patient care competence domains, “dosage and formulation” and “provision of information and services.” In addition, representatives of the pharmaceutical sector mentioned the need to develop joint training with medical students, teach managerial and entrepreneurship subjects, redesign internships to support a better acquisition of professional knowledge, etc. Both groups considered implementing new teaching methods and involving practising pharmacists important to link theory more efficiently with practice.

A survey of curriculum evaluation by pharmacy students showed satisfaction with the selected specialty and curriculum content; however, more flexibility within the curriculum was expected (Paper II). Theoretical professional knowledge and understanding of pharmaceutical research methods were assessed as the most acquired competencies during the studies. These results were followed by the ability to apply existing theoretical knowledge to solve practical problems. In the future, more focus on acquiring digital and managerial skills is needed, as well as acquiring self-management and cooperation competencies (Figure 6).

In general, the evaluation results of the 5th-year students were higher than that of the 1st and 3rd-year students, which is logical and confirms the acquisition of the assessed knowledge and skills during the studies. Only 1st-year pharmacy students could provide feedback on the updated pharmacy curriculum. As they rated the placement of subjects in the curriculum and the availability of sufficient information on the organisation of studies higher than 3rd and 5th-year students, it could be seen as a positive curriculum change.

Table 8. Assessment of the competency level of the pharmacy curriculum of the University of Tartu based on the European Pharmaceutical Competence Framework by representatives of academia and other pharmacy stakeholders.

Competence domains	Specific subjects	Subject area/s	Full programme	Mean competency level*, academia	Mean competency level*, other pharmacy stakeholders
Personal competences					
1. Learning and knowledge	n/a**	Medical and social sciences, pharmacy internship	Yes	4.0	3.4
2. Values	n/a	Social sciences, pharmacy internship	Yes	4.4	3.7
3. Communication and organizational skills	n/a	Social sciences, pharmacy internship	Yes	3.8	3.1
4. Research and industrial pharmacy	Yes	Pharmaceutical technology, drug analysis	Yes, only one competence	4.0	2.5
Personal competence domains 1–4 mean value					
4.1					
Patient care competences					
5. Patient consultation and assessment	Yes	Medical sciences	n/a	3.3	3.2
6. Need for drug treatment	Yes	Medical sciences	n/a	3.0	3.0
7. Drug interactions	Yes	Medical sciences, pharmaceutical technology	n/a	3.0	3.2
8. Drug dose and formulation	Yes	Pharmaceutical technology, medical sciences	n/a	4.2	3.0
9. Patient education	Yes	No	n/a	4.0	3.7
10. Provision of information and service	Yes	Medical and social sciences, pharmaceutical technology, pharmacy internship	n/a	4.7	3.5
11. Monitoring of drug therapy	Yes	Medical and social sciences, pharmaceutical technology, pharmacy internship	n/a	3.2	2.4
Patient care competence domains 5–11 mean value					
3.6					

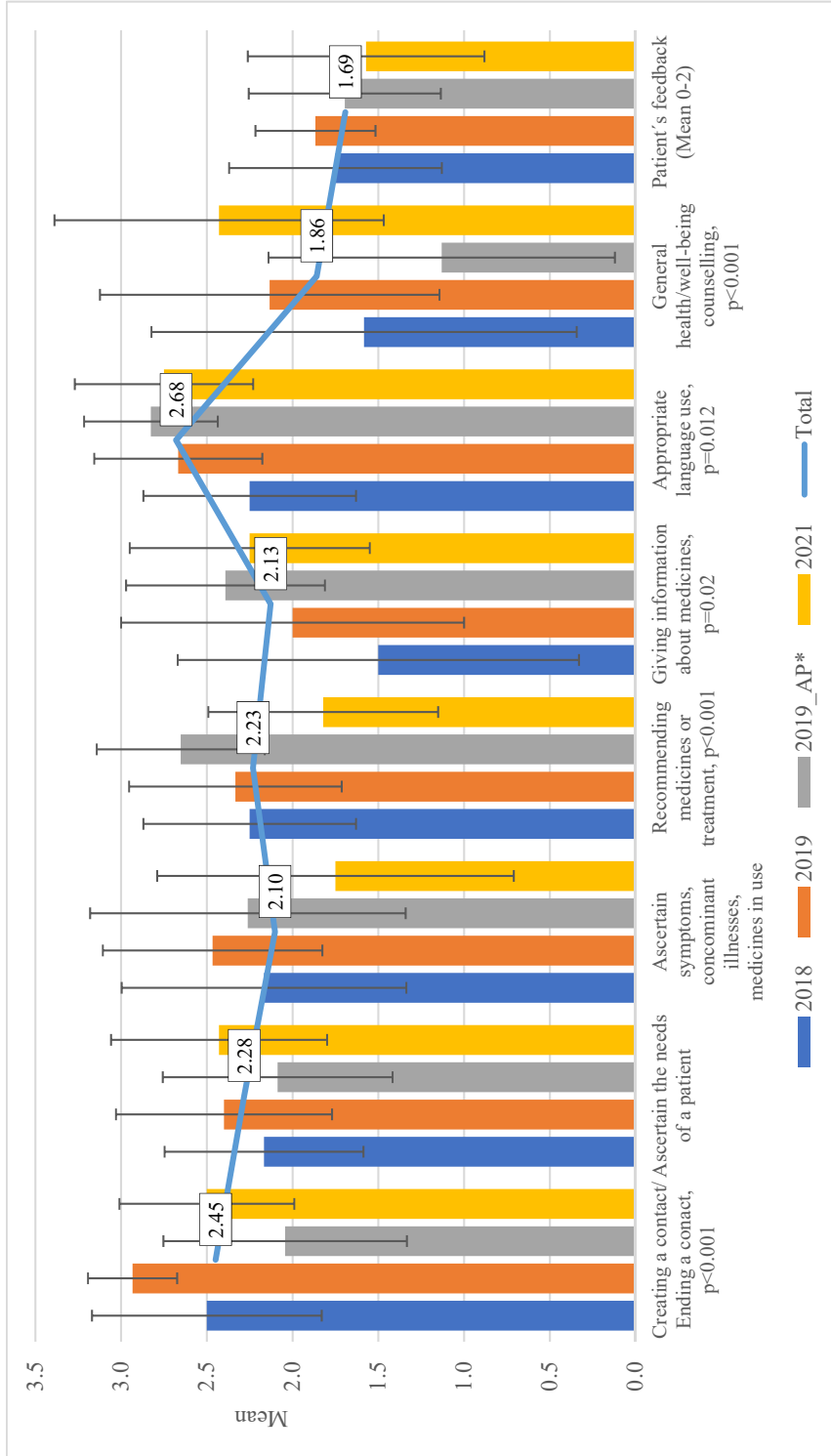
*Five-point competency level evaluation scale: 1–theoretical education and 5–ability to use independently theoretical knowledge and practical skills in practice.

**n/a—not applicable.

More efficient linking of theoretical and practical knowledge to support the development of professional skills was outlined by pharmacy stakeholders during curriculum evaluation (Paper I), as well as reflected in the survey of pharmacy students (Paper II).

One way to combine professional knowledge and communication skills in a practical counselling situation is the OSCE test (Paper III). Based on the students' feedback, the OSCE test was feasible and effective regardless of the setting. On the other hand, based on the performance assessment at the stations, the provision of PCC in an online setting was somewhat limited, which was also confirmed by the simulated patients' feedback on counselling with the lowest score of 1.57 ± 0.69 , whereas the highest score of 1.87 ± 0.35 was received by the students of 2019 in the classroom setting. Statistically significant differences between groups appeared in establishing and ending contact and in recommending medicines and treatment ($p < 0.001$), the latter being lower in the online setting but, on the contrary, higher in health and well-being counselling ($p < 0.001$). This result can be explained by recent changes in the content of the pharmacy curriculum, which is less related to the setting where the OSCE test was carried out. This also applies to giving information about medicines ($p = 0.02$).

Another important outcome of this study was the difference in performance on the OSCE test of assistant pharmacists within the continuous education program "From assistant pharmacist to pharmacist" and pharmacy students. Though the assistant pharmacists had previous experience providing community pharmacy services and real-life contact with the patients, they focused less on making and ending contact with patients, identifying symptoms, and educating patients about general well-being and health (Figure 7). At the same time, their expertise, in contrast to pharmacy students, was higher in recommending medicines and treatment ($p < 0.001$) and using appropriate language to the patient while counselling ($p = 0.012$).



*AP-assistant pharmacists within the continuous education program "From assistant pharmacist to pharmacist".

Figure 7. Results of OSCE test among pharmacy students in different years and settings.

5.2. Quality framework and principles of contemporary pharmacy practice

5.2.1. Implementation of the Community Pharmacy Services Quality Guidelines (CPSQG) (Paper IV)

The CPSQG-based self-evaluation was carried out over three different years, and all community pharmacies with an activity licence in Estonia were invited to participate. The motivation of pharmacies to participate in the research was low, remaining on average at 38% across the three study years. The results demonstrated slow implementation of the principles of CPSQG. The self-assessed counselling about non-prescription medicines was more efficient and patient-focused than prescription medicines information and/or education (Figure 8). However, few significant changes in practice occurred throughout the study years. The provision of drug information concerning drug administration and dosing; and adverse drug reactions and drug interactions significantly decreased during the three study years (2014, 2016, 2019; $p=0.007$ and $p=0.012$, respectively). In addition, there was a significant reduction in counselling on the use of medical devices, such as insulin needles, syringes, nebulisers ($p<0.001$), as well as medication storage conditions ($p<0.001$), lifestyle and other aspects that may affect patient treatment outcomes ($p<0.001$). On the positive side, throughout the three study years patient's needs were considered more, e.g., factors that may affect treatment outcome were identified ($p<0.001$), important aspects (e.g., taste, dosage form) of medicines or product, including price, were discussed with the patient ($p<0.001$). More often patient's name was written on the medicines package ($p<0.001$), or if the medicines had any contraindications in the particular case, it was explained to a patient ($p=0.002$). The described positive trends increase the embedding of person-centredness in practice.

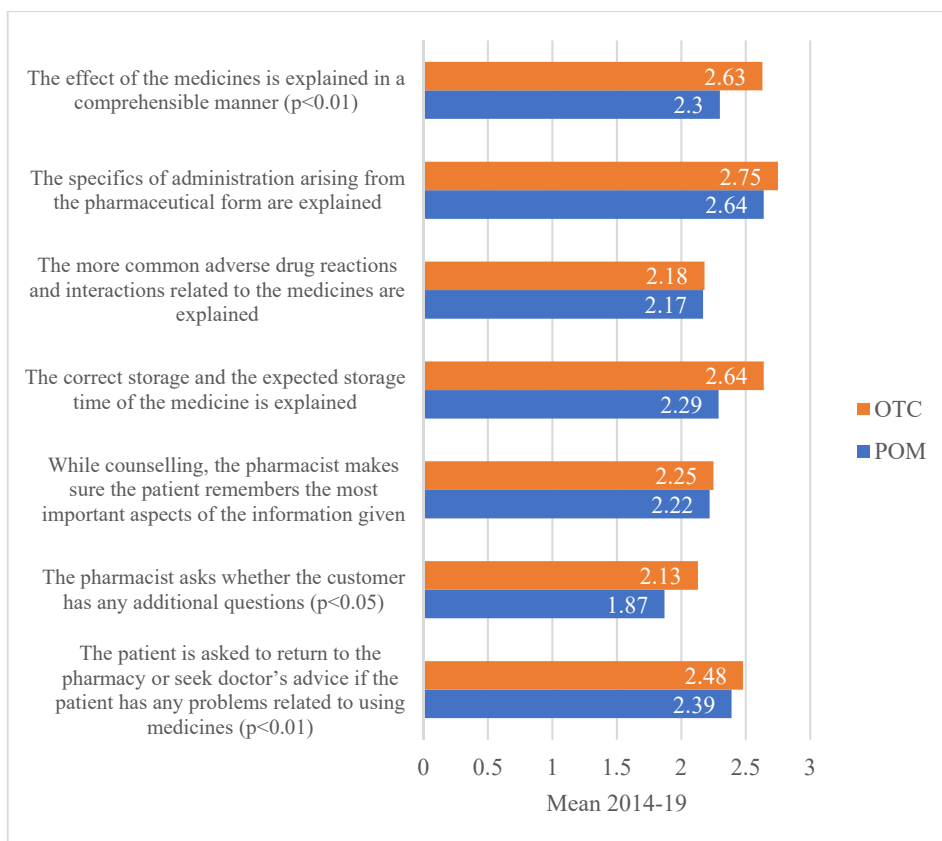


Figure 8. Community pharmacies' self-assessment in counselling patients regarding OTC medicines and POMs based on Community Pharmacy Services Quality Guidelines 2014–19.

During the study period, several services, mainly point-of-care testing (Figure 9), were provided; however, no significant improvements appeared in the provision frequency, except for taking blood pressure ($p=0.026$). The slow development of extended services may be related to a rather poor self-evaluated training of pharmacy staff providing extended pharmacy services ($p<0.001$), although adherence to the principles of lifelong learning, in general, had improved ($p<0.001$).

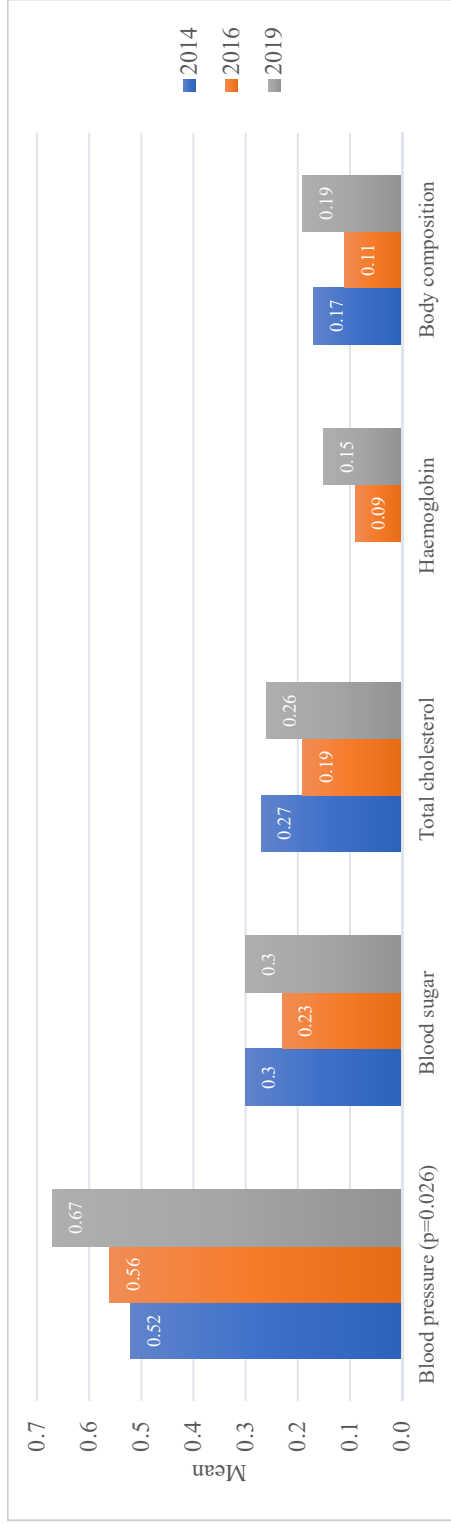


Figure 9. Community pharmacies' self-assessment in providing extended services based on Community Pharmacy Services Quality Guidelines 2014–19.

5.2.2. Principles of person-centredness in the Community Pharmacy Services Quality Guidelines and service provision (Papers IV and V)

The main goal in developing the CPSQG was to support high-quality pharmacy service, an essential part of which is a person-centred approach. Of the CPSQG quality indicators (N=126), 61.9% (n=78) contributed to Santana's PCC concept (Santana et al., 2018). More than half (61.6%) of the CPSQG indicators were process-based, focusing on patient-provider interactions. The PCC structure category (25.6%) covered PCC domains related to the healthcare system or care context. The outcome-based category included only 12.8% of the CPSQG indicators.

In the context of counselling about medicines, sharing information with the patient, and discussing care plans supports the concept of PCC. All CPSQG quality indicators of patient counselling on POMs and OTC medicines belong to the PCC process domain and mainly to the P1. domain – cultivating communication. The latter included aspects such as the effect of medicines and details of medication administration.

Complying with the CPSQG quality indicators of selection of treatment method is expected to enhance patient care, not only at the pharmacist-patient level but also by improving access to care, i.e., the patient is informed about the medicine at the cheapest price (PCC O1. domain – access to care) (Paper V). Care context is the foundation for PCC. Privacy-focused pharmacy design, modern technical equipment, and e-health tools are prerequisites to creating a person-centred environment. The CPSQG quality indicators characterising the pharmacy environment (e.g., privacy, seating possibilities) supported the PCC structure domain (Paper V). However, according to the community pharmacy study (Paper IV), conditions needed for private and person-centred counselling have not changed during the study period (2014–2019). On average, only 14% of the participant pharmacies had private counselling rooms or private counselling options in the sales area for POMs (average 16%) and OTC medicines (average 10%).

To better manage customer relations, more pharmacies have organised the collection of feedback, including complaints and suggestions ($p=0.005$). They have carried out a satisfaction survey among customers during the past three years ($p<0.001$) (Paper IV). The latter has increased four times during the two study years and is an essential PCC structure domain to monitor PCC performance (Paper V).

A competent and skilful pharmacy manager is mandatory, creating a PCC environment and supporting a workforce committed to PCC (S4. domain) (Paper V). They should follow unified principles of customer service and problem-solving outlined in the CPSQG to support the PCC implementation better; however, the shortage of employees is a growing problem ($p=0.005$) (Paper IV).

5.2.3. Pharmacists' perceptions of the provision of extended services in a community pharmacy on an example of influenza vaccination (Paper VII)

Community pharmacists (N=212) who participated in the study, half of whom had more than 20 years of work experience, agreed that pharmacy-based extended services add value to healthcare as a separate and not as part of a traditional community pharmacy service. Using vaccination as a benchmark for extended services, the involvement of pharmacists was considered necessary for educating people about vaccination benefits (70.6%) and reaching people at risk (59.4%). Pharmacists expressed some concerns about their knowledge and counselling skills about vaccination. Nevertheless, participants in the age group <36 years had higher readiness to be involved in the vaccination process by providing invasive extended pharmacy-based services ($p=0.02$) and especially after undergoing specific training ($p<0.01$). Likewise, professional training was the most relevant source of knowledge about vaccination for 83.7% of participants, followed by professional journals (68.9%) and the Internet (61.7%). The accessibility and availability of community pharmacies (location, lack of pre-booking, long opening hours), as well as the high quality and reliability of the pharmacy-based service, were considered by pharmacists as a major advantage in the provision of pharmacy-based vaccination services.

5.3. Patients' perceptions of traditional and extended community pharmacy services

5.3.1. Experiences and expectations of different ethnic groups towards community pharmacy medicines-related services (Paper VI)

The study (Paper VI) revealed differences in the behaviour of Estonian and Russian-speaking ethnic groups in the case of medicines-related services at community pharmacies. Russians were more concerned about their health ($p=0.006$), medicines consumed ($p=0.037$), and used pharmacy less as a source of medicines-related information and services ($p<0.001$) than Estonians (Figure 10). Furthermore, lack of experience also affected Russians' expectations to receive medicines-related advice in the future. Thereby, Estonians showed a greater need for receiving advice about medicine use ($p=0.044$) and to solve medicine use and related problems ($p<0.001$) from the pharmacist. Also, with the increase in age and polypharmacy, more people in all ethnic groups asked for information about medicines ($p<0.001$) and minor health problems ($p<0.003$) in pharmacies. Those, who did not consider pharmacy the first choice to solve medicines-related problems, mainly preferred a general practitioner or trusted their own knowledge.

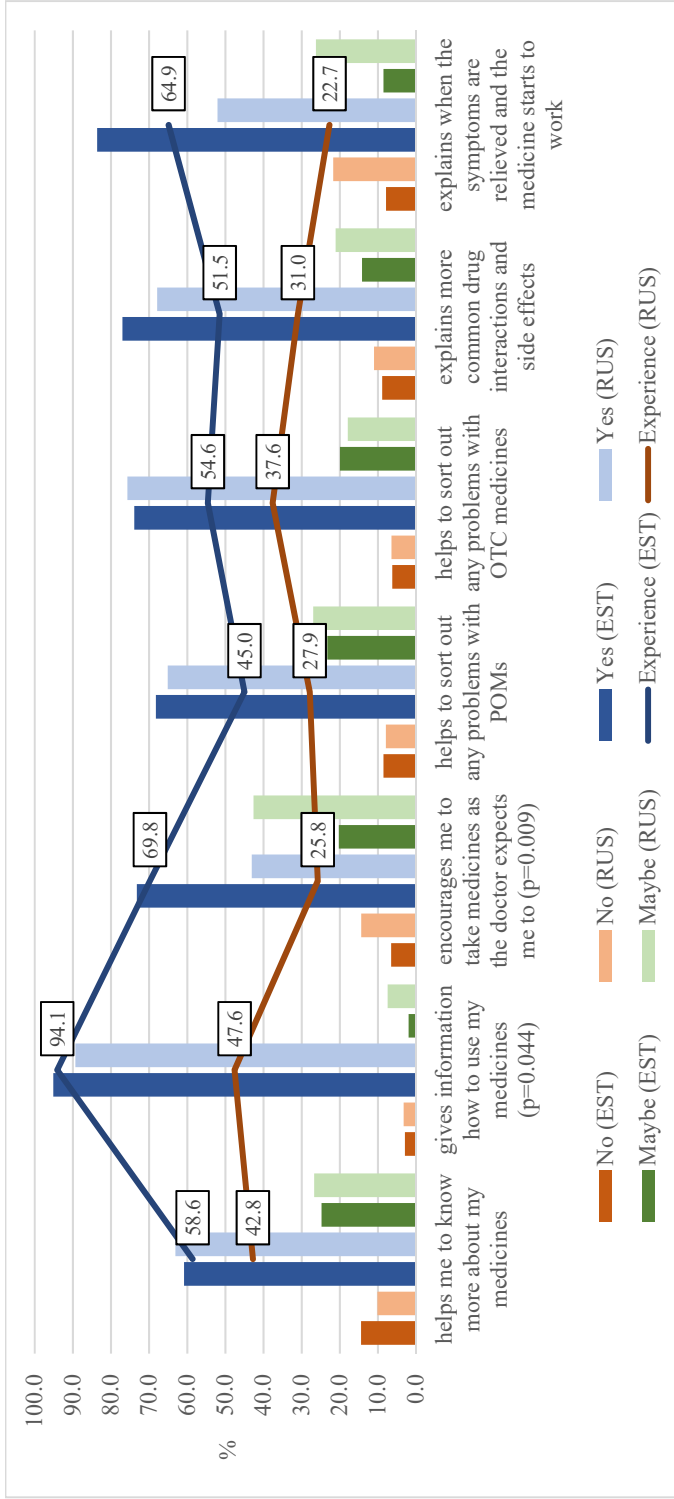


Figure 10. Experiences and expectations of pharmacy customers on medicines-related counselling based on their mother tongue (Russian/ RUS and Estonian/EST).

Overall, the interest in having other medicines-related services at a community pharmacy in the future was moderate. Participants were most interested in receiving support regarding the use of newly prescribed medicines (78.9%). Significant differences between the two groups were in most aspects, except for the medicines use review (Figure 11).

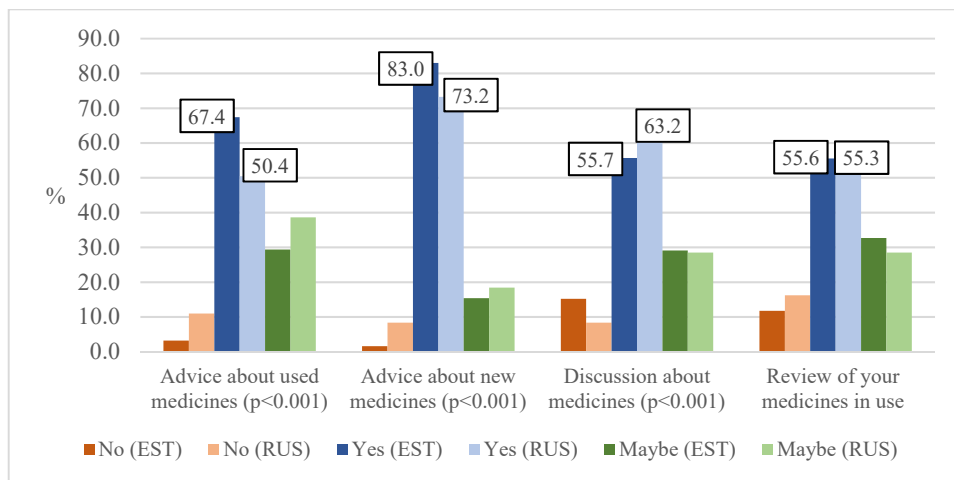


Figure 11. Expectations of pharmacy customers on medicines-related services based on their mother tongue (Russian/RUS and Estonian/EST).

The reason to use a pharmacy as a medicines-related information source was mainly influenced by the belief that the pharmacist is competent to help (78.3%). Also, pharmacists' personal readiness to invest time in communication about medicines was relevant for 53.4% of the participants. More than half (55.2%) of pharmacy customers would prefer to have more privacy in a pharmacy. On average, people were willing to wait 5–10 minutes to have a consultation, whereas elderly customers would spend even more time waiting (p<0.001).

The study highlighted that after pharmacy customers become more aware of what type of medicines-related information could be obtained from the pharmacists, overall awareness of pharmacists' role improved. Mostly, the competence and knowledge of the pharmacist were outlined: *"I appreciate the pharmacist's awareness and competence to explain the effect of the medicines and active substances. Good advice helps to cure the disease"* (an Estonian respondent).

5.3.2. Accessibility to and awareness about influenza vaccination – involvement of community pharmacies (Paper VII)

In 2018, a vaccination service was offered for the first time at community pharmacies in Estonia. In the pharmacy customer study, more than half (54.9%) of the participants (N=257) received the influenza vaccine for the first time. Most of the participants (95%, n=235) were satisfied with the information they received from the provider and would use pharmacy-based vaccination in the future and recommend it to others. Reasons to receive influenza vaccination at the community pharmacy could be categorised into personal motivation and pharmacy-related factors. The personal reasons were mostly related to the fear of illness. At the same time, the one related to the pharmacy emphasized the convenience of a community pharmacy as a location that is open for many hours and offers quality service that a person can trust (Figure 12).



Figure 12. People’s reasons for vaccination at the community pharmacy.

In addition, participants would, in the future, involve more community pharmacies in the supply of pharmacy-based influenza vaccines and expand the number of vaccines (e.g., Tick-Borne Encephalitis, Hepatitis A and B, Diphtheria, and Tetanus) that can be vaccinated in pharmacies.

6. DISCUSSION

The doctoral thesis provides a comprehensive overview of the development of community pharmacy practice in Estonia, focusing on the application of person-centredness and professional competencies. More specifically, the competency-based focus in pharmacy education, the implementation of a quality framework on the pharmacy service, and patient feedback on both traditional and extended services in the community pharmacy were evaluated.

6.1. Pharmacy education

Frameworks for the development of competency-based pharmacy education

Interest in implementing CBE in the education of health care professionals, including pharmacists, has grown (Gruppen et al., 2016). The traditional education system is often too rigid and static to adapt quickly to the needs of society and patients (Gallagher, 2014).

What are the current key points of pharmacy schools in the EU countries in developing pharmacy curricula? The requirements established in the EU directive *the Recognition of Professional Qualifications* (Directive 2013/55/EU) for the length, content, and outcomes of pharmaceutical education support course and subject-based learning, with competencies formulated in very general terms as learning outcomes. In order to develop CBE, it is essential to apply other frameworks in addition and collaborate with pharmacy stakeholders to identify the competences needed in a particular country. The EPCF model, standardized for pharmacy education and training in Europe, was first time used in 2016 for the evaluation of the UT pharmacy curriculum, involving representatives of both the pharmaceutical sector and academia (Paper I). The results showed that both groups of evaluators have to some extent different perceptions and expectations regarding the competency levels of entry-level pharmacists, which also suggests a different understanding of the content and organization of CBE. According to the academia, the level of personal and patient care competencies was relatively high and sufficient to start practicing in various fields of pharmacy. Thereby other pharmacy stakeholders assessed the obtained competency level at graduation lower and presented several proposals on how to make changes in the content and teaching quality of pharmacy education at the UT. They emphasized the need for better acquisition of professional knowledge corresponding to the labour market, creating collaborative training opportunities with medical students, as well as teaching management and entrepreneurship subjects (Paper I). The aspects mentioned above would support the acquisition of professional competencies and contribute to providing person-centred care and ensuring the sustainability and development of the pharmacy service. Regarding the representatives of academia, the higher evaluation of acquired competencies in the curriculum can be explained by their understanding of providing a versatile and comprehensive education supporting broad-based professional knowledge. Various other steps have

been taken at different levels in the UT to improve teaching and learning quality; for example, by implementing Good Practice of Learning and Good Practice of Teaching, both supporting outcome-oriented and learner-centred approaches (University of Tartu, 2021a; University of Tartu, 2021b). The need to support the development of transferrable skills by supporting different competencies was also recently emphasized at the UT. To assess the development of both professional and transferable skills, in the spring of 2020, the evaluation of curricula by students was carried out for the first time at the UT.

Students feedback on the development of competency-based education

The pharmacy students who participated in the curriculum evaluation study pointed out the need for more effective linking of practical and theoretical knowledge (Paper II). The most satisfied were the 5th-year students who had completed a 6-month pharmacy internship, where they experienced the practical application of theoretical knowledge every day. Students of junior courses would have liked to acquire more practice-related professional knowledge. However, their limited experience with pharmacy education can also strongly influence their expectations of the curriculum, especially for 1st-year students. In addition, the study outlined those transferable skills, i.e., management, leadership, analytical, and organizational culture, which should be further developed within the pharmacy curriculum, as well as digital competences. The latter was rated as the lowest acquired competence among pharmacy students. Digital skills are considered an essential part of future competencies and skills of health care professionals (Directorate-General for Health and Food Safety, n.d.). The increasing use of digital applications, telemedicine, or artificial intelligence applications (Masters, 2019) requires the development of general and field-related digital competences during pharmacy studies. Therefore, digital health education is a major focus, as the deficit of digital health training in pharmacy education has been reported (FIP, 2021b). A similar trend can be seen at the UT, where according to the long-term goal, every graduate acquires, in addition to professional knowledge and skills, the digital competence necessary for both general and professional practice (Mällo, 2020; Tartu Ülikool, n.d.). Recently, the digital competencies of lecturers and students at the Institute of Pharmacy were mapped. The results showed that the application of the latest digital solutions in the pharmacy field and public e-services in the pharmacy curriculum should be more effectively implemented to support students' professional digital competencies (Sepp & Volmer, 2022). Also, an action plan and specially developed courses are required to develop digital competencies at the Institute of Pharmacy.

Similar to the results in Paper II, some transferable skills were also outlined by pharmacy stakeholders in Paper I, but mainly in connection with the need to teach entrepreneurship and management subjects. Although the curriculum was updated in 2019, transferable skills still need more attention in the future to increase thinking beyond qualification and experience, especially in a situation where rapid technology changes, innovation, and political and economic trends in the health care sector require fast adaptation to new circumstances and new roles.

Contemporary assessment methods for competency-based pharmacy education

An essential part of CBE is assessing acquired knowledge and skills in a relevant setting; one possibility is using the OSCE test (Patricio, 2013). Since 2018, the test has been conducted in-person and remotely at the Institute of Pharmacy. The OSCE test can be used well in the learning process for both interim and final assessments, giving feedback on the student's knowledge and the quality of teaching to both the student and the teacher (Paper III). Since 2019 the OSCE test has also been used after a pharmacy internship to evaluate pharmacy students' clinical and communication skills about POMs and OTC medicines (Tartu Ülikooli farmaatsia instituut, 2021b).

Our study showed the feasibility of the OSCE test in evaluating and providing feedback on the clinical and communication skills of pharmacy students regardless of the OSCE setting (online or classroom). However, creating a supportive and accommodating PCC environment in an online setting is undoubtedly challenging, as the simulated patient satisfaction was low. The preparation of students in the online environment did not differ from that in the classroom, so the various factors that affect the interaction with the patient in the online environment were not considered. Indeed, through virtual counselling, it is more difficult to establish rapport and identify non-verbal cues from patients that may influence patients' willingness to participate in counselling (Speyer & Zack, 2003). Furthermore, an online setting lacks the intimacy and intricacy of real-world interactions (Poh Li et al., 2013). More advanced training in online counselling may be required, where the person-centred and digital care aspects are inter-related (OECD, 2020; Van der Eijk et al., 2013). A skilful, competent, and digitally capable pharmaceutical workforce is needed to use digital health's full potential (FIP, 2021b).

The study (Paper III) unexpectedly revealed the simulated patient counselling gaps of assistant pharmacists participating in the continuous education program "From assistant pharmacist to the pharmacist" in multiple aspects (e.g., identification of patient problems and providing supportive health information if needed). This gap emphasizes the need to acquire professional competencies not only during undergraduate studies but also to follow the principles of lifelong learning to promote professional development in everyday practice. The competencies required for CPD should be introduced and developed before entering practice, such as self-assessment and self-management skills (Khamis et al., 2020). CBE embraces the continuum of learning from undergraduate education through the pharmacist's lifelong professional development to achieve and maintain continuity of professional competencies (Chuenjitwongsa, 2018). The continuing education system for pharmacists in Estonia has improved over the years, but it has been developed more in the context of continuous professional education than continuous professional development. The main form of training comprises lectures, where the trainee has mainly a passive role. However, there is not existing lifelong learning system that seamlessly combines under- and postgraduate education (Eesti Farmaatsia Selts, 2021a). To support continuous professional development in the pharmacy profession, it is essential to develop

practice-based competency standards (Nash et al., 2017), which, in turn, is the basis for providing high-quality service. It has been demonstrated that academia could play a more important role in organizing the lifelong learning education of pharmacists (Batista, 2022). It is also applicable in the Estonian context.

In conclusion, the first steps in developing CBPE have been taken at the Institute of Pharmacy. These steps are also supported by the UT's general trend of introducing contemporary teaching methods and acquiring transferable skills in undergraduate education. When promoting CBE, it is also crucial to involve various stakeholders, first to agree on professional competencies, then provide education and find possibilities for implementation of acquired competences. The first competence-based evaluation of the pharmacy curriculum at the UT showed that different stakeholders have different expectations regarding pharmaceutical education in Estonia. While other stakeholders emphasized the necessity to develop more patient care competences and various transferable skills and introduce entrepreneurship knowledge, according to the representatives of the academia, the existing curriculum offers sufficient professional knowledge for entry-level pharmacists. The development and implementation of CBPE are challenging. Multi-stakeholder involvement is required for a common understanding of professional competencies and needs from society and patients to contemporary pharmacists.

6.2. Development of contemporary and person-centred pharmacy practice

Development and use of Community Pharmacy Services Quality Guidelines

In recent decades increased emphasis has been placed on monitoring and improving the quality of care provided to enhance the community pharmacy practice (Alhusein & Watson, 2019; Dolovich, 2018). In collaboration with different pharmacy stakeholders, the quality standards of pharmacy practice in Estonia have been developed, whereas the state has played a modest part in these activities. The CPSQG was first developed and published in 2012 and updated in 2016 and 2021. This reflects well a constant need for change in the community pharmacy practice – to adapt fast to the needs and expectations of society, and the changing role of the pharmacist at the community level, e.g., the provision of extended pharmacy services.

The developed CPSQG enables active monitoring of service quality and supports the implementation of necessary changes. The CPSQG quality indicators are primarily process-based, assessing community pharmacy activities in drug communication, organizational management, self-improvement, compounding of medicines, monitoring of medicines stock in pharmacy, etc. (Paper IV). The principles of PCC can also be evaluated in the scope of 2/3 of the CPSQG quality indicators: 1/10 belong to the outcome category (access to care), 1/4 to the

structure (environment and operation aspects), and all the rest to the process category (patient-pharmacist interaction) (Paper V).

Despite several promotional activities and jointly organized guideline-based evaluations in 2014, 2016, and 2019, the study results showed a low uptake of the CPSQG in practice and, therefore, little impact on the quality of community pharmacy services. In some cases, there was even a decline in service quality; hence, it is understandable that standards alone will not change pharmacy practice. One of the reasons for not using guidelines may be that, despite the existence of the standard for ten years, the need for its practical use has not yet reached all pharmacists. A recent online survey among community pharmacy professionals outlined that only half were familiar with the CPSQG. Low motivation and limited time, attributed to the lack of labour, were considered the main obstacles to the implementation of CPSQG. The same study recommended that in the future, additional training opportunities on implementing guidelines and using quality indicators should be organized to increase the use of CPSQG in practice. Also, a mentoring system with more experienced pharmacists serving as a role models and encouraging less experienced colleagues in terms of the usability of CPSQG and the benefits of these guidelines might be helpful. In general, a more comprehensive promotion of the utility of CPSQG should be considered in the future (Raja & Sepp, 2022). Similarly, other studies have shown that to maximize adherence to the guidelines, several strategies are needed, e.g., reminders in daily used computer programs, constant feedback one-on-one about the uptake of the guidelines, and interactive seminars (Mahmoudi et al., 2015). As well as the need to address pharmacists' perceptions, e.g., "lack of patient's interest" (Seiberth et al., 2020).

In addition, there are several other reasons why the uptake of the guidelines has been limited: constant changes in community pharmacy regulations; outdated and product-based compensation of medicines' prices by the Estonian Health Insurance Fund; no apparent role of community pharmacists as health care providers along with poor integration into primary health care; lack of leadership, which is characterized by the fragmentation of the sector; lack of pharmacy professional workforce, etc. The listed aspects are discussed more in detail in Paper IV, and some are touched upon later in this chapter.

Provision of traditional community pharmacy services

The results of the CPSQG-based study demonstrated that pharmacists provide more counselling about OTC medicines and less about POMs. Aspects affecting the quality of medicines counselling and the provision of care can be categorized as pharmacy and health care system based. The latter is characterized by community pharmacies' poor involvement in patient care teams. There is no access to patients' medical records and no connection to the same information channels as for other health care professionals to share information, except the data about dispensed POMs (and not OTC medicines) are available to other health care professionals. It is necessary to develop and integrate structures that support health information technology through continuous care and consider the needs of

different health care providers. Currently, clinical decision-making supporting tools developed, and provided by the Estonian Health Insurance Fund, are mainly oriented toward GP practices (Eesti Haigekassa, n.d.(b)).

Another aspect at the health care level is the reimbursement system of medicinal products, which has not changed for almost two decades, with the average mark-up for manufactured medicines in 2020 at 12.8% (Sotsiaalministeerium, 2021b) and for extemporaneous and serial medicines per sales package at 0.96 EUR (Ravimite hulgi- ja jae..., 2011). At the same time, GP practices funding has constantly been updated and adjusted to ensure the sustainability and quality of provided services (Eesti Haigekass, n.d.(c); Jorro, 2016). Also, a quality bonus system (pay for performance) has been developed to motivate them to follow the quality system (Merilind et al., 2016). Although current financing does not satisfy GPs (Jorro, 2016), it still puts them in a much better position compared to community pharmacies. A study of community pharmacies across Europe highlighted that unless there is significant intervention at the system level and adequate remuneration for pharmacy services, there will be no change in community pharmacy practice (Costa et al., 2017).

On a pharmacy level, pharmacists themselves are often an obstacle to providing counselling about the use of medicines and supporting patients in self-care because they are insecure about their clinical abilities and are therefore afraid to take responsibility (Frankel & Austin, 2013; Rutter, 2017). Moreover, a survey conducted among Estonian pharmacy customers showed that the quality of the pharmacy information service could be increased by paying attention to pharmacists acquiring effective communication techniques (Volmer et al., 2007). By focusing on PCC in daily practice, they can concentrate more on the particular patient's needs, thus practicing their theoretical knowledge and communication skills and increasing the pharmacist's self-perceived competence (Piecuch et al., 2017). Kaae et al. (2012) have outlined that engaging patient in medicines-related communication at the pharmacy counter depends on what type of questions are asked, as it has been shown to induce patients to offer information (Garner & Watson, 2007). Therefore, the task of the pharmacist is to shape the conversation with the patient and improve the medication experience. These are important components of pharmaceutical care and PCC practice (Cipolle, 2012).

Provision of extended community pharmacy services

The lack of connection of the community pharmacies with the primary health care sector described above could be improved by the increased introduction of extended services. In Estonia, however, extended pharmacy services have received little national recognition, and some of them are even considered controversial by policymakers and other health care professionals (Sepp et al., 2021). Pharmacists have the knowledge and skills to promote health, prevent disease, and advice on medicines' environmental risks. However, their use is not coordinated nationally to support public health in Estonia (Eesti Farmaatsia Selts, 2021a). Until now, various point-of-care tests have been offered in Estonian community pharmacies. The CPSQG indicator-based service quality study (Paper IV) demon-

strated only an increase in the frequency of blood pressure measurements. The standstill with the provision of extended services can be explained by the same aspects as mentioned before: lack of privacy and resources, no reimbursement, no access to patient's medical records, the image of the pharmacy different from a health care facility, etc. In the future, it would be crucial to enable pharmacists to practice to the fullest and to remove the constraints that limit their scope of practice (OECD, 2020; Sepp et al., 2021). In cooperation with the state and other institutions, the launching of health promotion and disease prevention services integrated with the rest of the health care system (e.g., vaccination, diabetes risk assessment, smoking cessation) in community pharmacies have started (Eesti Farmaatsia Selts, 2021a). The pharmacy-based vaccination (Paper VII) could be seen as a first attempt to integrate community pharmacies with other health care, as it required effort from community pharmacies and health care providers who carried out vaccination at community pharmacies. Also, the Estonian Ministry of Social Affairs and state institutions' active involvement was needed to ensure service quality, including vaccination room requirements (Rootslane, 2021). Definitely, more clarity is needed regarding the role of community pharmacists in public health delivery (Hope et al., 2021). However, the positive outcomes of previous initiatives (Paper VII, Valge-Rebane & Sepp, 2021) should motivate the Estonian Ministry of Social Affairs and the Estonian Health Insurance Fund to involve pharmacists more in order to reach the population with different disease prevention services. The development of extended services leads to the need to evaluate patient-reported outcomes, and for this, it is necessary to create an additional set of indicators in the CPSQG.

Not all pharmacists have shown a willingness to widen the scope of their practice. Mainly younger pharmacists or those with a positive experience with the provision of extended services, e.g., pharmacy-based vaccination, are interested in providing extended services. Thus, a major barrier is the lack of competences necessary for the provision of services. Community pharmacists would prefer to upskill the competencies for a vaccination with professional training compared to information on the Internet or in professional journals (Paper VII). According to the pharmacies' self-assessment, the organization of CPE, in general, has improved over the years, but there is still no targeted or need-based competence development (Paper IV). The systematized CPD is necessary to keep up with the needs of society but also to ensure the quality and person-centredness of provided care in the pharmacy.

Person-centred care components in the Community Pharmacy Services Quality Guidelines

Adherence to CPSQG would be of great help to pharmacists in the practical implementation of the principles of PCC as 2/3 of the current indicators allow for a more direct or indirect way to follow these aspects considering patients' individual preferences, values, and needs. However, the three pillars of person-centred communication – openness, active listening, and plain speaking (Ilardo & Speciale,

2020), should also be integrated into the guidelines to better engage the patient in their care and to make pharmacists aware of the importance of these competencies.

Pharmacists' communication skills, usually described in professional standards (Cavaco, 2017), are not directly addressed in the CPSQG but should be supplemented with quality indicators of patient communication. The application of *Patient-Centred Communication Tools* could be considered one of the solutions for developing pharmacists' person-centred communication skills (Naughton, 2018). Appropriate communication skills of the pharmacist should promote a humanized practice, active patient participation in their health, and better health outcomes (Ilardo & Speciale, 2020; Naughton, 2018). Moreover, satisfaction surveys among pharmacy customers should be carried out by community pharmacies to improve understanding of patients' needs and expectations towards pharmacy services. The latter has been on a continuous upward trend based on the CPSQG self-assessment study (Paper IV), being an important indicator for measuring general PCC performance in pharmacy practice.

The CPSQG-based study (Paper IV) also revealed that a pharmacy environment supporting PCC and ensuring privacy during counselling is essential for creating a trusting relationship with the patient. However, the number of private encounters or rooms has not increased throughout the three study years. Limited pharmacy space, size, and poor-quality consultation rooms have been shown to concern patients and physicians internationally (Dhital et al., 2022; Hindi et al., 2019). A community pharmacy's visual and professional appearance influences patients' perceptions (Guhl et al., 2019). Community pharmacies look more like retail businesses than health care facilities in Estonia: open sales areas, fully stuffed sales shelves, broad product range, and active marketing within the pharmacy and other channels. As a result, community pharmacies are often perceived as commercial entities, and product-based financing further increases this perception (Lake et al., 2020). In a situation where the financing of pharmacy services in Estonia is unsustainable, no considerable changes are expected in the pharmacy's environment or marketing activities, an example of other countries (Kho et al., 2017).

In conclusion, the CPSQG development showed the initiative of Estonian professional organizations to improve the quality of pharmacy services. The guideline also contains the principles of PCC, but these aspects should be emphasized more by including additional indicators. Moreover, patients should be engaged in standard development to meet their needs. PCC should also be introduced further during undergraduate pharmacy studies. An apparent problem is the insufficient use of the guideline by pharmacists and its impact on the quality of pharmacy services, but here the reason is not only related to the standard itself. More effective integration of community pharmacies into the health care system could be one solution to overcome quality gaps in pharmacy practice. The development of contemporary and person-centred pharmacy practice requires more public attention, involvement, and funding from the government and improved collaboration with other health care providers and within the pharmacy

sector. Pharmacies' engagement in health care is crucial. Otherwise, it is difficult to expect significant changes in practice.

6.3. Patients' awareness, experiences, and expectations towards pharmacy services

Public perception toward pharmacies and pharmacists

Participation in the study allowed pharmacy customers to focus more on the information they have received from the pharmacy or could receive in the future. This led to an improved understanding of the pharmacist's role and competencies in the patient treatment process (Paper VI). Based on other studies, the pharmacist is often perceived only as a medicine dispenser alias shopkeeper (Ilardo & Speciale, 2020; Majchrowska et al., 2019). It is necessary to promote the pharmacist's role, to improve public awareness and, therefore, patients' accessibility to comprehensive pharmacy-based services, which will improve patients' health outcomes, save costs, and make better use of the health care system resources (Dalton & Byrne, 2017; OECD, 2020). The COVID-19 pandemic also outlined the importance of pharmacists (Costa et al., 2021). Community pharmacies were often the only health care settings that continued "real" contact with patients, in addition to daily practices educating people on health-related issues, offering psychological and social support, etc. The pandemic clearly outlined the need to expand the pharmacist's professional role (Sepp et al., 2022; Watson et al., 2021). Still, community pharmacies need appropriate support, recognition, and funding to ensure the provision of essential services and quality of care (Allinson et al., 2022).

Patients' experiences with traditional and extended services

A critical indicator of high-quality service is patient satisfaction (Curtiss et al., 2004), which is the basis for regular visits to health care professionals and better adherence to the treatment (Barbosa et al., 2012). The pharmacy customer study (Paper VI) outlined that proactiveness from the pharmacist is expected in medicines-related counselling. Current patients' experience with receiving counselling did not fully meet their expectations. This indicates the need to improve and standardize the quality of traditional services. Patients were interested in learning more about their medicines, especially when there were problems with using the medicine (e.g., adverse drug reactions), but also how to take medicine (e.g., when prescribed for the first time), when to expect the medicine to start working, etc. The described results also coincide with the results of the CPSQG study, where, according to pharmacists' self-assessment, the POMs counselling was not as high-quality as the OTC medicines counselling. Factors affecting counselling have already been discussed in the previous chapter. However, if patients have additional questions about POMs after a doctor's visit, they may not get all the answers from the pharmacy because the pharmacist does not have access to the medical record of the patient. This may also be one of the reasons

why patients' interest in receiving medicines-related services in the future was moderate (Paper VI).

A positive experience with extended services is well illustrated by the pharmacy-based influenza vaccination, which was popular among service recipients due to the convenient accessibility of pharmacies and high-quality service, and increased interest in receiving other vaccines at the pharmacy (Paper VII). Several studies and reports have described accessibility to pharmacies as an important value in health care (OECD, 2020; Steckowych et al., 2019; Watson et al., 2021). In Estonia, the proportion of those vaccinated for the first time against influenza during pharmacy-based vaccination was high (Paper VII), which confirms that pharmacies are visited by those who have not been seen by other health care professionals for years. This situation again emphasizes the community pharmacy value in health care, especially in disease prevention, such as screening, point-of-care testing, vaccination, etc. These roles in public health extend a pharmacist's influence beyond the pharmacy counter and have a significant impact on communities (Blouin & Adams, 2017).

The survey results also emphasized that, in addition to the content of the service, the private environment is also very important (Paper VI). More than half of the study participants outlined the need for more private areas in the community pharmacies and pharmacists' personal willingness to devote time to patient communication. The above argument is also supported by the survey results of pharmacy self-evaluation based on CPSQG quality indicators, where less than 1/5 of the pharmacies that participated in the study had private consultation areas or rooms. Patients consider lack of time and privacy as the reasons why they do not interact with the pharmacists in the community pharmacy (Brata et al., 2016). In the current research, most pharmacy customers would be happy to wait to talk to the pharmacist for 5–10 min (Paper VI).

Patients' expectations about medicines-related services

Even though that expectations for pharmacy services were not very high, various services were still listed that pharmacy customers wanted to receive from a pharmacy in the future. New medicines service was mentioned most often (Paper VI). It describes the need for more comprehensive counselling for first-time medicine users to manage a long-term condition. When starting a new medication, people may experience problems, discomfort, and a lack of understanding of the need to use medication, which may increase non-adherence and worse health outcomes (Barber et al., 2004; Fernández et al., 2017). The new medicines service helps resolve specific problems and concerns of the medicine user by receiving more information about the medicines from the pharmacist. Almost half of both groups (Russians and Estonians) in our study (Paper VI) were interested in medication use review (MUR) service. Described service is needed for patients using several medicines simultaneously. It is a structured review with patients about their medicines use intended to improve patient knowledge and use of medicines (National Pharmacy Association, n.d.). Internationally, the provision of MUR through community pharmacies has increased as it has demonstrated

improved medication adherence and patient health outcomes (Bulajeva et al., 2014; Lee et al., 2009). In 2019, a MUR pilot was carried out in Estonian community pharmacies, where 140 medication-related problems were identified in 67 patients (Tuula et al., 2021). Currently, the MUR is still under development. For the full implementation of MUR, it is first necessary to agree on collaboration with GPs, access to patients' medical records for pharmacists, and funding the service by the Estonian Health Insurance Fund. A UK study found that patients were satisfied with the service they received but were concerned about their relationship with their GP, as MUR was provided separately from patients' other care aspects, and no collaboration between pharmacists and GPs existed (Latif et al., 2013).

Impact of cultural background on community pharmacy services

It is crucial that pharmacists put the needs and concerns of the patient first, considering patient-related socio-demographic aspects and patient willingness to interact (active versus passive patient). This not only increases patient satisfaction but also loyalty to the pharmacy (Guhl et al., 2019). Pharmacists' professional and PCC competencies should be enhanced to overcome pharmacists' insecurity and better support patients throughout their care.

A patient's cultural background can significantly influence the experiences and expectations of medicines-related counselling and services in a community pharmacy (Paper VI). For example, Russian-speakers' experience with medicines counselling was half that of Estonians, although they expressed more concern about the use of medicines. Several aspects affect ethnic minorities when interacting with pharmacists and vice versa, but the first and foremost is the language barrier. Studies have shown that the language barrier impacts the quality of health care and increases dissatisfaction among ethnic minority patients and care providers (Al Shamsi et al., 2020). In addition, patients with a language barrier are more likely to use extra health care services (Bischoff & Denhaerynck, 2010) and experience more adverse events (Wasserman et al., 2014). Moreover, building a trusted relationship and providing PCC is challenging when a language barrier exists between the patient and the care provider. Lack of relationship with a pharmacist due to lack of experience in medicines-related counselling affects Russian-speakers' willingness to use pharmacy-based medicines counselling in the future. Therefore, it is important to recognize language differences with ethnic minorities and make better use of, for example, various online translation tools (Al Shamsi et al., 2020), attend specific language courses, etc., as they offer possible solutions to overcome these challenges and thus prevent further health disparities.

Also, Russian-speakers are characterized by a high level of trust in physicians (Vihalemm et al., 2017). In the current study, the GP was mainly preferred by those who did not consider the pharmacy the primary place for solving medicines-related problems (Paper VI). This belief is not only common in the Estonian context, but other studies have also shown that patients tend to prefer a doctor to a pharmacist regarding medication-related problems (Vihalemm et al., 2017).

Patients believe that physicians, unlike pharmacists, can answer all the questions related to their medications (Perrault & Newlon, 2022). In addition, physicians have traditionally played a more dominant role in the health care system because of their unique influence over the use of health care resources in determining treatment and prescribing medications (Denis & van Gestel, 2016).

In conclusion, patients value the accessibility and availability of community pharmacies and are interested in both traditional and extended pharmacy services. However, a limited understanding of the role of community pharmacists and their competencies, as well as a lack of privacy and pharmacists' attitudes, may be a major barrier to receiving quality service. The experience of suboptimal medicines counselling also affects people's views of the pharmacist and the pharmacy service. The provision of PCC in community pharmacies needs to be enhanced to better respond to the needs and concerns of different patient groups.

7. CONCLUSION

This study is the first comprehensive research on the development and implementation of the competency-based and person-centred pharmacy practice in Estonia, considering perspectives of pharmacy education, the quality framework of community pharmacy services, as well as patients' experiences and expectations towards medicines-related services at the community pharmacy.

Based on the objectives of the thesis, the following conclusions have been drawn:

1. Over the past ten years, the development of competency-based and person-centred pharmacy practice in Estonia has been fragmented, and its implementation slow.
2. The principles of competency-based and person-centred pharmacy education have been partly covered in the Pharmacy curriculum of the UT and should be introduced more effectively. Different pharmacy stakeholders have different expectations towards professional competencies of entry-level pharmacists.
3. CPSQG is a validated standard supporting pharmacy professionals in providing high-quality and person-centred pharmacy services, which, however, has not had a sufficient impact on improving the quality of Estonian pharmacy services over the past ten years.
4. The quality of medicines-related services still needs standardization. Patients want the pharmacist to be more active in counselling on various aspects of medication use. The pharmacy environment, especially the presence of privacy, significantly affects the provision of person-centred services.
5. The development of contemporary pharmacy practice is related to the introduction of extended services in community pharmacies. The lack of community pharmacy professionals, but also their age and uncertainty about the new role may be important hindering factors in expanding the scope of practice on the example of vaccination.
6. Patients' awareness about the content of the pharmacist's work was rather low. They had more expectations towards traditional than extended pharmacy services. Ethnic minorities were less satisfied and had lower expectations towards community pharmacy services.

Ultimately, community pharmacies in Estonia are not integrated into health care system. Struggles related to funding, lack of workforce, partially used professional competencies, and non-existing connection with health care have distanced pharmacies from health care system. At the same time, the pharmacists' own efforts have not borne fruit, as social interest has been low, and the contribution from the authority has been limited. Moreover, the fragmentation of the sector itself hinders the overall progress of the field.

Healthcare facing challenges requires involvement and strengthened cooperation of all parties. The convenient accessibility of community pharmacies and the professional competency of pharmacists are invaluable assets to healthcare.

8. PRACTICAL IMPLICATIONS

The findings of this thesis are beneficial for policymakers, higher education institutions, professional organizations, and professionals who are involved in health-care for making changes in legislation or further practice.

1. Professional pharmacy competency standards should be developed based on a shared understanding of the professional role of pharmacists. This is important for the improvement of pharmaceutical education, the development of a continuing professional development system, and the promotion of contemporary pharmacy practice. Competency standards also demonstrate to the public and other health professionals the expertise of pharmacists.
2. Stronger cooperation between the university and pharmacy practice is required in order to apply the results of research to improve the quality of pharmacy services.
3. In the future, different stakeholders, including patients, should be involved in the development of frameworks better to understand their perspectives and expectations toward pharmacy practice.
4. In order to develop pharmacy service quality and person-centred principles, the change can be brought by a transformation of pharmacy financing system from product- to performance-based. Increased involvement of community pharmacies in public health initiatives (e.g., vaccination, health screening), as people value the accessibility and availability of community pharmacies.
5. The language barrier and cultural differences can affect the availability and quality of healthcare services, including pharmacy services. As a result, more attention should be paid to these patient groups at the national level.
6. It would be necessary to create a more comprehensive view at the state level of how to develop the field of pharmacy and integrate it with healthcare better and apply the competence of pharmacists for the benefit of patients and the sustainability of the health care system.
7. In order to reduce the fragmentation of the sector, one umbrella organization should be created that represents all pharmacies and pharmacists, as well as the academic community in Estonia.

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10. SUMMARY IN ESTONIAN

Kompetentsipõhine ja inimkeskne apteegiteenus – arendamine ja rakendamine Eestis

Sissejuhatus

Kaasaegne tervishoid peab olema kvaliteetne, kättesaadav ning vastama elanikkonna ootustele ja vajadustele sõltumata nende sotsiaalmajanduslikust taustast. Elanikkonna vananemine, krooniliste haiguste kasv, ressursside (erialane tööjõud, rahalised vahendid) vähesus, aga ka COVID-19 pandeemia, on toonud esile mitmed tervishoiu probleemid ning tinginud vajaduse leida neile jätkusuutlikke ja kulutõhusaid lahendusi (OECD, 2021b). Maailma Terviseorganisatsioon (WHO, 2015) on leidnud, et inimkeskne, kompetentsipõhine ja valdkondade ülesele koostööle suunatud tervishoid on tõhus viis, kuidas toetada elanikkonna tervist ning terviseteadlikkust ning hakkama saada eesootavate väljakutsetega. Oluline on tervishoiutöötajate kiire kohanemine muutustega tervishoius, et vastata ühiskonna vajadustele (WHO, 2013). Seetõttu peab antav meditsiini- ja farmaatsiaharidus olema laiapõhjalisi teadmisi ja oskusi pakkuv ning toetama spetsialisti kohanemisevõimet sarnaselt tervishoiusüsteemi muutustele (Kak et al., 2001; WHO, 2013). Kompetentsipõhise õppe rakendamine on tõhus viis, kuidas paremini vastata ühiskonna ootustele (Pengsuparp & Muangsiri, 2012) ning suurendada inimkesksete põhimõtete rakendamist praktikas, kus teenuse osutamisel on fookuses konkreetse inimese vajadused ning ta on aktiivselt kaasatud oma ravi protsessi (Atkinson et al., 2016).

OECD esmatasandi tervishoiu 2020. a raportis toodi välja, et tervishoiu väljakutsetega hakkama saamiseks on oluline kaasata ka teisi tervishoiuspetsialiste, sh apteekreid ning laiendada nende tänast rolli. Eestis osutavad proviisorid ja farmatseudid üldapteegis apteegiteenust, mille põhifookus on ravimialane nõustamine, ravimite väljastamine ja valmistamine (Medicinal Product Act, 2022). Samas on üldapteegid kõige kättesaadavamad tervishoiuasutused, 84% elanikkonnale on need 15 minuti ühistranspordi või jalutustee kaugusel (Eesti Uuringukeskus OÜ & Norstat Eesti AS, 2019). Suurimaks takistuseks on üldapteekide vähene integreeritus tervishoidu (Sepp et al., 2021), kuigi on näidatud, et apteekide sisuline kaasamine võib suurendada tervishoiusüsteemi kulutõhusust ning parandada elanikkonna tervist ja terviseteadlikkust (Kruus & Paat-Ahi, 2013).

Aastal 2012 anti välja esimene „Apteegiteenuse kvaliteedijuhis“ (täiendatud versioonid 2016. a ja 2021. a), et kaasajastada, ühtlustada ja parandada pakutava teenuse sisu ning kvaliteeti ja laiendada apteekrite rolli esmatasandi tervishoiusüsteemis. Samuti oli juhises esmakordselt kirjeldatud erinevate tervisenäitajate määramine, nt vererõhu mõõtmine ja veresuhkru määramine. Juhise loomine algatati apteegisektori initsiatiivil ning selle praktikas rakendamine oli apteekidele vabatahtlik (Sepp et al., 2021). Juhise väljatöötamisse ei olnud kaasatud

tavakodanikke, seega nende ootused ja vajadused, millisel määral juhis inimkeskse apteegiteenuse pakkumist toetab, ei olnud lähteandmetena teada.

Eesmärgid

Doktoriväitekirja põhieesmärk oli hinnata kompetentsipõhise ja inimkeskse apteegiteenuse arengut ning rakendumist Eestis. Täpsemalt jaotub uurimisvaldkond kolmeks.

1. Hinnata kompetentsipõhise ja inimkeskse proviisoriõppe arendamist ja rakendamist Tartu Ülikoolis.
2. Selgitada välja, kuidas on rakendunud apteegiteenuse kvaliteediraamistik ja kaasaegse apteegiteenuse põhimõtted üldapteekides inimkeskse ja kvaliteetse teenuse osutamiseks.
3. Hinnata patsientide teadlikkust, kogemusi ja ootusi seoses traditsiooniliste ja laiendatud apteegiteenustega.

Meetodid

Antud doktoriväitekirjas rakendati mitmemeetodilist lähenemist (Gil-Garcia & Pardo, 2006; Morse, 2003). See võimaldas hinnata kaasaegse ja inimkeskse apteegipraktika alustalasid – haridus, apteegiteenuse kvaliteet ja patsientide vaatenurk.

Kompetentsipõhise proviisoriõppe arendamise esimeste sammude hindamiseks Tartu Ülikoolis (TÜ) viidi 2016. aastal läbi Euroopa Farmaatsia Kompetentsi Raamistikul (EPCF) (Atkinson et al., 2014) põhinev kvalitatiivne uuring TÜ õppejõudude ja üliõpilaste (n=7) ning farmaatsiaspektori esindajate (n=7) hulgas. Raamistik sisaldab personaalseid ja patsiendihoolduse pädevusi 11 valdkonnas ja 50 konkreetset pädevuses. Mudelis hinnati loetletud kompetentside kaetust TÜ proviisoriõppes, üliõpilaste kompetentsuse taset ülikooli lõpetamisel ning puudusi õppekavas; arutati EPCF 11 valdkonna keskmised väärtused viiepunktilise skaala hindamisvahendi alusel ning TÜ ja teiste huvirühmade tulemusi võrreldi omavahel.

Pärast proviisoriõppe uuendamist viidi muudatuste esmase mõju teada saamiseks 2020. aastal läbi kvantitatiivne küsitlusuuring proviisoriõppe üliõpilaste seas. Hindamiseks rakendati üle-ülikoolilist õppekava tagasiside küsitlust, mis hõlmas 39 küsimust (õppekava, õpikeskkond, tudengi kompetentsipõhine eneseareng ja tugisüsteemid). Küsitlus viidi läbi 2019/2020 õppeaasta kevadsemestril. Valimi moodustasid 1., 3. ja 5. kursuse proviisoriõppe üliõpilased (N=67). Tulemuste analüüsil arvatati iga väite keskmine ja standardhälve. Tulemusi võrreldi proviisoriõppe erinevate kursuste vahel, aga ka ülikooli üleselt ning meditsiini-teaduste valdkonna tulemustega.

Proviisoriõppe üliõpilaste erialaseid teadmisi ja suhtlemisoskust hinnati kvantitatiivses uuringus, milles võrreldi *OSCE (Objective Structured Clinical Examination) – testi* tulemusi klassiruumis (2018–2019, kolm erinevat kursust) ja veebikeskkonnas (2021, üks kursus). *OSCE test* on enimkasutatav õppemeetod

üliõpilaste kliiniliste ja inimkesksete kompetentside hindamiseks, mis nõuab üliõpilaselt erinevate teadmiste ja oskuste kasutamist simuleeritud patsienti nõustades (Patricio et al., 2013). Testi sooritamisel hinnati 7 aspekti: kontakti loomine ja lõpetamine; sümptomite, kaasuvate sümptomite, kaasuvate haiguste ja kasutatavate ravimite hindamine; ravi soovitusel; teave ravimite kohta; patsiendile sobiv keelekasutus ning üldine tervise- ja heaolualane nõustamine. Hindamisel rakendati nelja-astmelist skaalat (teavet ei saadud – 0, osaliselt teave esitatud – 1, enamasti teave esitatud – 2, kogu teave esitatud – 3). Lisaks sai simuleeritud patsient anda tagasisidet kolmeastmelise skaala (ei – 0, võib-olla – 1, jah – 2) põhiselt, kas ta pöörduks sarnase probleemiga tulevikus taas apteekri poole. Gruppide vahelisi erinevusi analüüsiti dispersioonanalüüsi meetodil *ANOVA*.

Teise doktoriväitekirja eesmärgi saavutamiseks viidi kolmel aastal (2014, 2016, 2019) Eesti üldapteekides läbi kvantitatiivne vaatlevuuring, milleks kasutati „Apteegiteenuse kvaliteedijuhise“ kvaliteedi-indikaatoreid. Uuringus kasutati neid kvaliteedi-indikaatoreid, mis olid esindatud vähemalt kahel uuringuaastal (N=126). Vastamisel rakendati kahe- (jah – 1, ei – 0) ja neljaastmelist skaalat (mitte kunagi – 0, mõnikord – 1, enamasti – 2, alati – 3). Andmete analüüsimiseks rakendati dispersioonanalüüsi meetodit *ANOVA*, et võrrelda uuringuaastate vaheliste erinevuste statistilist olulisust.

Inimkesksete põhimõtete hindamiseks „Apteegiteenuse kvaliteedijuhises“ viidi läbi deduktiivne dokumendi sisuanalüüs (Elo et al., 2014), mille aluseks oli rahvusvaheline inimkesksuse rakendamise mudel tervishoius (Santana et al., 2018).

Proviisorite arusaamade hindamiseks laiendatud apteegiteenustest kasutati näitena apteegipõhist gripivastase vaksineerimise teenust. Kvantitatiivne küsitlusuuring viidi läbi 2019. a kevadel tegevapteekrite hulgas. Küsimustik koosnes 13 valikvastustega küsimusest, hõlmates alljärgnevaid teemasid: erialased teadmised vaksineerimisest; tajutav valmisolek vaksineerimise osutamiseks; apteekrite tajutav mõju elanikkonna vaksineerituse suurendamisele; apteek kui vaksineerimise koht. Saadud tulemusi analüüsiti neljas vanuserühmas: ≤ 35 , 36–50, 51–64 ja ≥ 65 aastat. Seost vanusega hinnati *Hii-ruut testi* abil.

Kolmanda doktoriväitekirja eesmärgi saavutamiseks viidi Eesti apteegikülastajate hulgas läbi kaks küsitlusuuringut. Esimene keskendus ravimialasele nõustamisele ja teenustele (2018–2021. a, 16 küsimust, millest 2 vabavastusega) ning teine apteegipõhisele gripivastasele vaksineerimisele (2018. a, 12 küsimust, millest 7 vabavastusega). Küsimustikud töötati välja vastavalt Inglismaa ja Iirimaa küsitlusinstrumentide põhjal (Pharmaceutical Society of Ireland, 2015; Rodgers et al., 2016). Ravimialase nõustamise ja teenuste küsimustik tõlgiti ka vene keelde, et jõuda vene keelt emakeelena rääkiva elanikkonnani. Tulemuste analüüsimiseks rakendati ravimialase nõustamise ja teenuste küsimustiku korral *T-testi*, et võrrelda eesti keelt ning vene keelt rääkivate apteegikülastajate erinevaid kogemusi ja ootusi ravimialasele nõustamisele apteegis. Vaksineerimise küsimustiku demograafiliste tunnuste seoseid hinnati *Hii-ruut testi* abil.

Uuringute eetilised aspektid

Kõikides uuringutes järgiti eetilisi uurimispõhimõtteid (Beauchamp, 2007; World Medical Association, 2013). Kõikidele osalejatele tutvustati konkreetse uurimistö eesmärke ja meetodeid, sealhulgas õigust oma osalemisest igal ajal loobuda. Kõigis uuringutes osalemine oli vabatahtlik ja anonüümne. VI ja VII artiklis käsitletud uuringute teostamiseks saadi kooskõlastus Tartu Ülikooli inim-uuringute eetika komiteelt (vastavalt 284/T-1 ja 286/T-9) (Ethics Committee of the University of Tartu, 2010) kuna need uuringud hõlmasid patsientide tervise ja ravimite kasutamisega seotud aspekte. Andmete kogumine, säilitamine ja analüüs vastavad isikuandmete kaitse seadusele (Isikuandmete kaitse seadus, 2019).

Tulemused

Kompetentsipõhine ja inimkeskne proviisoriõppe haridus

TÜ proviisoriõppe õppekava hindamise tulemusena Euroopa Farmaatsia Kompetentsi Raamistiku põhiselt selgus, et personaalse pädevuse kompetentside omandamine olid kaetud kogu õppe jooksul erinevalt inimkesksest pädevusest, mis oli esindatud konkreetsetes ainevaldkondades või õppeainetes. Võrreldes TÜ esindajatega olid farmaatsiaspektori esindajad enam kriitilised erinevate pädevuste omandamise osas proviisoriõppe raames. Viimased pidasid oluliseks suurendada valdkondadeülelset õpet meditsiiniteaduste valdkonnas, õpetada ettevõtluse ja juhtimispädevusega seotud õppeaineid ning kaasajastada apteegipraktikat. Mõlemad rühmad tõid olulise aspektina välja suurema vajaduse, kaasata õppesse praktikuid, et parandada teoreetiliste teadmiste praktikas rakendamist ning võtta täiendavalt kasutusele uusi õpetamise meetodikaid.

Proviisoriõppe üliõpilased olid rahul saadava hariduse ja omandatava pädevusega, kuigi ootaksid enam paindlikkust õppekava ülesehituse osas. Sarnaselt proviisori õppekava hindajatele pidasid ka tudengid oluliseks teoreetiliste ja praktiliste teadmiste tõhusamat sidumist kutseõppes. Tulevikus tuleb proviisoriõppes aina enam keskenduda digi- ja juhtimisoskuste ning enesejuhtimis- ja koostööpädevuste õpetamisele.

Proviisoriõppe teoreetiliste teadmiste praktikas rakendamist hinnati uudse õpetamise meetodika *OSCE testi* abil. Üliõpilaste hinnangul oli test teostatav ja tõhus sõltumata testi läbi viimise kohast, samas simuleeritud patsientide testi tulemused näitasid, et veebikeskkonnas patsiendi nõustamine oli mõnevõrra piiratum. Statistiliselt olulised erinevused ($p < 0,001$) rühmade vahel ilmnesid kontakti loomisel ja lõpetamisel ning ravimite ja ravi soovitamisel, mis olid tõhusamad otsekontaktis nõustamisel. Samas tervise ja elustiili alane nõustamine ($p < 0,001$) ning ravimiinfo edastamine ($p = 0,02$) olid põhjalikumad veebikeskkonnas, kuid neid tulemusi saab pigem seostada hiljutiste muudatustega proviisoriõppe õppekava sisus. Lisaks eeltoodule oli testi tulemusena võimalik hinnata ka varasema praktilise kogemusega farmatseutide (kes osalesid täiendusõppe kursusel, et saada proviisoriõppe) patsientide iseravimise kvaliteeti. Nead keskendusid vähem simuleeritud patsientidega kontakti loomisele ja lõpetamisele, sümptomite tuvastamisele ning patsientide üldise tervise- ja elustiili alasele nõustamisele,

kuigi nende teadmised olid võrreldes proviisoriõppe üliõpilastega põhjalikumad ravimite ja ravi soovitamisel ($p < 0,001$) ning patsiendile sobivas keelekasutuses ($p = 0,012$).

Kaasaegse apteegiteenuse kvaliteediraamistik ja inimkesksuse põhimõtted

„Apteegiteenuse kvaliteedijuhise“ põhine enesehindamine viidi läbi kolmel erineval aastal ning osalema olid kutsutud kõik Eesti üldapteegi tegevusluba omavad apteegid. Apteekide motivatsioon uuringus osalemiseks oli tagasihoidlik, jäädes vaadeldud uuringuperioodil (2014, 2016, 2019) keskmiselt 38% juurde. Praktikas näitasid tulemused „Apteegiteenuse kvaliteedijuhise“ põhimõtete aeglast rakendamist.

Ravimiteabe pakkumine ravimite manustamise ja annustamise ($p = 0,007$) ning ravimite koos- ja kõrvaltoimete ($p = 0,012$) kohta vähenes oluliselt uuringuperioodil. Lisaks vähenes statistiliselt olulisel määral ($p < 0,001$) nõustamine meditsiiniseadmete, nt insuliinid, inhalatorid, ravimite säilitamise, elustiili ja muude aspektide osas. Positiivseid arenguid oli näha inimkeskse nõustamise pakkumisel, kui enim tuvastati patsiendi ravitulemusi mõjutada võivaid tegureid, ravimi või toote olulisi aspekte (nt maitse, ravimvorm) (mõlemad $p < 0,001$) või kui ravimil oli konkreetset juhul vastunäidustusi ($p = 0,002$), selgitati seda patsiendile.

Erinevate laiendatud apteegiteenuste pakkumisel oli suurenenud vererõhu mõõtmine ($p = 0,026$). Muude teenuste pakkumine (nt veresuhkru, kolesterooli, hemoglobiini määramine) oli jäänud samale tasemele. Viimase põhjuseks võib pidada privaatse ruumi puudumist apteegis, kus neid teenuseid läbi viia saaks. Uuringus osalenud apteekidest keskmiselt 14% oli privaatne nõustamisruum olemas. Lisaks laiendatud teenustele on traditsioonilise apteegiteenuse pakkumisel oluline ka privaatne ruum, mis on aga läbi uuringuaastate püsinud pigem tagasihoidlikuna nii retseptiravimite (keskmiselt 16%) kui käsimüügiravimite (keskmiselt 10%) väljastamisel ja nõustamisel. Privaatse ruumi tagamine on oluline komponent inimkeskse (patsiendikeskse) tervishoiuteenuse pakkumisel. „Apteegiteenuse kvaliteedijuhise“ deduktiivne sisuanalüüs *Santana inimkeskse tervishoiu rakendamise mudeli* (Santana et al., 2018) põhiselt näitas, et 61,9% ($n = 78$) kvaliteedi-indikaatoritest toetavad inimkeskset lähenemist apteegiteenuse osutamisel. Valdavalt (61,6%) on tegemist protsessipõhiste kvaliteedi-indikaatoritega, keskendudes patsiendi ja apteekri vahelisele suhtlusele. Apteegikülastajale pakutava teenuse tulemuslikkust sai hinnata 12,8% kvaliteedi-indikaatorite korral. Organisatsiooni ja tervishoiusüsteemi mõju inimkeskse teenuse pakkumiseks ehk struktuuripõhised indikaatorid oli esindatud 25,6% kvaliteedi-indikaatorite osas. Viimasel juhul on inimkeskse apteegiteenuse arendamisse oluline enam kaasata ka apteegikülastajaid. Selles osas on apteegid näidanud üles suuremat aktiivsust – viimase kahe uuringuaasta (2016 ja 2019) jooksul on apteegikülastajatelt tagasiküsimine saadud apteegiteenusele kasvanud neli korda ($p < 0,001$).

Inimkeskse apteegiteenuse pakkumisel on oluline pädev ja motiveeritud töötajaskond. Apteekrite elukestva õppe põhimõtetest kinnipidamine oli uuringuaastatel (2014, 2016, 2019) statistiliselt olulisel määral paranenud ($p < 0,001$).

Apteekrid ise pidasid erialaseid täiendusõppe koolitusi tõhusaimaks viisiks, kuidas uusi teadmisi ja oskusi omandada (83,7%). Vaatamata oma pädevuse ulatuse laienemisele oldi kriitilisemad vaksineerimisteenuse osutamise osas. Noorema vanuserühma esindajad (<36 aastat) olid oluliselt enam ($p=0,02$) valmis oma tegevuse ulatust apteegis laiendama. Samas kõik apteekrid mõistsid, et apteekide hea kättesaadavus ja ligipääsetavus ning pakutava apteegiteenuse kõrge kvaliteet on tõhus viis, kuidas elanikkonnani vaksineerimise teemadega jõuda, eriti riskirühmade puhul. Selge on see, et kvaliteetse ja inimkeskse apteegiteenuse pakkumiseks peab olema ka piisav arv erialatöötajaid, mis aga vaadeldud uuringuperioodil oli oluliselt langenud ($p=0,005$).

Apteegikülastajate kogemused ja ootused apteegiteenusele

Apteegikülastajate kogemused ja ootused ravimialasele nõustamisele apteegis erinevad sõltuvalt rahvusest. Vene rahvusest apteegikülastajad olid enam mures oma tervise ($p=0,006$) ja kasutatavate ravimite ($p=0,037$) pärast, kuid ei pidanud apteeki erinevalt eestlastest ravimialase info saamise kohaks ($p<0,001$). Samuti erines nende senine kogemus ravimialasele nõustamisele apteegis tunduvalt eestlaste omast, mis omakorda vähendas nende ootusi tulevikus ravimialasele nõustamisele apteegis. Lisaks rahvusele mõjutas apteegi, kui ravimialase info pakkuja valikut olulisel määral veel patsiendi vanus ja kasutatavate ravimite hulk ($p<0,001$). Need, kes ei pidanud apteeki esmaseks valikuks ravimitega seotud probleemide lahendamisel, eelistasid peamiselt perearsti või usaldasid oma teadmisi.

Ravimialaste teenuste saamisel apteegis oli huvi nii eesti- kui ka venekeele rühmas mõeldukas. Ennekõike tunti huvi uute väljakirjutatud ravimite kasutamise nõustamise vastu (78,9%). Uuringus osalejad tõid välja, et teenuse kasutamist soodustab suurem privaatsus apteegis, aga ka apteekri proaktiivsus ravimialase nõustamise pakkumisel. Samas ei olda ise valmis apteegis ravimialase nõustamise järele pikalt ootama, keskmine ooteaeg oli 5–10 minutit. Lisaks tuli uurin-gust välja, et apteegikülastajate teadlikkus, millist teavet on võimalik apteekrilt ravimialaselt saada, on madal.

Vaksineerimisuuringus, mis viidi läbi 2018. a, kui üldse esmakordselt pakuti apteegis elanikkonnale võimalust kasutada gripi vastu vaksineerimist, said üle poole (54,9%) uuringus osalejatest ($N=257$) gripivaktsiini esmakordselt. Enamik osalejatest (95%, $n=235$) jäid apteegis pakutud vaksineerimisteenusega rahule ning soovitasid seda ka teistele. Gripivastase vaksineerimise põhjused apteegis võiks liigitada isikliku motivatsiooni ja apteegiga seotud tegurite alla. Isiklikud põhjused olid enamasti seotud hirmuga haiguse ees, apteegiga seonduva all peeti oluliseks apteekide head kättesaadavust ja ligipääsetavust ning ka teenuse kvaliteeti. Samuti oldi huvitatud teiste vaktsiinide saamisest apteegis, nt puukentsefaliit, difteeria-teetanus.

Järeldused

Käesolev uuring on esimene laiaulatuslik teadustöö kompetentsipõhise ja inimkeskse apteegiteenuse arendamisest ja rakendamisest Eestis. See käsitleb põhjalikult proviisorihariduse tuleviku perspektiive, apteegiteenuse kvaliteediraamistiku rakendumist ning patsientide kogemusi ja ootusi ravimialasele nõustamisele ning teenustele apteegis.

Doktoriväitekirja eesmärkidest lähtuvalt on tehtud järgmised järeldused:

1. Kompetentsipõhise ja inimkeskse apteegiteenuse areng Eestis on viimase kümne aasta jooksul olnud killustatud ja aeglane.
2. Kompetentsipõhise ja inimkeskse farmaatsiaõppe põhimõtted on osaliselt Tartu Ülikooli proviisoriõppes kaetud ja neid tuleb senisest tõhusamalt juurutada. Erinevatel farmaatsiaspektori sidusrühmadel on erinevad ootused proviisorite erialasele pädevusele pärast Tartu Ülikooli proviisoriõppe läbimist.
3. „Apteegiteenuse kvaliteedijuhis” on valideeritud juhise, mis toetab apteekreid kvaliteetse ja inimkeskse apteegiteenuse osutamisel. Vaatamata selle olemasolule juba viimased 10 aastat ei ole apteegiteenuse kvaliteet sisulist muutust läbi teinud.
4. Ravimitega seotud teenuste kvaliteet apteegis vajab parendamist. Patsiendid ootavad, et apteeker oleks nõustamisel erinevate ravimite kasutamise aspektide osas aktiivsem. Inimkeskse apteegiteenuse pakkumiseks tuleb suurendada privaatsust apteegi müügisalis.
5. Kaasaegse apteegiteenuse areng on seotud laiendatud teenuste kasutusele võtmisega apteekides. Laiendatud apteegiteenuste pakkumisel (vaktsineerimise teenuse näitel) on takistavateks teguriteks apteekrite vähesus, nende vanuseline jaotus, aga ka ebakindlus laiendatud tegevuse suhtes.
6. Patsientide üldine teadlikkus apteekri töö sisust oli küllaltki madal, kuid sellele vaatamata olid ootused nii traditsiooniliste kui laiendatud apteegiteenuste suhtes kõrged. Vähemusrahvuste ootused kui ka rahuolu apteegiteenustega oli madalam.

Tervishoiusüsteemi jätkusuutlikkuse tagamiseks on oluline kaasata kõiki selle osapooli ja parandada omavahelist koostööd. Elanikkonna mugav juurdepääs apteekidele ja apteekrite erialased teadmised on tervishoiule hindamatu väärtus, kuid apteegisektori killustatus, tootepõhine rahastus, töajõupuudus, osaliselt rakendatud erialased kompetentsid ja vähene seotus tervishoiuga on apteekide tervishoiusüsteemist distantseerinud.

Väärtus praktikas

Doktoriväitekirja tulemused on väärtuslikud sektori erinevatele osapooltele (nt poliitikakujundajatele, kõrgkoolidele, erialaorganisatsioonidele, tervishoiuga seotud spetsialistidele) muudatuste tegemiseks seadusandluses ning igapäevases praktikas.

1. Proviisori kompetentsistandardi väljatöötamisel tuleb lähtuda ühisest arusaamast proviisorite kutserolli osas. See on oluline põhimõte farmaatsiahari-

- duse täiustamisel, jätkuva professionaalse arengu süsteemi arendamisel ja kaasaegse farmaatsiapraktika edendamisel. Kompetentsistandardid näitavad ka avalikkusele ja teistele tervishoiutöötajatele apteekrite pädevuse ulatust.
2. Teadustöö tulemuste rakendamiseks apteegiteenuse kvaliteedi parandamisel on vajalik tihedam koostöö ülikooli ja apteegisektori vahel.
 3. Erinevate tegevusraamistike väljatöötamise tuleb enam kaasata erinevad sidusrühmasid, sealhulgas patsiente, et paremini mõista nende vajadusi ja ootusi apteegi tegevuse osas.
 4. Apteegiteenuse kvaliteedi ja inimkesksete põhimõtete arendamisel võib muutuse tuua apteekide finantseerimissüsteemi tootepõhisest tulemuspõhiseks muutmine. Samuti tuleb suurendada apteekide kaasatust erinevates rahvatervist toetavates tegevustes (nt vaksineerimine, tervisenäitajate hindamine), kuna inimesed hindavad apteekide head ligipääsetavust ja kättesaadavust.
 5. Keelebarjäär ja kultuurilised erinevused võivad mõjutada tervishoiuteenuste, sh apteegiteenuste kättesaadavust ja kvaliteeti ning sellest lähtuvalt tuleb nendele patsiendirühmadele riiklikul tasandil rohkem tähelepanu pöörata.
 6. Vaja on luua riigi tasandil terviklikum vaade, kuidas apteegivaldkonda arendada ning proviisorite pädevust patsientide hüvanguks ja tervishoiu jätkusuutlikkuse nimel rakendada.
 7. Apteegisektori killustatuse vähendamiseks tuleb luua üks katusorganisatsioon, mis ühendab kõiki apteeke ja apteekreid ning akadeemilist farmaatsia kogukonda Eestis.

ACKNOWLEDGEMENTS

This research was carried out at the Institute of Pharmacy, Faculty of Medicine, University of Tartu, Estonia, during the years 2018–2022.

I would like to express my deepest gratitude to Associate Professor and friend Daisy Volmer; without her support and encouragement, I would not have undertaken this journey. I am extremely grateful for the time and input she has shared with me, very often from early morning to late at night. Your warm and welcoming nature and example as a scientist is admirable. Your contribution and commitment to the development of social pharmacy science has also put Estonia on the world map in this field. Thank you for taking me to your academic team and demonstrating the importance of research in shaping the community pharmacy practice.

I am also grateful to Associate Professor Afonso Cavaco for his knowledge and expertise in the social pharmacy field and to Professor Ain Raal for his intangible support. Thank you for your time and effort, I appreciate it a lot.

I am also thankful to the working group of Community Pharmacy Services Quality Guidelines; I have been a member since 2013. Members have contributed their personal time and expertise to develop a tool that aims to improve and standardize community pharmacy practice. It has also provided an opportunity to assess the quality of care provided regularly. This is a great initiative that should also be noticed and recognized by society.

Special thanks to Professor Jeffrey Atkinson, who has played a significant role in the development and implementation of competency-based pharmacy education in Europe and supporting the uptake of these principles at the University of Tartu.

I am also grateful to Professor Andra Siibak for showing the uniqueness of social sciences. The diverse lectures and the sincere effort to open up the challenges and opportunities of the academic world were impressive. The tips shared by Prof. Siibak helped me overcome several academic writing challenges.

I am also thankful to my colleagues from the Institute of Pharmacy at the University of Tartu and Tallinn Health Care College. You have been a great support all these years. In particular, I would like to recognize my social pharmacy fellow doctoral students Anita Tuula and Veera Bobrova, you have been very kind and supportive, and we have built together with Assoc. Prof. Daisy Volmer, an Estonian Social Pharmacy hub. What a team! It has been a pleasure working with you. Also, I extend my sincere thanks to the University of Tartu and Tallinn Health Care College students for accepting me as a lecturer and challenging me in many ways. Especially, I would like to acknowledge the pharmacist students who contributed to my research. Thank you!

Finally, I would like to express my love and gratitude to my friends and family, especially my mother, Maret, husband Jaanus, and my children Eleriin, Erik, and Aron. Their understanding and support throughout the process kept me going. You are everything to me!

I would like to finalize the chapter with my son Erik's question to me "Mum, why do you still go to school? You are already old." I answered, "I want to become smarter." I am definitely smarter now. Thank you to everyone who has been with me and supported my academic path!

PUBLICATIONS

CURRICULUM VITAE

Name: Kristiina Sepp (née Mering)
Date of birth: December 27, 1981
E-mail: kristiina.sepp@ut.ee

Education:

1988–1997 Tartu Karlova Gymnasium, primary education
1997–2000 Tartu Commercial Gymnasium, secondary education
2000–2005 University of Tartu, Faculty of Medicine, Institute of Pharmacy (MSc Pharm)
2018– University of Tartu, Faculty of Medicine, Institute of Pharmacy, PhD studies

Professional employment:

06.2005–05.2010 Terve Pere Apteek OÜ, Gildi community pharmacy, pharmacist
06.2010–03.2015 Terve Pere Apteek OÜ, Sõbrakeskuse community pharmacy, pharmacist-manager
01.2013–03.2015 Terve Pere Apteek OÜ, pharmacy services project manager
04.2015–08.2018 Terve Pere Apteek OÜ, board member
02.2019–05.2019 Tallinn Health Care College, lecturer
09.2018–05.2019 Magnum AS, manager of professional development projects
06.2012–08.2019 Estonian Pharmacies Association, board member
09.2019–02.2020 Tallinn Health Care College, lecturer of pharmacy management
09.2019–07.2020 Euroapteek OÜ, board member
03.2021– University of Tartu, Faculty of Medicine, Institute of Pharmacy, junior lecturer of pharmaceutical entrepreneurship
03.2021– Tallinn Health Care College, Medical Technology Education Centre, lecturer
02.2022– Estonian Academical Society of Pharmacy, board member

Research fields:

Community pharmacy practice:

- development of competence-based and person-centred community pharmacy services;
- expanding the scope of competence of pharmacists, provision of various extended pharmacy services;
- patients' awareness, experiences, and expectations regarding the pharmacy service.

Digital pharmaceutical care, digital therapeutics, and the accompanying digital competence of pharmacists.

List of publications in international peer-reviewed journals:

- Sepp, K., Cavaco, A., & Volmer, D. (2022). The principles of person-centredness in quality patient care-Evaluation of the Community Pharmacy Services Quality Guidelines in Estonia. *The International Journal of Health Planning and Management*, 37 Suppl 1, 101–114. DOI: 10.1002/hpm.3567
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ELULOOKIRJELDUS

Nimi: Kristiina Sepp (neé Mering)
Sünniaeg: 27. detsember 1981
E-postiaadress: kristiina.sepp@ut.ee

Haridus:
1988–1997 Tartu Karlova Gümnaasium, põhiharidus
1997–2000 Tartu Kommertsgümnaasium, keskharidus
2000–2005 Tartu Ülikool, Arstiteaduskond, bakalaureuse- ja magistriõppe integreeritud õpe, farmaatsiamagister proviisoriõppe erialal
2018– Tartu Ülikool, Meditsiiniteaduste valdkond, farmaatsia instituut, doktoriõpe

Erialane teenistuskäik:

06.2005–05.2010 Terve Pere Apteek OÜ, Gildi apteek, proviisor
06.2010–03.2015 Terve Pere Apteek OÜ, Sõbrakeskuse apteek, proviisor-juhataja
01.2013–03.2015 Terve Pere Apteek OÜ, apteegiteenuste projektijuht
04.2015–08.2018 Terve Pere Apteek OÜ, juhatuse liige
02.2019–05.2019 Tallinna Tervishoiu Kõrgkool, õppejõud
09.2018–05.2019 Magnum AS, erialaste arendusprojektide juht
06.2012–08.2019 Eesti Apteekide Ühendus, juhatuse liige
09.2019–02.2020 Tallinna Tervishoiu Kõrgkool, farmaatsiakorralduse õppejõud
09.2019–07.2020 Euroapteek OÜ, juhatuse liige
03.2021– Tartu Ülikool, Meditsiiniteaduste valdkond, farmaatsia instituut, farmatseutilise ettevõtluse nooremlektor
03.2021– Tallinna Tervishoiu Kõrgkool, meditsiinitehnilise hariduse keskuse lektor
02.2022 – Eesti Akadeemiline Farmaatsia Selts, juhatuse liige

Teadustöö suunad:

Üldapteekide tegevus ja areng:

- kompetentsipõhise ja inimkeskse apteegiteenuste arendamine;
- proviisorite sisulisem rakendamine tervishoius sh erinevate laiendatud apteegiteenuste osutamine;
- inimeste ootused ja vajadused apteegiteenuse ja ravimialase nõustamise suhtes.

Digitaalne farmatseutiline hool, digiravimid ning sellega kaasnev apteekrite digipädevus.

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Volmer, D., Sepp, K., Veski, P., Raal, A. (2017). The Implementation of Pharmacy Competence Teaching in Estonia. *Pharmacy*, 5 (2), ARTN 18. DOI: 10.3390/pharmacy5020018

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