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**EVALUATION OF PATIENTS' MEDICAL
INFORMATION REQUIRED TO DETERMINE
DRUG-RELATED PROBLEMS IN COMMUNITY
PHARMACIES: A MIXED METHOD STUDY**

MASTER THESIS

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DECLARATION

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree except where due acknowledgment has been made in the text.

23/06/2023

İrem Çiftçi



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LIST OF SYMBOLS AND ABBREVIATIONS

APhA	The American Pharmacists Association
COPD	Chronic obstructive pulmonary disease
CPhA	Canadian Pharmacists Association
DRPs	Drug Related Problems
EHRs	Electronic Health Records
ESCP	European Society of Clinical Pharmacy
FIP	International Pharmaceutical Federation
JCPP	The Joint Commission of Pharmacy Practitioners
MAS	Medication Administration Services
MTM	Medication Therapy Management
OTC	Over the Counter
PCNE	Pharmaceutical Care Network Europe
PIP	Pharmacist independent prescribing
TDF	Theoretical Domain Framework
UK	United Kingdom
US	United States
WHO	World Health Organization

ABSTRACT

Çiftçi, İ. (2023). Evaluation Of Patients' Medical Information Required to Determine Drug-Related Problems in Community Pharmacies: A Mixed Method Study. Yeditepe University, Institute of Health Science, Department of Clinical Pharmacy, MSc thesis, İstanbul.

Access to patient information is essential for community pharmacists to provide comprehensive pharmaceutical care, involving a deep understanding of medical history, medications, and disease conditions. Yet, the impact of information access on a pharmacist's ability to identify and resolve drug-related problems remains uncertain. This study investigates this relationship's significance in enhancing pharmaceutical care quality. The primary objective is to assess how access to patient information affects community pharmacists' ability to deliver comprehensive pharmaceutical care and accurately address drug-related problems. Additionally, the study explores factors influencing pharmaceutical care provision in community pharmacies. We used a mixed-methods approach to evaluate pharmacist patient care services through standardized simulated patient cases. We collected quantitative data on the number and accuracy of identified drug-related problems and time spent on care provision. Qualitative analysis involved a think-aloud protocol for pharmacist decision-making and cognitive interviews to explore perceptions and factors impacting the identification and resolution of drug-related problems, with a focus on the role of information access. Our findings indicate significant improvements in total drug-related problems identified, confidence levels, accuracy, and sensitivity after providing access to patient information. Thematic analysis of transcripts uncovered key themes related to information access and pharmaceutical care in community pharmacies, including missed care opportunities, pharmacy and pharmacist-related barriers, external obstacles, societal perceptions of pharmacists, and a strong desire to advance pharmaceutical care.

Keywords: Pharmaceutical care, Drug Related Problems, Mixed method study, access to patients' health records, community pharmacist

ÖZET

Çiftçi, İ. (2023). Serbest Eczanede İlaçla İlgili Problemlerin Çözümü için Gerekli Hasta Verilerinin Değerlendirilmesi: Karma Yöntem Analizi. Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü Klinik Eczacılık Anabilim Dalı, Master Tezi, İstanbul.

Hasta bilgilerine erişim serbest eczacıların kapsamlı farmasötik bakım sunabilmeleri, hastaların ilaç rejimlerini, hastalık öykülerini ve hastalık durumlarını derinlemesine anlamaları için şarttır. Ancak eczacıların bilgiye erişiminin ilaçla ilgili problemleri belirleme ve çözme becerisi üzerindeki etkisi belirsizliğini hala koruyor. Bu çalışma, bu ilişkinin farmasötik bakımın kalitesinin artırılmasındaki önemini araştırmaktadır. Birincil amaç, hasta bilgilerine erişimin serbest eczacıların kapsamlı farmasötik bakım sunma ve ilaçla ilgili sorunları doğru bir şekilde ele alma becerilerini nasıl etkilediğini değerlendirmektir. Ek olarak, çalışma serbest eczanelerde farmasötik bakımı etkileyen faktörleri araştırıyor. Karma yöntem yaklaşımı kullanarak, eczacının hasta bakım hizmetlerini standartlaştırılmış simüle edilmiş hasta vakaları aracılığıyla değerlendirdik. Tespit edilen ilaçla ilgili problemlerin sayısı ve doğruluğu ile bakım sağlanması için harcanan süreye ilişkin niceliksel veriler topladık. Niteliksel analiz, bilgiye erişimin rolüne odaklanarak, eczacının karar verme sürecini sesli düşünme protokolü aracılığıyla ve bilişsel görüşmeler yöntemiyle, ilaçla ilgili problemlerin tanımlanmasını ve çözümlenmesini etkileyen algıları ve faktörleri araştırıldı. Bulgularımız, hasta bilgilerine erişim sağlandıktan sonra tespit edilen toplam ilaçla ilgili problemlerin sayısında, eczacıların güven düzeylerinde, ilaçla ilgili problemlerin doğruluğunda ve araştırma hassasiyetinde önemli iyileşmeler olduğunu göstermektedir. Transkriptlerin tematik analizi, kaçırılan farmasötik bakım fırsatları, eczane ve eczacıyla ilgili engeller, dış engeller, eczacılara yönelik toplumsal algılar ve farmasötik bakımı geliştirmeye yönelik güçlü istek dahil olmak üzere serbest eczanelerde bilgiye erişim ve farmasötik bakımla ilgili temel temaları ortaya çıkardı.

Anahtar Kelimeler: Farmasötik bakım, Karma yöntem araştırması İlaçla İlgili Problemler , hasta bilgilerine erişim, serbest eczacı

1. INTRODUCTION AND AIM

Pharmacies are the most suitable places for patients' counselling about their health in terms of accessibility, quality of care, and reaching medication safely.¹ In the past, there had been people who believe that the medicinal effects of natural products and used them as a therapeutic. That constituted the conventional role of the pharmacist and pharmacy. At the beginning of the nineteenth century, The Industrial Revolution led to pharmacies' being more commercial places with the medicines developed and manufactured as a factory made. With the decreasing demand for the conventional role of community pharmacies, pharmacists started to think about turning community pharmacies into improved forms that are more professional, specialized, and educated standardly.² The worries between pharmacists about patient safety and improved health outcomes and qualified drug therapy also formed a basis for clinical pharmacy and pharmaceutical care concepts in America.³

According to Russell R. Miller, the concept of clinical pharmacy originated at the University of Michigan. Thanks to David Burkholder, one of the students at Michigan, pharmacists started to take part in the patient care process with the establishment of a drug knowledge center in 1962. The effect of knowledge centers and interested pharmacists, clinical pharmacy eventually be an independent entity at the University of Kentucky towards the end of the 1960s.⁴ The understanding of pharmaceutical care has changed over time. The initiative expression was 'pharmacist care activities' in the 1960s. In the 1990s, the term "pharmaceutical care" first appeared in the United States and then rapidly spread to other nations.⁵ According to the American College of Clinical Pharmacy: 'Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention.'⁶ Hepler and Strand defined Pharmaceutical Care in 1990 as: 'Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes which improve a patient's quality of life.'⁷ Linda Strand et al. also emphasized that in 1997 Pharmaceutical Care is more patient-oriented, and is not only theoretical but also the philosophical aspect of the practice.⁸ Actually, these two concepts are quite interrelated, both concepts aim the parallel targets that represent different ways of practice. For the practice of

pharmaceutical care, knowledge of clinical pharmacy should be sufficient. On the other hand, having a good perspective on pharmaceutical care would enhance and extend the patterns and ideology of clinical pharmacy.³

After the explanation and involvement of clinical pharmacy and pharmaceutical care terms in the pharmacy profession 1960s and 1990s respectively the practice of pharmacists become more patient and patients' health outcomes adapted rather than medications or compounds.⁹ Community pharmacists' role also became more patient-focused and their services were advanced and became different from just dispensing medications, giving health advice, and selling drugs.¹⁰

Pharmaceutical care is a way that aims in patients' therapies to determine possible and present drug-related problems, fixing the present problems and excluding the potential ones. These aims require pharmacists' planning, applying, monitoring and evaluating optimal therapy with other healthcare providers and patients or their caregivers. To develop an optimal care plan for a patient collecting patient data is an important step for pharmacists.⁷ Since the ideal care plan should be specific for every patient, their past medical history and all therapy-related parameters like social history, family history, habits, allergies and patient lifestyle should be known by pharmacists and other healthcare providers. Access to patient medical information enhances the more qualified, effective, better determined and resulted patient care process.¹¹

In Türkiye, clinical pharmacy and pharmaceutical care are comparatively younger concepts.^{12,13} Although it requires more studies, there have been many research about implementation, improvement and the impacts of clinical pharmacy and pharmaceutical care practice in Türkiye. Some showed that patient-oriented pharmaceutical care services such as medication therapy management provided by pharmacists who had knowledge of clinical pharmacy and pharmaceutical care positively affected patients' therapy outcomes, quality of life, drug adherence, and drug-related problems.^{12,14,15} Pharmacists' integration into the primary care team ensures the chance for them to access the patients' health records truly as a result of this more efficient pharmacotherapy and care process.¹⁶⁻¹⁹

This study aims to determine the access of needed patient therapy-related data in community pharmacies in Türkiye, the importance of medical records in the patient care process in terms of identification, resolution and prevention of drug-related

problems, impacts of having access to patient data on pharmacists' level of confidence and of community pharmacists' opinions about cases in terms of access to patient health records and providing pharmaceutical care in community pharmacies in Türkiye.



2. LITERATURE REVIEW

2.1. Clinical Pharmacy and Pharmaceutical Care

2.1.1. Clinical Pharmacy

Since all authorities desired to clarify and define an exact meaning and framework for clinical pharmacy from its beginning there have been many similar definitions for clinical pharmacy.¹⁰ According to the American College of Clinical Pharmacy, ‘Clinical pharmacy is a health science discipline in which pharmacists provide patient care that optimizes medication therapy and promotes health, wellness, and disease prevention.’ And this science comprehends the practice of pharmaceutical care eventually. Clinical Pharmacy is an area that uses scientific protocols, appropriate technologies and suitable authorised, ethical, financial, cultural and practical rules to reach demanded therapy outcomes. As a discipline, clinical pharmacy concentrates on the current research in both pharmacological and non-pharmacological treatments for maintaining well-being.⁶ From the European Society of Clinical Pharmacy (ESCP)’s point of view, there was a need for a clear description of clinical pharmacy, its scope and its practitioners. In 2014, with the help of member pharmacists of ESCP better framed and defined version of clinical pharmacy was introduced. The last authorized definition of ESCP is ‘Clinical pharmacy aims to optimize the utilisation of medicines through practice and research in order to achieve person-centered and public health goals. ESCP also targets explaining the six topics with the expanded type of this definition: the classification, scope and goals of clinical pharmacy, its providers and the range of settings and association with pharmaceutical care. As a result, clinical pharmacy encompasses both research and practice components. In terms of research clinical pharmacy benefits from many disciplines such as biomedical science, social pharmacy, pharmacoepidemiology, behavioural science, and health services research. The primary aim of this research is to improve how to utilize the present drugs in the treatment and management of diseases. As a practice, clinical pharmacy emphasizes on attaining its objectives through the selection/design, use/implementation, and monitoring/adjustment of medication therapy. All these research and practice crates the philosophy of clinical pharmacy that aims to reach patients’ therapy goals in multiple aspects such as assessing patients’ data, drug selection, planning and

implementing a medication therapy or nonpharmacological treatment, consulting, following, and evaluating the outcomes and patient adherence. Although, the providers are mostly pharmacists, the practice of clinical pharmacy includes multidisciplinary team and supported by other team members (medical doctors, pharmacy technicians, nurses) and tools like data software or guidelines and according to its latest definition clinical pharmacy practice can be performed in any environment.²⁰

2.1.2. Pharmaceutical Care

However the term pharmaceutical care was frequently used and mentioned in pharmacy discipline after Helpler and Strand published an article in 1990, Donald Crum Brodie was first mentioned Pharmaceutical care in 1973.²¹ Helpler and Strand, defined pharmaceutical care as the ‘Responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life.’⁷ In 1998, Linda Strand and friends made another definition explaining responsibility and care more as ‘a practice in which the practitioner takes responsibility for a patient’s drug-related needs and is held accountable for this commitment. In the course of this practice, responsible drug therapy is provided for the purpose of achieving positive patient outcomes.’³ From these there has been many definitions, new terminologies like ‘Medicines Management’, ‘Disease Management, and ‘Medication Therapy Management (MTM)’ and according to Pharmaceutical Care Network Europe (PCNE), there was still confusion. For this reason, in 2013 the board of PCNE published “What is Pharmaceutical Care in 2013”. They searched present definitions in the literature and redefined Pharmaceutical Care as “Pharmaceutical Care is the pharmacist’s contribution to the care of individuals in order to optimize medicines use and improve health outcomes.” The perception of Pharmaceutical Care has been changed from its first type ‘pharmacist care activities’. Besides previous terminologies also “pharmaceutical assistance,” and “pharmacy services,” also used for definition end explanation. The curiosity in drug effects on people and public health is getting more important and some associations like the World Health Organization (WHO) and the International Pharmaceutical Federation (FIP) announced papers about pharmaceutical care to reach desired patient therapy results and utilize medications in

a logical, efficient and safe way. With the increasing focus on pharmaceutical care, its positive effects on patient's quality of life, satisfaction and health system such as cost related also enhanced pharmaceutical care services in the World.⁵

The care process includes five steps; collect, assess, plan, implement, and follow up. This means the care process involves gathering patient-related information and evaluating their current condition to identify any potential or existing issues related to medication. Subsequently, a personalized care plan is developed to resolve the patient's specific medication-related problems, offering services such as patient education, counselling, doctor referrals, improving medication adherence, implementing lifestyle changes, and more. The patient's progress is then monitored to assess the outcomes. Finally, if any problems still exist, the plan is reassessed and revised according to the final condition of the patient. If a standardised care process is provided for patients, their quality of life can be enhanced.²²

2.1.3. Pharmaceutical Care Services

2.1.3.1. Drug Related Problems

Determination, resolution, and prevention of Drug Related Problems are the most important services in pharmaceutical care.²³ According to The Pharmaceutical Care Network Europe (PCNE), 'Drug Related Problems (DRPs) are events or circumstances involving medication treatment that actually or potentially interfere with the patients' desired health outcomes'. Drug-related problems (DRPs) are generally related to particular types of errors like errors in prescribing, drug use, or administration. On the other hand, maybe, no error is involved at all. Additionally, a medication error may not cause a drug-related problem; there might be no problem at all, or the problem could be potential.²⁴

DRPs lead to morbidity, mortality, and hospitalization commonly worldwide. According to the research, 5-7% of recorded hospitalizations are due to DRPs and it is believed that almost 60% of these admissions can be prevented. For preventing and identifying DRPs, community pharmacists' interventions like routine counselling and dispensing services are important in decreasing related morbidity and mortality.²⁵

For the improvement of pharmaceutical care practice and research, the classification of DRPs is also beneficial and promotes documenting and following up. There are some significant reasons for classifying and documenting of DRPs like standardization of the process, increasing the pharmacists' focus on patients' drug-related problems and their management, emphasizing the pharmacist's role in drug use and safety, promoting continuous education and improvement of pharmacists, ensuring the documentation of practices provided by pharmacists. Over the years, there have been many different DRP classification systems owning both similar and different characteristics. The major qualification desirable for a DRP classification system is practical usage for pharmacists. The goal of improving medication use behaviour and quality of life in patients is common in these classification systems and they all agree in covering both existing DRPs and potential DRPs. Among DRP classification systems, The Hepler/Strand Classification is the first organized classification and it is still the same as the original form. It contains eight different DRP categories: (1) untreated indications (2) improper drug selection (3) subtherapeutic dosage (4) failure to receive drugs (5) overdosage (6) adverse reactions (7) drug interactions (8) drug use without indication²³. PI-Doc, PCNE Classification for DRPs, The Westerlund System and DOCUMENT System are other examples of DRP classification systems for the identification, resolution, and prevention of drug-related problems. These systems also explain and emphasize the community pharmacists' role and tasks and importance of the pharmacist interventions to the identification, resolution, and prevention of DRPs respectively.^{23,25}

Pharmacists are the cornerstone for identifying, preventing and resolution of DRPs and they can give optimal consultancy about drug therapy through the patient treatment process.²⁶ Access to patient data for providing drug therapy management services is also an important factor for the quality and validity of care. When community pharmacists are integrated into the system they have access to the health records of patients, better therapy outcomes, improved patient adherence, more effective collaboration between healthcare providers, improved quality, and consistency of patient care through improved documentation, a better understanding of the patient population and enhancement of care services can be obtained.^{27,28}

2.1.3.2.Prevent Services

Since pharmacies are places that are easy to access they can play a big role in preventing diseases by providing immunization and health screening services.

When the ease of access to pharmacies is considered, it is better to determine the patient in risk group and provide immunization services in pharmacies. According to studies about vaccination in pharmacies pharmacists have the great potency of educating people about immunization, administering immunization services for patients, and providing recommendations about vaccinations for preventing deaths, improvement of the health status of the population, and decreasing health costs.

Pharmacists also can perform some screening and disease prevention services like cancer screening and identification, prevention, and control of heart diseases, diabetes prevention and control, and family planning by educating and doing screening tests for patients, checking blood pressure and blood glucose level, and monitoring patients that are in the risk groups for chronic diseases and giving counselling. Studies show the beneficial effects of providing these services in pharmacies.²⁹

2.1.3.3.Health Promotion Services

Community pharmacists can improve the health of populations by performing such services as smoking cessation, weight control management, control of alcohol consumption and drug abuse and giving healthy lifestyle advice and public health services. The provision of these services enhances the therapy result in patients especially those having chronic diseases, decreases morbidity and mortality, and lowers the overload of health professionals and health cost of populations.²⁹

2.1.3.4.Treatment-related Services

Patient adherence, medication review, chronic disease management, patient education in complicated treatments, prescription for minor illnesses and palliative care for terminal illnesses and geriatric services are provided in community pharmacies by pharmacists.²⁹

Community pharmacists evaluate patients' medication adherence, identify potential adherence problems, and develop strategies to address them with different methods, such as counting pills, checking prescription records, and using scales for adherence.³⁰ They give counselling about adherence and develop an individual therapy plan to support patients to increase adherence to their treatments.³¹

Pharmacists provide medication therapy review with the examination of patients' prescribed medications, herbal products used by patients and drugs used without medication by patients. They check the appropriateness, safety and effectiveness of drugs and potential interactions that may be harmful to the patient.³² They explain instructions about medications, warn patients about side effects and provide rational and safe use of drugs for patients.³³

Community pharmacists have many advantages in terms of chronic disease management. Patients can easily access community pharmacies and they can communicate regularly with pharmacists about their disease conditions and benefit from the medication knowledge of pharmacists. Community pharmacists have a high impact in managing many chronic conditions such as hypertension, diabetes, asthma/chronic obstructive pulmonary disease (COPD) or mental disorders. Their involvement in managing these conditions resulted in significant improvements in different patient groups. The involvement includes educating patients about diseases; symptoms, complications, and risk factors, drug usage, dosage and side effects; the importance of regular screening the diseases, evaluating the risk of polypharmacy, patient adherence, the effectiveness of treatment, giving advice about lifestyle changes and self-management of diseases, monitoring disease-related parameters like blood pressure, blood glucose, lipid profiles or attacks frequency in asthma and COPD or improvements of mental health parameters.

The value and impact of pharmacists involvement into primary health care team is better understood in countries named high-income countries like the US, UK, Australia, Canada, and Germany. And also in Portugal pharmacy practices almost similar to high-income countries. However, in the low and middle-income countries like Lebanon, India, China, Türkiye the integration of community pharmacists to healthcare system and patient-centered approach are not fully achieved. Still, there are some barriers in legacy. On the contrary in Nigeria and Malaysia enhanced pharmacy

services provided unofficially. Also in Brazil, Indonesia and South Africa, some crucial attempts for pharmacists collaboration into healthcare system has been done within the legal frames.³⁴

Due to difficulties in the access to primary healthcare services increasing demand for healthcare services and shortage of healthcare professionals, pharmacist prescribing system, pharmacist independent prescribing (PIP) introduced to healthcare system in some countries firstly in Canada and in the United Kingdom, and then in the United States, Australia, New-Zealand. The pharmacist independent prescriber model have positive effects in e the medication management of patients and avoiding negative health outcomes, safe use of drugs and reducing inappropriate medication use. Also, PIP has positive impact on reducing health-related costs and improved access to care.³⁵

2.2. Pharmaceutical Care Services in Türkiye and Other Nations

2.2.1. Pharmaceutical Care Services in Türkiye

Pharmaceutical care is still a developing process in Turkey.¹² İsmail ÜSTEL mentioned firstly about Clinical Pharmacy in Turkey in some aspects; developmental and educational needs, its acceptability and feasibility and its possible future.³⁶ The first exact movement of Clinical Pharmacy education was performed in 1991 with the opening of the first Clinical pharmacy graduate program at Marmara University. Then, Hacettepe University and Ankara University followed this start and they introduced clinical pharmacy education in undergraduate programs and started interdisciplinary clinical pharmacy education programs in 1994 and 1997 respectively. On the other hand, ‘The Society of Clinical Pharmacy, KED’ was established in 1998 and they conducted many continuous training programs in clinical pharmacy and pharmaceutical care with the Turkish Pharmacists’ Association Academy of Pharmacy. The establishment of the Department of Clinical Pharmacy in Hacettepe, Marmara, and İnönü Universities are further improvements in Türkiye. Also, clinical pharmacy education process is still conducted by the Pharmacology department in some universities in Turkey. One of the latest development in the clinical pharmacy area is legal regulation approved by the Grand national assembly in 2014. According to the legislation supported by the “Law on Pharmacies and Pharmacy”, the clinical

pharmacy became a scope of a specialty that includes pharmacists' taking an exam and completing 3-year postgraduate clinical pharmacy specialty education in selected.¹²

In our country, more than 100 clinical pharmacists, who completed their master's degree at Marmara University mostly, either continue to produce patient-oriented pharmacy services in their own pharmacies or work in hospitals. Besides master's degrees, many pharmacists introduced to patient-centered pharmacy practices such as clinical pharmacy and pharmaceutical care thanks to continuous education programs ensured by Turkish Pharmacists' Association Academy of Pharmacy.

In Türkiye, there have been improvements in recent years for pharmacists to take a more active role in the fields of oncology and nutrition. Pharmacists also play crucial role not just in traditionally dispensing and producing of drugs they also take clinical duties such as training of these patients, increasing treatment compliance, controlling side effects and drug interaction, counselling patient monitoring, supportive treatments. There are many studies show the contributions of clinical pharmacists in Turkey to patient health outcomes, adherence to therapy and identifying, resolving and preventing DRPs.³⁷

In a study conducted by Sancar et al., it is understood that pharmacists prevent the possible DRPs with educating and monitoring side effects and adherence of patients using antidepressants because of major depression.³⁸

In another study about the impact of clinical pharmacy recommendations and patient counselling programs among patients with diabetes and cancer in outpatient oncology settings, improved results in glycemic control, drug adherence, self-care activities for diabetes like diet, measurement of blood glucose and quality of life is obtained with the pharmacists' interventions.³⁹

The positive effects of pharmacists interventions on therapy outcomes of patients is assessed in a study, conducted in 8 community pharmacies in İstanbul. According to the results of the 3-month pharmaceutical care service provided by a clinical pharmacist to 43 type 2 diabetes patients, the fasting blood glucose values of the patients decreased by an average of 23%, and the number of patients that balanced blood glucose values increased from 16.3% to 39.5%. Patients' systolic and diastolic blood pressure values also decreased, the number of patients reaching the ideal blood pressure value increased from 30.2% to 51.2%.⁴⁰

2.2.2. Pharmaceutical Care Services in the U.S.

In the United States, there are almost 300,000 pharmacists. The role of pharmacists and the scope of the profession are evolving day by day with the aim of qualified care for less cost. Healthcare spending in 2014 in the United States was estimated at three trillion dollars. Both the effects of legislative arrangements, improved patient outcomes and decreased number of healthcare providers facilitated this evolution. At the same time, these changes made an opportunity for community pharmacists to become more than drug dispensers.⁴¹ The American Pharmacists Association (APhA) provides sources and supports pharmacists to expand their role in the delivery of patient care services. Today in the United States pharmacists provide a wide range of pharmaceutical care services; chronic disease management, medication therapy management (MTM), opioid drug misuse prevention, education, and assistance, tobacco cessation services, Medication Administration Services (MAS) like vaccines and medication for chronic disease management, patient safety services. APhA also gives a chance to its members to improve the provision of pharmaceutical care services provided by pharmacists with continuous education and certificate programs.⁴²

2.2.3. Pharmaceutical Care Services in UK

The United Kingdom was included in the European countries to adopt clinical pharmacy first, which later extended to many other countries across the world. In the United Kingdom, clinical pharmacy practice arose from the efforts of two pharmacists. Graham Calder, a pharmacist on hospital wards in Aberdeen, pioneered a new role for pharmacists. In order to assure safe prescribing, they started reviewing drug orders on the wards. John Baker, located at Westminster Hospital, originated the formulary concept, and developed the pharmacist's position as part of the prescribing system around the same time period, in the late 1960s.^{43,44}

In the United Kingdom, there are four primary aspects of pharmacy education. The first and second sections of this educational system are primarily theoretical, with the fundamentals of clinical pharmacy taught in a theoretical manner. The clinical pharmacy and hospital visits take place in the third and fourth parts, which are primarily concerned with practical knowledge.^{43,44}

According to the Royal Pharmaceutical Society, pharmacists' role in the provision of care should be more patient focused in England in the next three to five years. The prior aims of care focus on supporting people and communities to live well for longer, enabling people to live well with the medicines that they take, enabling people to live well with the medicines that they take. These aims are gathered with implementing particular themes. This vision for pharmacy professional is also schematized in Figure 1.⁴⁵

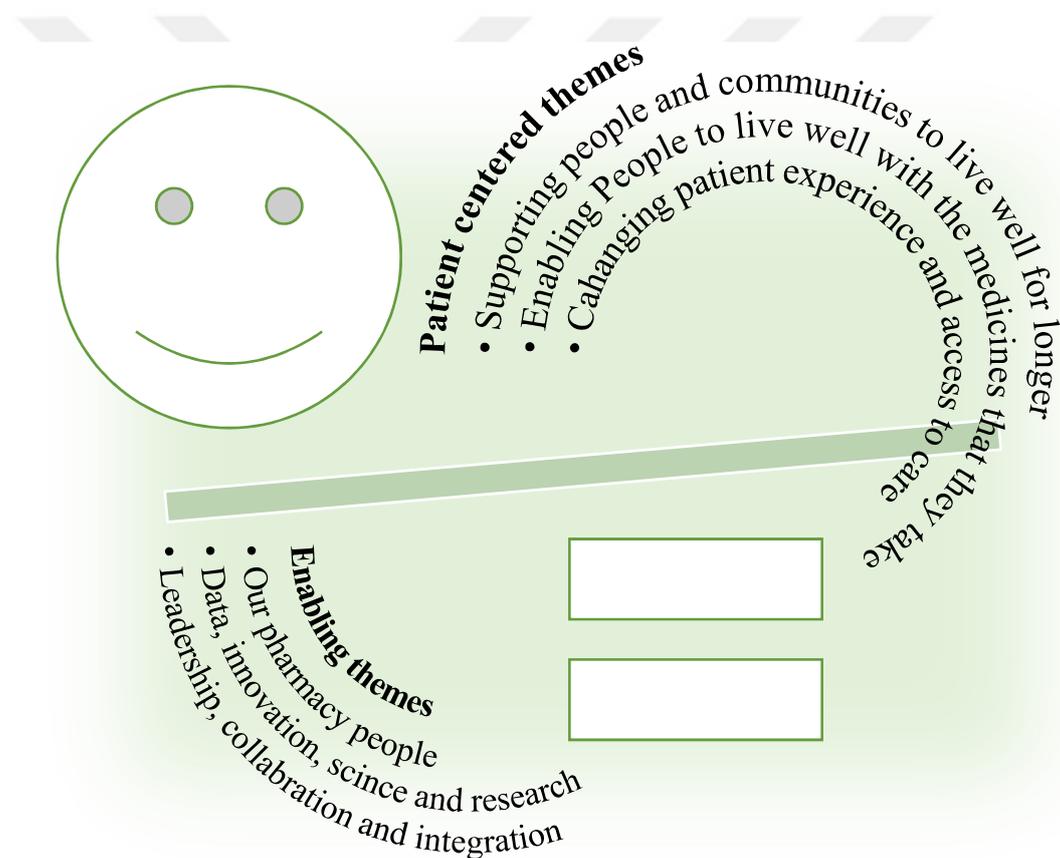


Figure 1: The vision for pharmacy professional practice⁴⁵

2.2.4. Pharmaceutical Care Services in Canada

Today, over 42,500 licensed pharmacists occupy more than 10,000 pharmacies. While 70% of these pharmacists work in community pharmacies, the other parts work in hospitals and other areas such as the pharmaceutical industry, governments, associations, colleges and universities. In Canada, pharmacists are the most attainable healthcare providers because of their advantageous locations.⁴⁶ Nowadays, pharmacists are quietly prestigious in the health profession in terms of medication therapy management. Their role expanded throughout the country, depending on the province territory provision of many patient care services change; medication review, chronic disease management, immunization services and health-promoting services and they owe prescribing rights in different variety of scopes which is a system that results in more suitable refill, less time spent in changing medication therapy regimens and collaboration with other healthcare providers. Different services provided by pharmacists in different regions of Canada are shown in Figure 2.^{47,48} For example in Ontario, Canada pharmacists' scope of practice consists of prescriptive authority for smoking/tobacco cessation, renewing/extending prescriptions for continuity of care, injection (SC or IM) of vaccines, including influenza vaccine, medication reviews and chronic disease management services.⁴⁹ Pharmacists' practising in all scopes have many proven benefits. Since the differences in the variety of practices in different areas of Canada, CPhA wants to ensure that all pharmacists can practice to full scope, regardless of practice setting or where they live and work.⁵⁰

2.2.5. Pharmaceutical Care Services in Europe

There are more than 400.000 community pharmacists and 160.000 community pharmacies in Europe. Several healthcare services provided by pharmacists such as dispensing (incl. repeat dispensing and homecare), compounding, medication management (unit dose packaging, new medicines service, medicines use review), emergency care (incl. emergency contraception) and minor ailment management as core services and immunization, smoking cessation, measurement of blood pressure, cholesterol, glucose, weight, chronic disease management, early screening and testing, repeat dispensing, homecare services as advanced pharmaceutical care. For example between 2014-2015 years in Ireland, 10% of patients benefited from vaccination

services in community pharmacies. In France, Belgium and Norway, consultation and follow-up services are provided for patients that are prescribed with asthma drugs and Vitamin K antagonists.⁵¹ In Denmark, from basic to advanced many pharmaceutical care services such as dispensing and counselling about both prescribed drugs and OTC medications, promotion of health and fulfilling of rational drug use, inhaled drug use support, new medicine service and re-prescribing services, preventative care, patient education, following up and documentation of treatment process and therapy adherence services provided by community pharmacists professionally.⁵²⁻⁵⁴

2.2.6. Pharmaceutical Care Services in Other Nations

In China, community pharmacists provide generally such services as counselling, medication review in dosage, precautions, evaluating adverse drug reactions and adherence, patient education and ensuring the safe use of drugs and also provide rarely health screening, documenting or examining prescription services.⁵⁵ According to research conducted in Sudan, while there is interest and attempts for enhanced pharmacy services, actual pharmacy practice is more traditional, pharmaceutical services still need improvements by revising the current system and providing tools to provide optimal care in community pharmacies.⁵⁶

2.3. Impacts of Pharmaceutical Care Services on the Quadruple Aim

2.3.1. Quadruple Aim

After Donald M. Berwick and colleagues presented the Triple with the aim of improving the healthcare system in the U.S. the question that there may be fourth aim to enhance these three aims gained currency.⁵⁷ The first triple aim consisted of increasing patient experience, improving population health, and decreasing costs. These aims are interdependent on each other. While the primary aim is increasing the health of the population the other two aims contribute to the primary aim and they also contribute to each other relatively.⁵⁸ In time the fourth aim came in additionally to these three aims with the thought of better health outcomes coming through more qualified work life of healthcare providers.⁵⁷ Nowadays also there is a fifth aim health

equity which also especially become popular after the COVID-19 pandemic in the US and all around the world for the improvement of the healthcare system.⁵⁹

2.3.2. Impacts of Pharmaceutical Care Services on the Quadruple Aim

According to M. Shawn McFarland and his colleagues, in the United States, the cost of nonrevised prescriptions is more than \$528 billion each year. The research also shows that with the pharmacists' implementations to the healthcare team in comprehensive medication management of patients for assessing and evaluating of drugs in terms of suitability, effectiveness, and safety there are seen better outcomes in terms of quadruple aim; better care for patients, decreased health care costs, an increased individual patient experience, and improved wellness and satisfaction of healthcare professionals.⁶⁰

In another study again conducted by M. Shawn McFarland and his other colleagues it seems that better health results which is the primary aim of the quadruple aim can be obtained by pharmacists' providing comprehensive medication management services for patients with other healthcare providers.⁶¹

In the study conducted Latin American hospital, with the intervention of pharmacists better outcomes are seen in terms of patients adherence and prevention and resolution of Drug Related Problems.⁶²

More positive and meaningful improvements can be obtained with the pharmacists' involvement in medication therapy management and optimization services in terms of decreasing the practitioners' workload, improvement of health outcomes and patients' satisfaction.⁶³

2.4. Barriers of Pharmaceutical Care

The increasing demand of society for health and health care requires focusing more on patients and their quality of life and individual patient care. That means changes in pharmaceutical care services to be more comprehensive and adapted to the healthcare system.⁶⁴ The pharmaceutical care process should be standardized for quality of care, this implies some challenges in the pharmacy profession. In one research published in 2004 some difficulties explained, these are; decreased

willingness in the pharmacy profession because of insufficient educational background, lack of standardization of services provided by pharmacists, need for optimized documentation guides, issues in collaboration with other healthcare providers and physicians' perspectives on pharmacists' role, time, place and financial constraints of pharmacists, lack of legislation regulations and expectations in reimbursement of services.⁶⁵ These barriers can be supported by other studies published in 2013 and 2023 respectively. The researches show the incompetency of pharmacists in terms of clinical skills in disease management, bureaucratic procedures of pharmacies and pharmacies' being commercial places, insufficient knowledge in providing pharmaceutical care and drugs, and communication problems with physicians and shortage of resources implementing pharmaceutical care are main barriers for pharmaceutical care services in many countries.^{9,13}

2.5. Access to Patient Health Records

The pharmacy profession is a kind of special area that have the proficiency in rational use of drugs and providing in different pharmaceutical care services. These services have impacts on decreasing adverse drug reactions, ensuring patient safety and optimization of drug therapy of patients, and improvement of health outcomes. Pharmacists reach this highly qualified, cost-effective, and available healthcare process for patients through a team-based patient-centered care plan. Implementing patient-centered care plan requires a standardized care process from collecting patient's therapy-related data to monitoring and following up therapy outcomes and reassessment by collaborating and communicating other caregivers and patients and documenting all process for the optimization.

The Joint Commission of Pharmacy Practitioners (JCPP) released the Pharmacists' Patient Care Process since the need for consistent processes in providing pharmaceutical care in the pharmacy profession. The Pharmacists' Patient Care Process Pharmacists is created through an evidence-based approach through comprehensive examination and comparison of the research in pharmaceutical care and medication therapy management. As it is shown in Figure 2, the Pharmacists' Patient Care Process consists of five steps which are collect, assess, plan, implement and follow up; monitor and evaluate respectively and requires collaboration with

providers, communication with patients, caregivers and providers, and documentation of the care process.

‘Collect’ is the first and essential step of care process which means the collection of all therapy-related subjective and objective data about patients by pharmacists to evaluate and determine the health status and therapy-related needs of patients. These data consist of (1) current medication list and medication use history for prescription and nonprescription medications, herbal products, and other dietary supplements, (2) relevant health data that may include medical history, health and wellness information, biometric test results, and physical assessment findings and (3) patient lifestyle habits, preferences and beliefs, health and functional goals, and socioeconomic factors that affect access to medications and other aspects of care. Then pharmacists create an individualized care plan for patients according to their assessments and implement this plan to meet the patients’ therapy needs and obtain desired health outcomes in patients. Pharmacists also follow up this care plan, monitor patients’ improvements in their health outcomes and reassess and may revise the care plan if there is a need according to the results of patients’ therapy. This process consists of (1) medication appropriateness, effectiveness, and safety and patient adherence through available health data, biometric test results, and patient feedback, (2) clinical endpoints that contribute to the patient’s overall health, (3) outcomes of care, including progress toward or the achievement of goals of therapy.⁶⁶

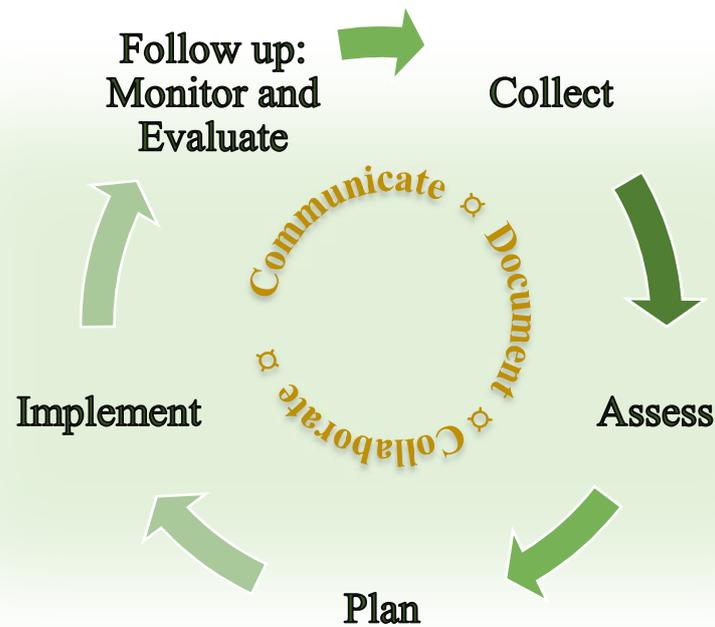


Figure 2: Pharmacists' patient care process⁶⁶

According to the Pharmacists' patient care process, pharmacists' access to patients' health records is important to provide optimal pharmaceutical care plans. Also The Royal Pharmaceutical Society believes that pharmacists' full access to the patient health record is major component for the delivery of more effective pharmaceutical care to patients, increasing patient adherence and patient safety, and reducing the medication-related malpractices and hospital admissions. They also suggest that pharmacists make more informed clinical decisions and enable collaboration with other healthcare providers and recognition of interventions made by them in patient therapies to ensure more safe, informed, and beneficial clinical decisions and therapies for patients.⁶⁷

Since the beginning of pharmaceutical care, community pharmacists' role is also evolved from being product-focused to patient-focused, and their role in providing pharmaceutical care and improving quality of life and patients' health outcomes became more important. Community pharmacists' access to patient health records is an important factor for the provision of enhanced pharmacy services. There are many studies showing the needs and positive effects of community pharmacists' access to

patient health records on the quality of pharmaceutical care provided by community pharmacists.

According to a study conducted by Jette A. van Lint et al., when community pharmacists had access to patient health records pharmacists' levels of confidence in the determination of drug therapy problems increased and their clinical decisions and assessments were more efficient, their care practice in medication review became more.¹¹

In Romania, pharmacists using a validated pharmaceutical care approach in the elderly resulted in the optimization of the pharmacotherapy needs of the geriatric population and easier identification of drug-related problems and team-based pharmaceutical care for patients.⁶⁸

A study about pharmacists' integration into Electronic Health Records (EHRs) in Canada showed that without EHRs incomplete information occurred in indication, adherence and patient care process. The collaboration with pharmacists and physicians and communication level increased with the EHRs. This also provided to make a resolution for medication therapy problems.¹⁹

3. MATERIALS AND METHODS

3.1. Study Design

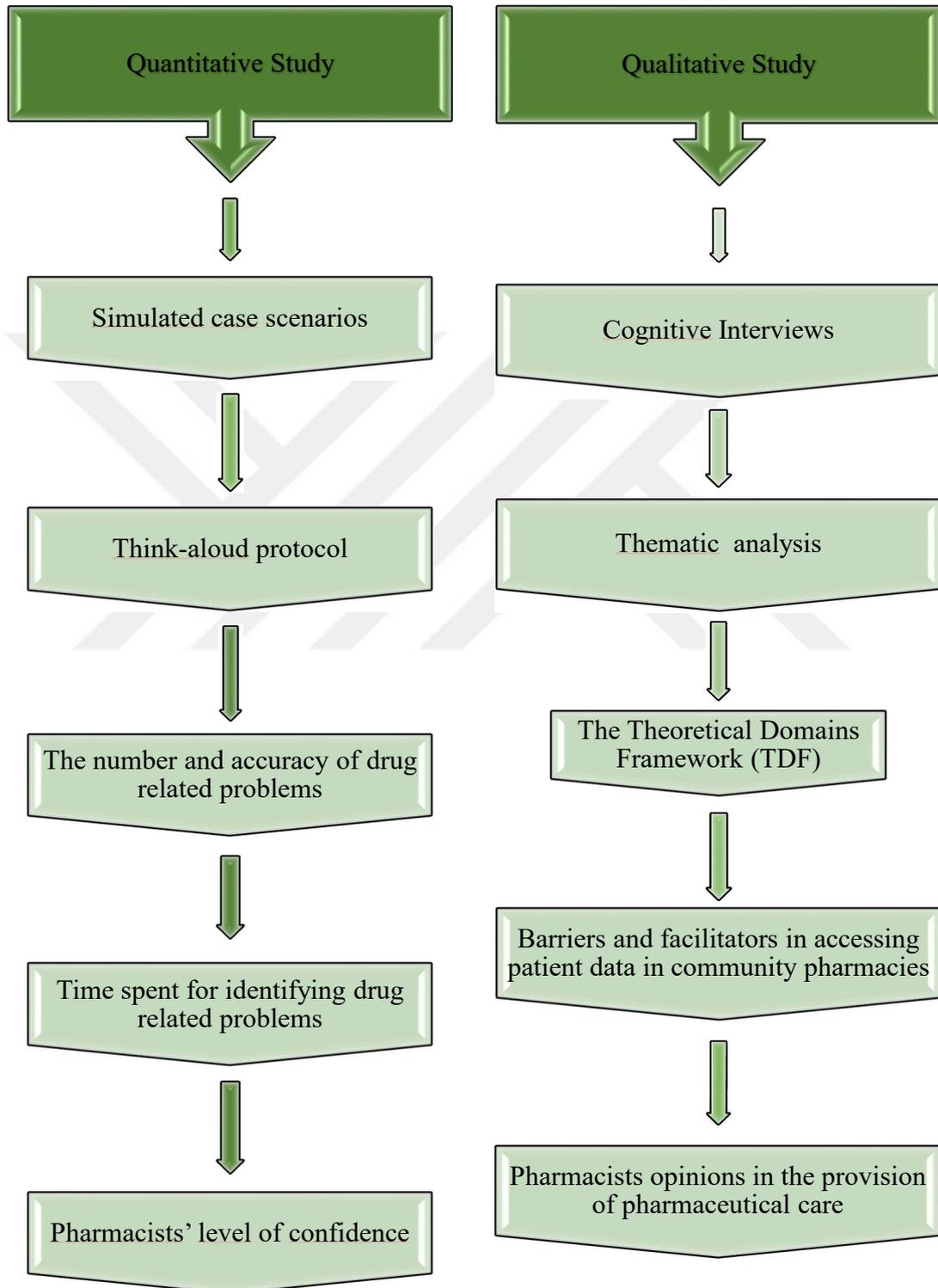


Figure 3: Study design⁶⁹

In this study, we hypothesized that there are differences in terms of the number and accuracy of drug-related problems, time and confidence level of pharmacists when community pharmacists have different levels of access to patients' health records. We wanted to evaluate the barriers to access to patient data in community pharmacies in Türkiye. This research is designed as a mix method study. Two simulated case studies which are separated in terms of patient data are created for the quantitative part and shared with the pharmacists who voluntarily accepted to join this study and requested them to make medication review and provide pharmaceutical care for the simulated patients. The 'think aloud' method was used in the case study which means participants expressed their thoughts loudly until they finished the medication review and pharmaceutical care process. After the case study researcher conducted a cognitive interview with pharmacists to obtain their opinions about cases and evaluate the barriers to reaching patients' medical records. All these processes were run from Zoom to optimize the conditions for pharmacists and record the think-aloud and cognitive interview parts. The Ethical Approval of this study was granted by the Ethical Committee of Yeditepe University-Institute of Health Sciences on 12.04.2022 (See Appendix I)

3.2. Participants

The inclusion criteria for this study are working as a community pharmacist in Türkiye and being competent in providing pharmaceutical care for patients. Participants were reached with the snowball sampling method. Snowball sampling is a useful method for recruiting participants that the possibility of reaching is more difficult than normal. It gives a chance for better communication with participants and access to the participants having more desirable characteristics.⁷⁰ Recruitment continued until data saturation and repetition were seen.

3.3. Case Scenarios

Two different case scenarios and one cognitive interview were prepared to simulate the same patient and to collect the opinions of pharmacists about cases. The scenarios were different from each other in terms of patient health records. The reason

for the choice of scenario was the high possibility of pharmacists' encountering these types of patients in their daily life.

One female student simulated both scenarios since the patient in cases was the same. Before starting the sessions case scenarios and cognitive interviews were pilot studied for standardizing and optimizing the cases and the interview. The standardized patient medical history was formed to answer the questions of pharmacists in the sessions.

In the first case, a 67 years old woman who had intensive headaches and hypertension came to the pharmacy to take her prescription without any health record. The pharmacist could see just the patient's prescription without any medical record of patient as a patient taking his medicines just with money. There was not any information about the patient in the Medula system. If a pharmacist asks a question about patient history, the simulated patient will respond according to standardized patient medical history. In the second case scenario the same patient, a 67 years old woman who had intensive headaches and hypertension came to the pharmacy to take her prescription. At that time pharmacists had full of access to patient health records. In the second scenario, health records were formed according to the pharmacotherapy casebook to present all related data about the patient for providing optimal pharmaceutical care.⁷¹

Before starting to case scenarios pharmacists were informed with a brochure prepared by the researcher about pharmaceutical care steps and the categorization of drug-related problems briefly. The information paper was prepared according to the Patient Care Process chapter in Pharmacotherapy Casebook and Strand's categorization of Drug Related Problems.^{72,73}

3.4. Data Collection and Cognitive Interview

The simulated patient-pharmacist interaction was a normal prescription dispensing process. The pharmacist was presented with a written prescription for a chronic condition. The pharmacist was asked to meet the prescription they usually do and examine the prescriptions in order to determine the drug-related problems. Pharmacists were asked to think loudly when they check the prescriptions and when they were scanning medication therapy their think-aloud processes were recorded.

When the simulated patient scenario was over, the cognitive interview part started which the researcher asked the pharmacists some questions regarding their level of confidence in identifying DRPs, opinions about prescriptions, access to patient data and barriers in this access and providing pharmaceutical care. The characteristics of participants also were collected at the end of that cognitive interview.

3.5. Think Aloud and Cognitive Interview Methods

The Think Aloud Protocols and Cognitive Interviews are used in the understanding of thought processes. Although these methods are useful for analysing thought processes there are some differences. While cognitive Interviews are preferred when the aim is understanding the opinions and approaches of participants if the goal of the study is evaluating the thinking process of the participant and the way of approach within a presented tool then think aloud protocols are more convenient in this research. Also, these two methods can be used together according to the methodology of the studies. The other important difference between Cognitive Interviews and Think Aloud Protocols is participant factors. In think-aloud protocols, participants are required to take part in the exercise and speak aloud while they consider their solution to the issue. There should not be any attempt or disruption from the researcher unless the participant quit thinking loudly. On the contrary, to think aloud protocol, cognitive interviews are required to interact between the researcher and participants. Researchers ask questions to evaluate the retrospective insights of participants in the presented tool. It may be possible that cognitive interviews may affect the thought processes of participants when both methods are used together the think-aloud protocol should come first. In both methods, participants should be trained in techniques before starting the studies.

The conclusions of Cognitive Interviews and Think Aloud Protocols can be gathered as verbal reports and then analysed qualitatively and quantitatively according to the aim of the research. Generally, transcripts of Cognitive Interviews and Think Aloud Protocols are examined with qualitative methods with detecting codes and themes based on inductive or deductive coding mechanisms. Also, quantitative analysis can be done from the verbal reports in terms of frequencies, distributions of determined themes or codes.⁶⁹

3.6. Data Analysis

Both quantitative and qualitative analyses were conducted in this study.

3.6.1. Quantitative analysis

All think-aloud protocols of pharmacists in both scenarios are transcribed in Turkish and translated into English. Quantitative analysis was done to interpret the case scenarios in terms of the number and accuracy of DRPs and pharmaceutical care services which are non-pharmacological treatments such as lifestyle change and monitoring of patients, time spent for each case scenario, and the pharmacists' level of confidence. Since the patient history was the same in both cases, the number of DRPs and category of DRPs were the same in both cases. Drug related problems in the cases were categorized according to Helper-Strand Drug related problem classification system and also two more parameters included in the case as drug related problems: 'Non-pharmacological treatment' and 'Monitoring' parameters.⁷⁴ In both cases, the existing DRPs, non-pharmacological treatment options, and monitoring needs were listed and defined before the study in Table 1.

The time spent on solving the cases was also estimated in both cases and compared to each other in terms of length to define statistically significant differences.

Pharmacists were asked to rate their level of confidence over 10 in identifying and solving DRPs after each case. The numerical results were also compared to each other in both cases to define statistically significant differences.

Table 1: The list of Categories of DRP/ Nonpharmacological treatments/ Monitoring⁷⁴

Helpier-Strand Classification of Drug Related Problems		The existing problems in patient in the cases
Number	Category of Drug related problem	
1.	Untreated indications	* The patient needed adjunctive therapy for diabetes.
		* The patient needed immunization against Pneumonia and Influenza because of her age
		* The patient needed adjunctive therapy for her hypertension.
2.	Improper drug selection	None
3.	Subtherapeutic dosage	* The patient needed a higher dose of atorvastatin therapy for her dyslipidaemia.
		* The patient needed a higher dose of antihypertensive drug therapy for her hypertension.
4.	Failure to receive drugs	* The patient did not use her prescribed drug aspirin.
5.	Over dosage	None
6.	Adverse reactions	* Glipizide had an adverse effect which was weight gain in the patient.
7.	Drug interactions	None
8.	Drug use without indication	* The multivitamin that the patient used was unnecessary for her condition.
Other related Drug related problems included in the case		
9.	Non-pharmacological treatment	* Patient needs to change her lifestyle for controlling; -Diabetes Mellitus -Hypertension -Dyslipidemia
10.	Monitoring	The patient needed to be followed up by a pharmacist in four conditions; - Diabetes Mellitus - Hypertension - Dyslipidemia - Obesity - Smoking

3.6.2. Qualitative analysis

Opinions of pharmacists about access to patient data and providing pharmaceutical care were questioned. Also, pharmacists were asked to evaluate the scenarios in terms of reality for second validation. Data was recorded and transcribed as verbatim. Interviews were translated into English using a standard forward backward translation method. The characteristics of participants also were collected at the end of that cognitive interview and transcribed also.

Thematic synthesis were carried according to Braun & Clarke's six-phase framework for doing a thematic analysis⁷⁵ and Theoretical Domain Framework (TDF)⁷⁶. After all interviews translated as it explained before, thematic analysis were conducted according to the scheme as it shown Figure 4.

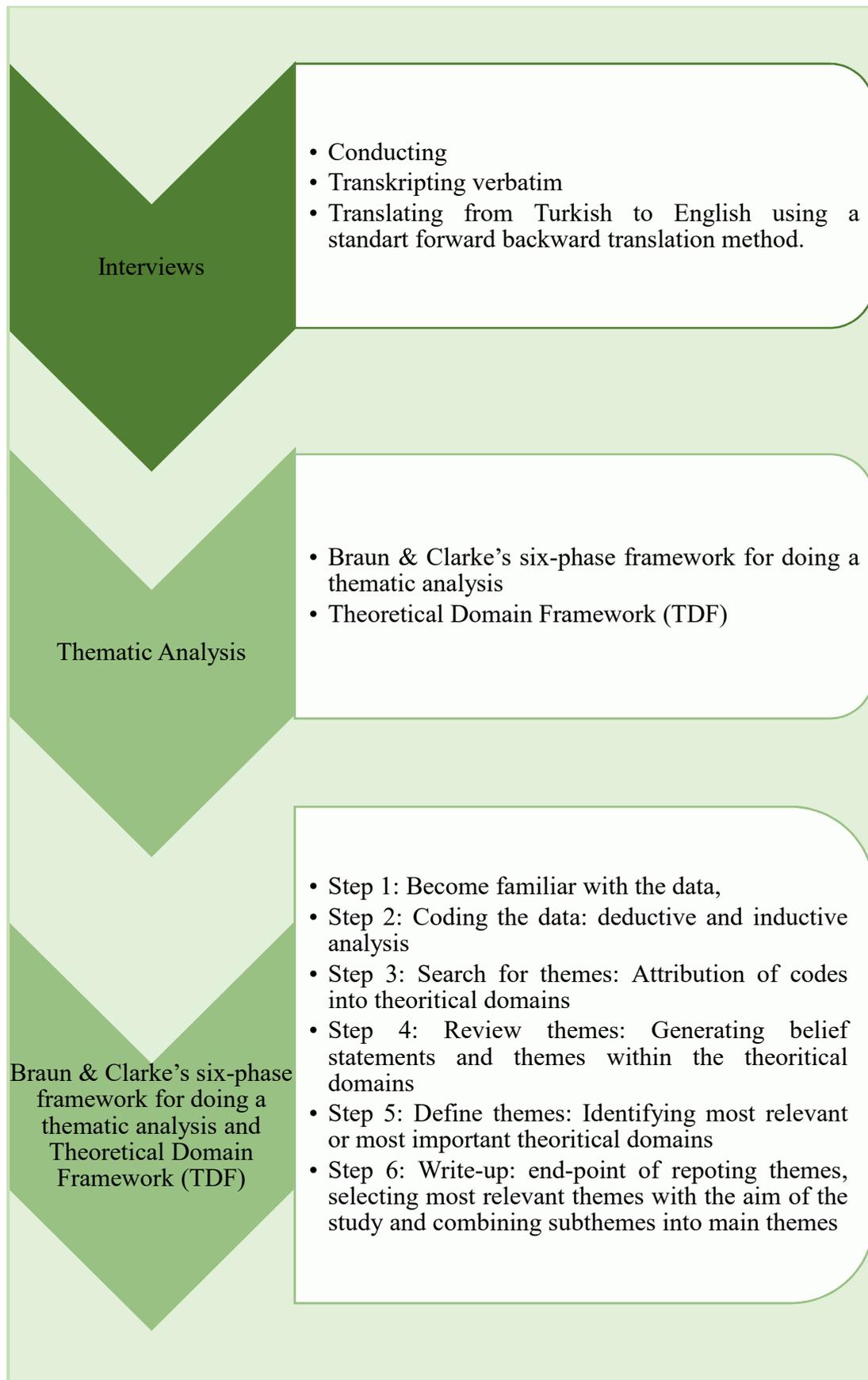


Figure 4: Thematic Analysis Steps for Qualitative Study

4. RESULTS

Two simulated case scenarios were done with ten community pharmacists and cognitive interviews were done with all those ten pharmacists who completed the cases. After each case, pharmacists are requested to rate their level of confidence out of 10 in determining drug-related problems in the cases.

The time spent doing medication reviews and providing pharmaceutical care for patients was also estimated for each pharmacist and each case. The mean time spent in the first case was estimated as 693 seconds and 645 seconds in the second case (Table 3).

In the first case study pharmacists identified a total of 36 DRPs (median, 2). The second simulated case with all patient medical data created changes in all pharmacists' initial assessments. Changes occur in the number of determined DRPs, the accuracy of DRPs, the time spent on providing pharmaceutical care and the confidence levels of pharmacists in determining a DRP. (Table 3)

4.1. Participant's characteristics

The average age of participants was $42,2 \pm 9,9$ with an average of $16,8 \pm 11,5$ years of experience as a community pharmacist as presented in Table 2. The youngest pharmacist was 27 years old with 2 years of work experience and the oldest pharmacist was 57 years old with 27 years of work experience as a community pharmacist. The longest duration of working as a community pharmacist was 29 years (Figure 5). 60% of the participants were female and 40% of them were male (Figure 6). All pharmacists stated that they had Clinical Pharmacy Master's or Ph.D. degree (70%) or joined training in pharmacotherapy or pharmaceutical care (30%) or both (50%) as they shown in Figure 7, Figure 8 and Figure 9 respectively.

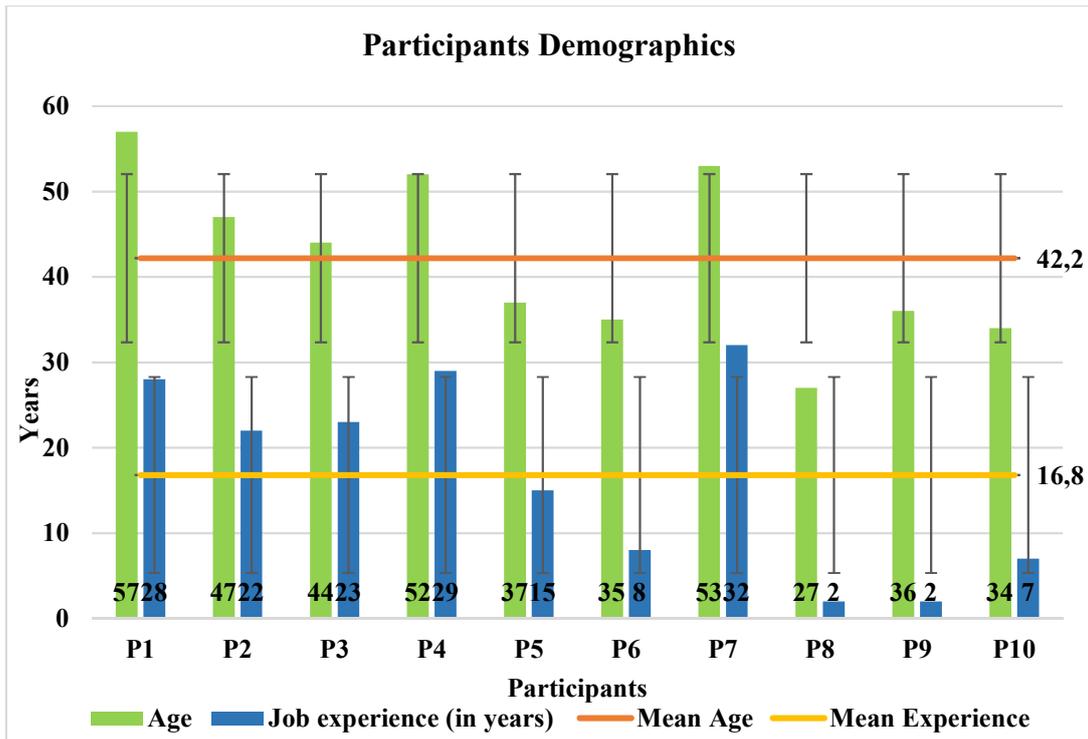


Figure 5: Participants characteristics/ Age and Job experiences (years)

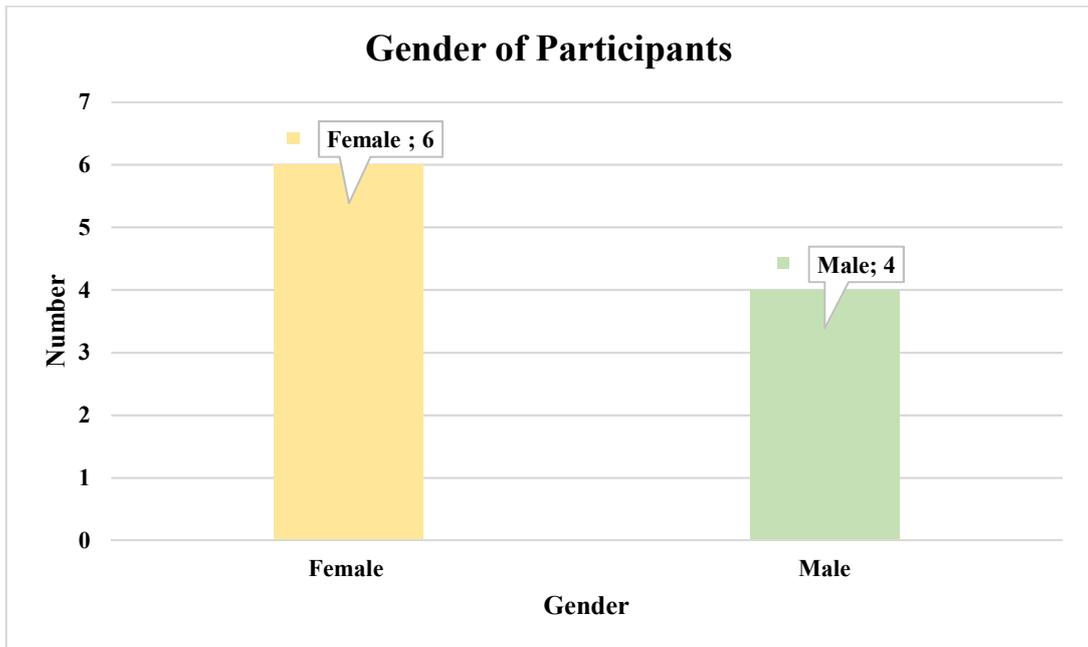


Figure 6: Participants characteristics/ Gender

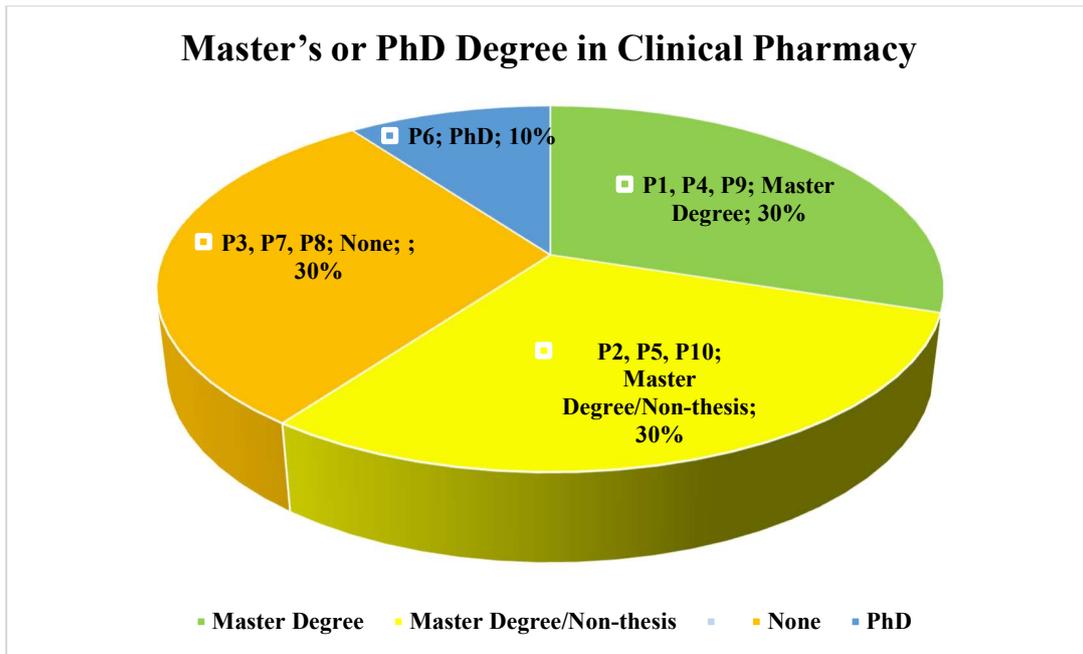


Figure 7: Participant characteristics/Holding a Master or PhD Degree

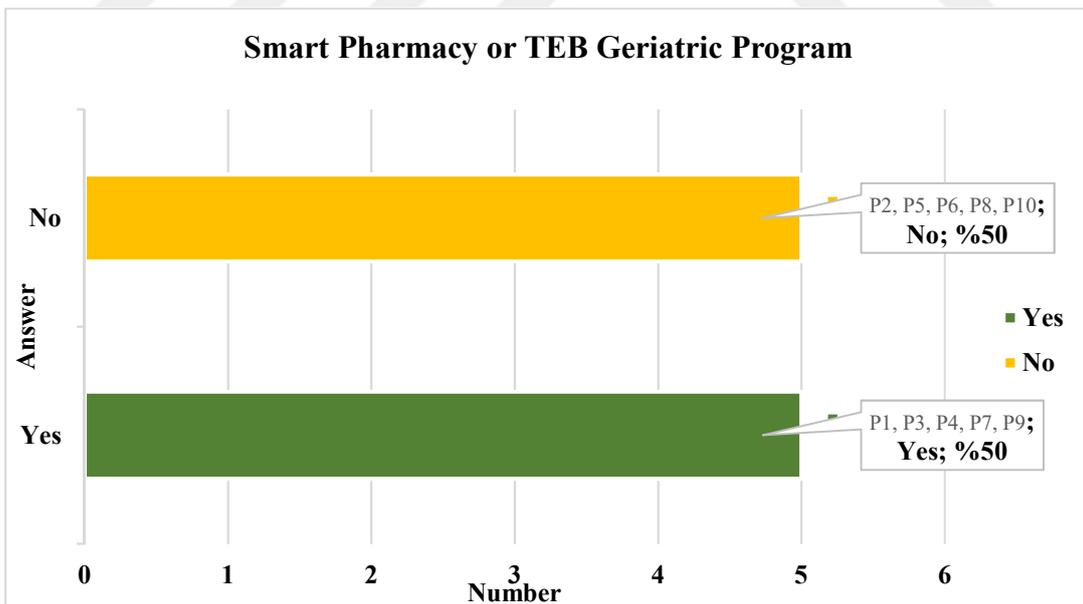


Figure 8: Participant characteristic/Joining Smart Pharmacy or TEB Geriatric Program

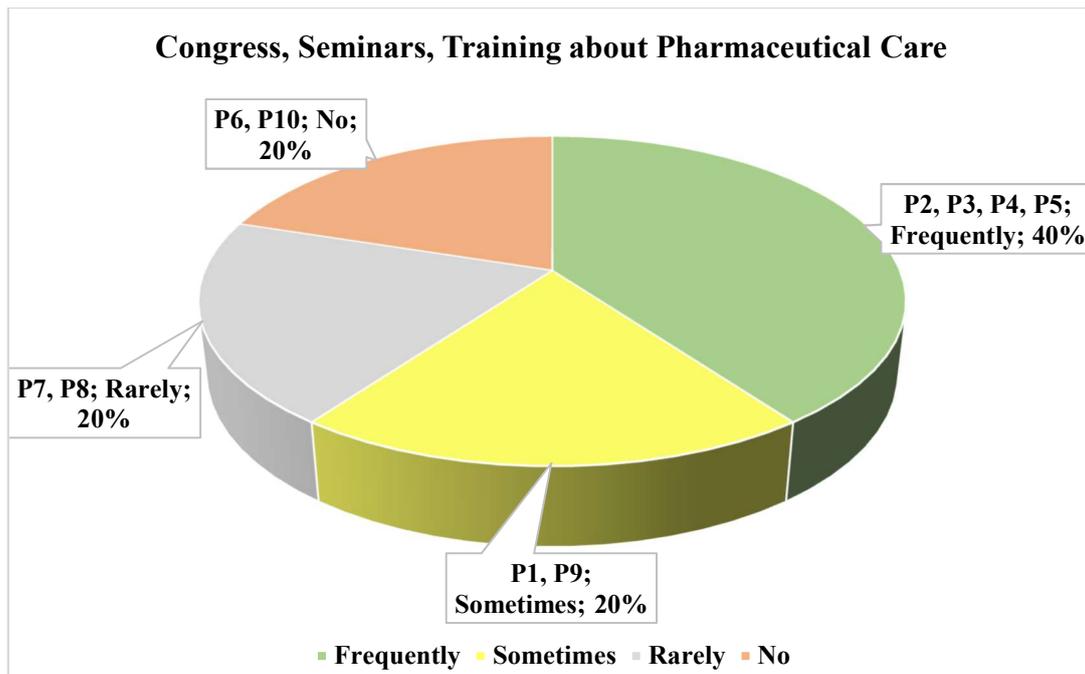


Figure 9: Participant characteristic/How often participants join the congresses, seminars or trainings about pharmaceutical care?

4.2. Drug-related problems

In the first case study, pharmacists could identify a total of 67 DRPs (median 3,5). The median value of confirmed DRPs was 3 over 16 actually existing DRPs. The maximum value of confirmed DRPs determined by a pharmacist was 12 over 16 and the minimum is 0 over 16. The median of DRPs they could not detect is 16 with a maximum and minimum 4. Lastly the median of unconfirmed DRPs that they defined but actually did not exist in the case is 0.5 with a maximum of 5 and a minimum of 0. On the other hand, when pharmacists could review the health records of patients the total number of DRPs became 126 (median 13 over 16 actually exist DRPs). At that time, the number of confirmed DRPs became 12 over 16 actually existing DRPs. The maximum value of confirmed DRPs determined by a pharmacist was 16 over 16 and the minimum is 3 over 16. The median of DRPs they could not detect is 4 with a maximum of 13 and a minimum of 0. Again, the median of unconfirmed DRPs that they defined but actually did not exist in the became 1 with a maximum of 4 and a minimum of 0 (Table 2).

Using SPSS normality test (Shapiro-Wilk Test) the outcomes distribution was determined as being deviated from normal distribution ($p < 0.05$). Wilcoxon ranked test showed significant differences between median values of total DRPs identified, number of true positives, confidence level and sensitivity of identifying DRP before and after providing access to patient information ($p < 0.05$).



Table 2: Quantitative results of cases

CASE 1										
Pharmacist	DRPs	True positive DRPs (.../16)	True negative DRPs (.../40)	False Negative DRPs (.../16)	False positive DRPs	Specificity	Sensitivity	PPV	NPV	Accuracy
P1	3	3	40	13	0	1,00	0,19	1,00	0,75	0,77
P2	3	3	40	13	0	1,00	0,19	1,00	0,75	0,77
P3	15	12	37	4	3	0,93	0,75	0,80	0,90	0,88
P4	3	3	40	13	0	1,00	0,19	1,00	0,75	0,77
P5	2	0	38	16	2	0,95	0,00	0,00	0,70	0,68
P6	3	3	40	13	0	1,00	0,19	1,00	0,75	0,77
P7	10	5	35	11	5	0,88	0,31	0,50	0,76	0,71
P8	8	8	40	8	0	1,00	0,50	1,00	0,83	0,86
P9	16	12	37	4	3	0,93	0,75	0,80	0,90	0,88
P10	4	3	39	13	1	0,98	0,19	0,75	0,75	0,75
Median	3,5	3	39,5	13	0,5					
Interquartile range	9,5	7	3	7	3					
CASE 2										
Pharmacist	DRPs After	True positive DRPs Post (.../16)	True negative DRPs Post (.../40)	False negative DRPs Post (.../16)	False positive DRPs Post	Specificity	Sensitivity Post	PPV Post	NPV Post	Accuracy Post
P1	15	12	37	4	3	0,93	0,75	0,80	0,90	0,88
P2	12	11	39	5	1	0,98	0,69	0,92	0,89	0,89
P3	17	16	39	0	1	0,98	1,00	0,94	1,00	0,98
P4	13	12	39	4	1	0,98	0,75	0,92	0,91	0,91
P5	15	13	38	3	2	0,95	0,81	0,87	0,93	0,91
P6	11	10	39	6	1	0,98	0,63	0,91	0,87	0,88
P7	13	9	36	7	4	0,90	0,56	0,69	0,84	0,80
P8	12	12	40	4	0	1,00	0,75	1,00	0,91	0,93
P9	13	12	39	4	1	0,98	0,75	0,92	0,91	0,91
P10	5	3	38	13	2	0,95	0,19	0,60	0,75	0,73
Median	13	12	39	4	1					
Interquartile range	3,5	3	1,5	3	1,5					

4.3. The time spent on providing pharmaceutical care

The mean time spent in the first case was estimated as 693.1 seconds and 645 seconds in the second case (Figure 10). The longest duration spent for the prescription in the first case was 1420 seconds and the shortest duration was 173 seconds. In the second case, the longest and the shortest time were estimated as 868 and 376 seconds respectively. The median time spent on providing pharmaceutical care increased from 575 seconds to 648 seconds. When the changes in times were examined one by one, the time of pharmacists' providing optimal pharmaceutical care and medication review services in both cases became shorter in the second case. When pharmacists changed their level of providing pharmaceutical care according to the patient data they reached, it seemed that the time spent on the prescription increased (Table 3). Using Wilcoxon ranked test no significant difference was observed between duration of time spent on processing the case before and after providing access to patient information ($p=0.55$).

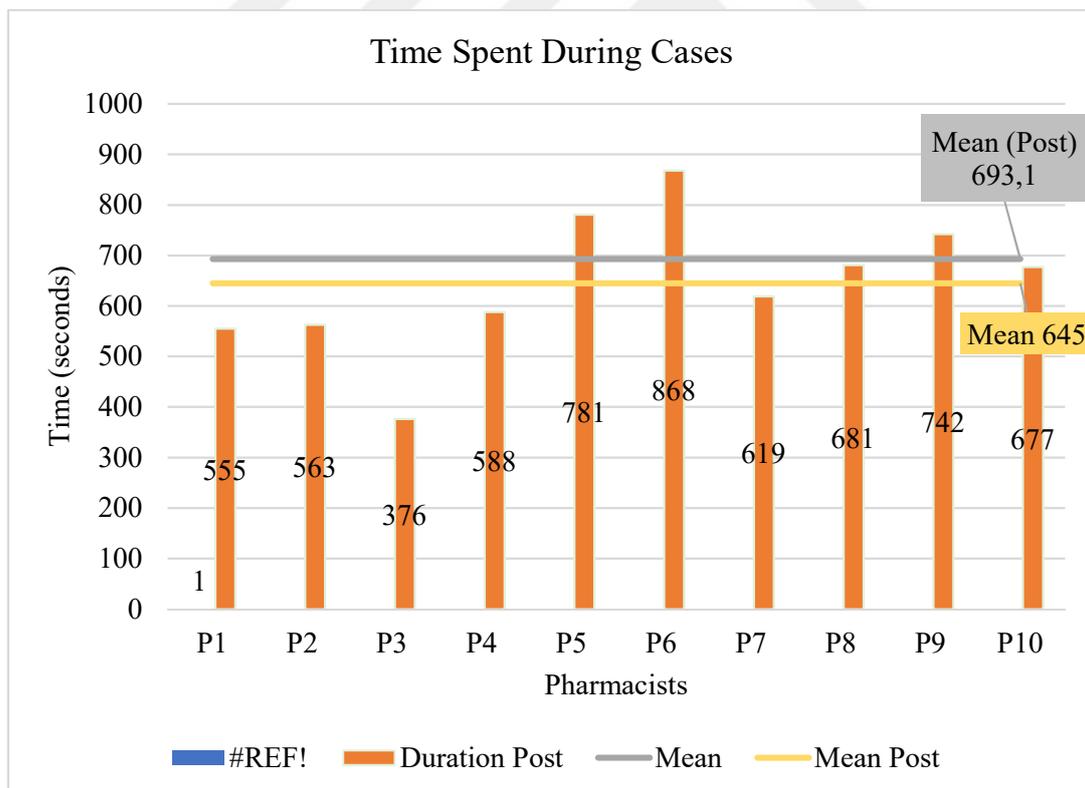


Figure 10: Time spent in cases

4.4. Pharmacist Level of Confidence

According to numbers, all pharmacists' levels of confidence in determining DRPs were higher in the second case than in the first case. In the first case scenario, the median level of confidence was evaluated as 5 over 10 with a maximum confidence level of 7 and a minimum confidence level of 2. On the other hand, in the second case, the confidence levels of pharmacists were calculated as 8 over 10 in the median value with a maximum level of confidence 9 and a minimum level of confidence 7 (Figure 11).

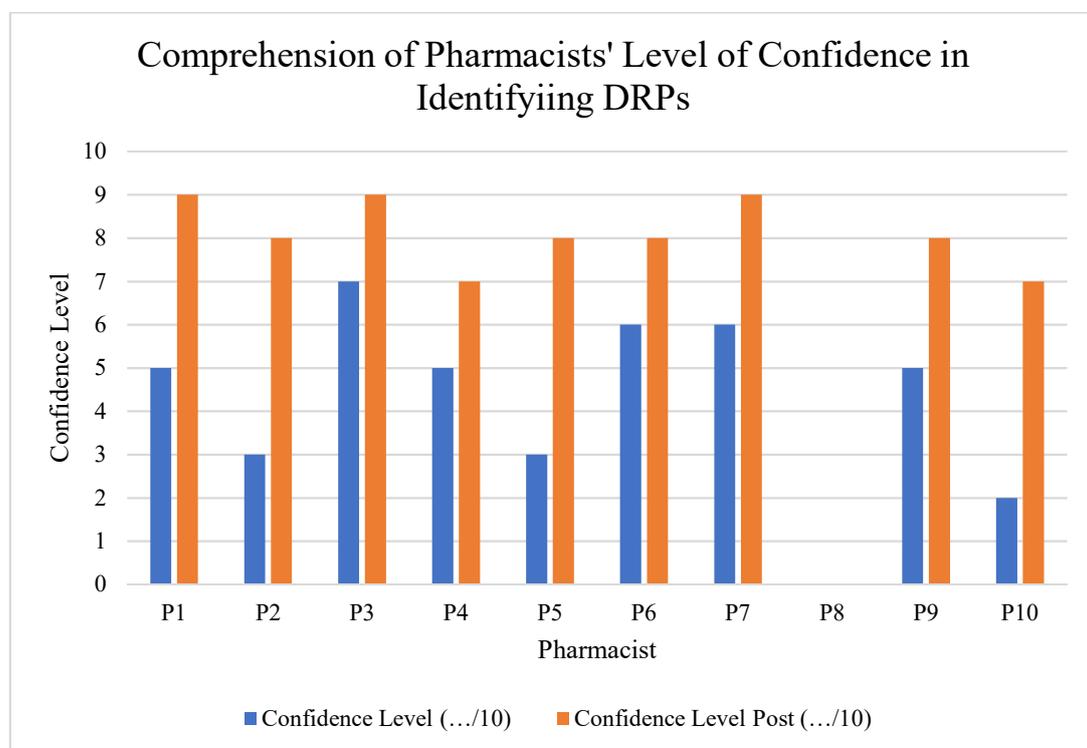


Figure 11: Confidence level of pharmacists in identifying DRPS

4.5. Qualitative Results

The thematic analysis of the transcripts has revealed several themes related to the access to patient information and provision of pharmaceutical care in community pharmacies in Türkiye. The main themes forming the thematic framework were (1) missed care opportunities, (2) pharmacy related barriers, (3) external barriers and societal perceptions of pharmacy, and finally (4) pharmacists' desire for advanced care. Each theme is discussed in detail below with subthemes along with quotes and examples from the relevant interviews mapped against the Theoretical Domains Framework (TDF) and COM-B to provide a comprehensive understanding of the factors influencing advanced pharmaceutical care in community pharmacies.

The first theme (1) highlights missed opportunities of providing valuable care to patients especially those with multiple comorbidities due to lack of access to patient information. Pharmacists report that (1.1) drug related problems are commonly encountered in their daily routine in community pharmacies, For example, one pharmacist stated that about 80% of their patients had profiles similar to the simulated patient profile presented to them (P.4) As well all pharmacist confirm that the simulated case was relevant to patient profiles they encounter daily (P.1- P11) .

The pharmacists recognize the need for access to patient data and that the current limited access hinder pharmacist ability to provide effective care (1.2). The participants noted that while they could access basic patient information, such as medication lists, they faced difficulties in obtaining more detailed information, such as blood pressure and blood sugar measurements. For instance, P.2 stated “It's not possible, even for existing patients, because we can't see such detailed information. We can only see the medications they are using. But we can't see the current state of their last blood pressure measurement. We can't see the latest blood sugar measurement. So, we miss out on a lot of details”. P.5 noted that it was challenging to obtain data regarding patients' polypharmacy, "Trying to access this data is not easy at all". A pharmacist stated that “without access to patients' medical history, (1.3) medication effectiveness and patient adherence cannot be properly assessed” (P.9).

The second theme identified in the text is (2) pharmacy and pharmacist related barriers to optimal pharmaceutical care. Pharmacists state that providing

comprehensive pharmaceutical care is (2.1) challenging due to the workload and time constraints. They report their “stressful work environment” as a challenge associated with providing comprehensive care. Another reoccurring sub-theme was the (2.2) lack of space highlighting the physical constraints faced in today’s pharmacies.

Example quotes:

"Providing comprehensive pharmaceutical care is challenging due to the workload and time constraints." (P.11)

“But currently, where will you do all this in a pharmacy that is thirty-five square meters? How many people will you accommodate at the same time? I think pharmacies should be more humane; they should be at least sixty square meters.” (P.4)

The third theme involved (3) external barriers and societal perceptions of pharmacy. Pharmacists believe that there is a need for (3.1) cultural transformation in relation to how pharmacy and pharmacists are perceived. The participants highlighted the need for a shift in the healthcare system to reduce the segregation between doctors and pharmacists and improve patient access to information. For instance, a pharmacist indicated that while waiting for a physician appointment is a norm patients do not wish to stay at a pharmacy more than a few minutes (P.4) "So, does it require a cultural transformation? Yes, it does" and "As a country, we need a cultural change in general to be more patient"

Some participants highlighted that the (3.2) societal perception of pharmacies and pharmacists is not favorable. They are seen as mere tradesmen, P.6 quotes “most people are not even aware that pharmacists are university graduates”. This lack of awareness of pharmacist’s role is a significant obstacle in providing quality healthcare services. For instance, a participant mentioned that “Unfortunately, besides that, there are patients whom we cannot directly communicate with, who send their children to pick up their medication. Apart from them, as I mentioned earlier, we have patients who directly resist. They try not to provide any information” (P.4). This sub-theme highlights the importance of building trust with patients to provide quality healthcare services.

The participants as well mentioned current (3.3) physicians’ perceptions as a barrier in providing quality healthcare services. A pharmacist quote "Coordinating

with doctors is essential in providing quality healthcare services." (P.6) They highlighted that some patients go to different doctors and get different prescriptions, which may cause unnecessary polypharmacy that negatively impact healthcare outcomes (P.6). The interviewee further adds that doctors do not want to spend time discussing medication with pharmacists, which makes it difficult to provide quality healthcare services. "Doctors do not want to spend time discussing medication with pharmacists, which makes it difficult to provide quality healthcare services." (P.5). The pharmacists also mention that doctors can be a barrier to providing pharmaceutical care, as they can be resistant to the pharmacist's suggestions. This sub-theme is evident as well in the following quotes: "That's why we don't want to interfere too much with prescriptions. The doctors on the other side get upset about this. When we say, "Can you fix this? Is the dose too high?" You get a reaction like "Just give it to them and let them go" from the doctor" (P.4). "The pharmacy is not seen as a healthcare facility but also a commercial establishment" (P.3).

The fourth theme observed in pharmacist interviews is (4) the desire for providing comprehensive pharmaceutical care. This theme that emerges from the interviewee mentions that they would like to provide pharmaceutical care based if they are aware of patient's medical history and context, which would be more (4.1) meaningful and motivating. The interviewee further adds that they would like to assist patients in a way that is more comprehensive (4.2) collaborating with physicians. This theme shows pharmacist's motivation to provide comprehensive care to patients.

Example quotes:

"We would like to provide pharmaceutical care based on the patient's history, which would be more meaningful and motivating." (P.11)

"I want to take care of every patient. When one of them doesn't come, I torment myself wondering why. If I can share my knowledge with someone, I feel happy, but these are very intertwined and complex things (getting access to patient information). I wish they could be better." (P.4)

"...some patients may not do it, but some patients do (counseling targeting medication adherence). That can be added as a note (for physicians), for example. That can be very useful for doctors." (P.3)

Within this theme as well appears that providing pharmaceutical care (4.3) fosters pharmacist satisfaction. The pharmacist mentioned that financial satisfaction is not that high anymore for pharmacists, and if they stay there for financial satisfaction, they cannot be satisfied. This theme was identified in the following quote:

"Financial satisfaction is not that high anymore for pharmacists, and if they stay there for financial satisfaction, they cannot be satisfied!" and "...spiritual satisfaction can motivate pharmacists to provide quality care to their patients." (P.3)

"Of course, it will satisfy you in terms of your recognition, reputation, increasing number of patients, and feeling good about practising pharmacy comprehensively. It's a good thing. It should be there." (P.4)

In conclusion, the thematic analysis of the text and interviews conducted with pharmacists reveals several themes related to the challenges faced by pharmacists in providing pharmaceutical care to their patients. The top themes identified are mapped against relevant TDF domains and the COM-B Model is presented in Table 3.

5. DISCUSSION AND CONCLUSION

There are many studies about the perception of pharmacists' access to patients' health records and providing pharmaceutical care. In one of them, a study about pharmacists' perspectives on providing pharmaceutical care, was conducted by John A. Dunlop and John P. Shaw in New Zealand. According to the study, time constraints, lack of motivation of pharmacy team, lack of reimbursement system, pharmacists' not being involved into healthcare team, there not being suitable educational curriculum for providing pharmaceutical care seem as main barriers for pharmacists' not being able to provide pharmaceutical care¹⁷.

In another study about pharmacists access to patients' health records in community pharmacies showed that when pharmacists could reach the health records

of patients like laboratory results, better practise results were seen in patients' primary care process like well-defined drug therapy problems, less missed pharmaceutical care opportunities and pharmacists can provide pharmaceutical care with in a more confident mood. Also more comprehensive and efficient therapy process were obtained with that practice¹¹.

Hughes et al. conducted a study in Canada about effects of the pharmacists' involvement into electronic health records. The study showed that there were educational and behavioural barriers for providing successful pharmaceutical care for patients. Also locational problems and issues about pharmacy staffs could be obstacle for the better pharmaceutical care process. On the other hand, pharmacist are the most suitable members of the healthcare teams to provide drug therapy management and pharmaceutical care¹⁹.

The study has identified the need for pharmacists to have access to complete patient information. Pharmacist were more competent and confident in identifying DRP when provided access to patient information compared to the current practice. Significant differences between median values of total DRPs identified, number of true positives, confidence level and sensitivity of identifying DRP before and after providing access to patient information ($p < 0.05$).

The thematic analysis of the text and interviews conducted with pharmacists reveals several themes related to the challenges faced by pharmacists in providing pharmaceutical care to their patients. The top themes identified in the text and interviews are missed care opportunities, pharmacy and pharmacist related barriers, external barriers and perception of pharmacists in society, and finally desire to provide advanced pharmaceutical care.

These themes highlight the need for pharmacists to have access to complete patient information, adequate physical space, and continuous education to provide comprehensive pharmaceutical care to their patients. The themes also highlight the importance of patient education, doctor interactions, patient compliance, medication safety, and collaboration to improve patient outcomes. The thematic analysis provides valuable insights into the experiences and perspectives of pharmacists and can inform the development of policies and interventions to improve pharmaceutical care.

When pharmacists had full access to patient information, they were more likely to suggest supplementary therapies. It can be said according to the results there may be made future researches for the need of a standardized therapy programmes as a guideline for pharmacists to decide when the supplement use appropriate for patients in community pharmacies in Türkiye.

When pharmacists' provision of pharmaceutical care process were examined in terms of time and practise, there were no meaningful results because of the differences in the practises of community pharmacists. Even if they were included with a particular characteristics for the standardization of study process, there were seen many differences in the think aloud protocols in terms of providing pharmaceutical care and drug therapy management between community pharmacists. It can be said there need more investigations in the relationship between pharmacists educational background and their performance in providing pharmaceutical care in community pharmacies in Türkiye.

In conclusion, the thematic analysis of the provided context reveals four main themes related to advanced pharmaceutical care in Türkiye. These themes highlight the missed care opportunities due to lack of access to patient information, pharmacy and pharmacist-related barriers, external barriers such as the perception of pharmacists in society, and pharmacists' desire to provide advanced pharmaceutical care. Mapping these themes against the Theoretical Domains Framework provides a comprehensive understanding of the factors influencing advanced pharmaceutical care in Türkiye and suggests potential strategies for addressing these barriers and improving patient care.

LIMITATIONS

This study has a few limitations. First, the number of participants was in adequate to generalize the outcomes but the perceptions and the points that pharmacists emphasize, started to repeat even in this small group. In this study, pharmacists completed the think-aloud sessions with minimal real-world interruptions and were not prompted or guided by the researcher. However, the think-aloud technique is prone to reactivity; pharmacists may perform better than usual because of a more structured working process or perform worse due to the double workload. In the think-aloud and

consultation recordings, pharmacists may have modified or improved their behaviours as they were aware they were recorded. If this factor have an impact in the quality of this study results, pharmacists actual patient care process usually has fewer DRPs and patient care process elements than reported. Finally, selection bias was a limitation in this study, snowball sampling is used for the recruitment of pharmacists, which may have led to bias within the medication review process but their similarity in terms of characteristics was also desired for the process standardization and prevention of bias in pharmacotherapy workup results.



Table 3: Themes mapped against TDF domains and COM-B model

Main theme	Sub-theme	TDF	COM-B	Interviews
Missed care opportunities	Drug related problems are commonly encountered (1.1)	- Domain 1: Knowledge - Knowledge of patient history necessary for decision making is lacking leading to failure in Identifying and resolving DRPs	COM-B Components: Capability, Opportunity	E.4, E.5, P.8, E.9, P.10, E.11 E.5, P.8, E.9, P.10, E.11
	Current limited access hinder pharmacist ability to provide effective care (1.2)	- Domain 2: Skills - Pharmacists Skills in providing pharmaceutical care is hindered. Difficulty in accessing patient data prevents pharmacists from providing comprehensive pharmaceutical care.		
	Medication effectiveness and patient adherence cannot be addressed properly (1.3)	- Domain 3: Social/Professional Role and Identity - Pharmacists feel frustrated with the limited access to patient information and the responsibility left to doctors.		
Pharmacy related barriers	Workload and time constraints (2.1)	- Domain 7: Environmental Context and Resources - Bureaucracy, commercial establishment, and lack of institutionalization pose challenges to workload management and employment opportunities.	COM-B Components: Capability, Opportunity	E.5, P.4, E.4
	lack of space and shortage of resources (2.2)	- Domain 8: Social Influences - Managing employees and dealing with drug shortages require effective leadership and coordination.		
		- Domain 9: Emotion - The frustration with the current healthcare system and limited time doctors have to examine patients affects workload and employment opportunities.		

<p>External barriers and societal perceptions of pharmacy</p>	<p>Cultural transformation needed (3.1)</p> <p>Lack of societal recognition of pharmacists' role in patient care. (3.2)</p> <p>Physicians perceptions as barrier in providing quality healthcare services (3.3)</p>	<ul style="list-style-type: none"> - Domain 5: Social Influences - The unfavorable perception of pharmacies and pharmacists in Turkish society affects the trust and acceptance of their services. - Domain 6: Environmental Context and Resources - Building trust and acceptance requires time and consistent interactions with patients. - Domain 10: Social Influences - Collaboration with physicians and involving patients in the process requires effective communication and coordination. - Domain 11: Social/Professional Role and Identity - Pharmacists emphasize the importance of trust in role of providing patient care. - Domain 12: Beliefs about Consequences - Collaborating with physicians and involving patients can lead to improved patient care and treatment outcomes. 	<p>COM-B</p> <p>Components: Capability, Opportunity, Motivation</p>	<p>Interviews Per Q.docx, P.3, Q.4 E.3, E.6</p>
<p>Desire to provide comprehensive pharmaceutical care</p>	<p>Meaningful and motivating to provide care while being aware pf patient progress (4.1)</p> <p>Will to collaborate with physicians to provide comprehensive care (4.2)</p> <p>Providing comprehensive pharmaceutical care fosters pharmacist job satisfaction (4.3)</p>	<p>TDF domains of Goals, Beliefs about Capabilities, and Environmental Context and Resources. Pharmacists express a desire for more meaningful work and acknowledge the challenges and workload associated with advanced pharmaceutical care. They also recognize the need for a hierarchical balance and the potential positive outcome of creating employment opportunities for pharmacy graduates. This theme emphasizes the importance of aligning goals, addressing beliefs about capabilities, and improving the environmental context and resources to support pharmacists in providing advanced pharmaceutical care.</p>	<p>COM-B</p> <p>Components: Motivation, Capability</p>	<p>P.2, E.2, P.3, E.3, All interviews P 2.docx</p>

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7. APPENDICES

7.1. Informed Consent Form

<p style="text-align: center;">INFORMED CONSENT FORM</p> <p>Dear Participant,</p> <p>This study in which you are participating is a scientific research focusing on "Evaluation Of Patients' Medical Information Required to Determine Drug-Related Problems in Community Pharmacies: A Mixed Method Study." The research is being conducted at the Department of Clinical Pharmacy, Yeditepe University, within the framework of the master's thesis of the researcher İrem Çiftçi. The information regarding the research is provided below, and by responding positively to this email, it indicates your consent to participate in the study. For further information about the research, you can contact the researcher İrem ÇİFTÇİ or reach the researcher at mobile phone number 0539 608 4627.</p> <p>Title of the Study:</p> <p>Evaluation Of Patients' Medical Information Required to Determine Drug-Related Problems in Community Pharmacies: A Mixed Method Study..</p> <p>Names of Researchers, Institutions, and Contact Numbers:</p> <p>İrem Çiftçi, Yeditepe University, +90 216 578 00 00 / 3077.</p> <p>Aim and Brief Summary of the Research:</p> <p>This research is a qualitative study covering the evaluation of necessary patient data to improve drug services at community pharmacies and the determination of facilitators and barriers to patient data access by community pharmacists.</p> <p>Why were you selected for this research?</p> <p>This research will be conducted with pharmacists working at community pharmacies who are graduates of the Faculty of Pharmacy.</p> <p>Do I have to participate in the research and continue until the end once I agree to participate?</p> <p>Participation in the research is entirely voluntary. You can choose not to participate or withdraw from the study at any time after agreeing to participate by informing the research coordinator.</p>	<p>What will happen if I agree to participate?</p> <p>If you agree to participate in the research, you will be involved in a case study that will take approximately 30-45 minutes and will be conducted online (via Zoom or Skype). The case study will involve evaluating the necessary patient data for drug review and pharmaceutical care service at community pharmacies. Two simulated patient prescriptions will be provided, and you will be asked to review these prescriptions and identify any drug-related problems. Evaluating pharmacists is not an objective of these case studies, as the purpose is to assess the impact of access to patient data on pharmaceutical care. The conversations will be recorded to ensure accurate and complete data transfer.</p> <p>Will there be any negative aspects or risks for me to participate in the research?</p> <p>There are no negative aspects or risks for you to participate in the research.</p> <p>What are the positive aspects or benefits of participating in the research?</p> <p>By participating in this scientific research, you will contribute to science.</p> <p>Is there any cost to participate in the research?</p> <p>There will be no fee or request for payment from you for participating in the research.</p> <p>How will the confidentiality of my identity and obtained data be ensured?</p> <p>Information related to participants will be stored electronically at the research center, and your identity and personal data will not be taken.</p> <p>Will I be informed of the results of the research?</p> <p>If you request a copy of this form after the research is completed, it will be sent to you.</p> <p>What will happen with the research results?</p> <p>The data obtained from the research will be used for scientific publication purposes. Individual assessments will not be made, and the personal information of participants will only be known to the researcher and will not be published.</p> <p>Thank you for your contribution to our research.</p>
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7.2. Informative Brochure

<p>Pharmaceutical Care Process</p> <p>Pharmaceutical care is the name given to patient-centered pharmacy services. Pharmaceutical care practices ensure the provision of qualified and high-standard pharmaceutical services to patients.</p> <p>The steps of the pharmaceutical care process are as follows:</p> <ol style="list-style-type: none">1. Collecting Patient Data <p>Before identifying, preventing, and resolving medication-related problems, the patient's medical information must be collected, classified, and recorded.</p> <ol style="list-style-type: none">2. Assessing Patient Data <p>The pharmacist evaluates the gathered information to identify and prioritize the patient's problems related to treatment. The goal is to achieve success and provide optimal care within the context of the patient's overall health objectives, analyzing the clinical effects of the patient's treatment.</p> <ol style="list-style-type: none">3. Developing the Treatment Plan <p>The pharmacist collaborates with other healthcare institutions, care professionals, and the patient or caregiver to develop a personalized, patient-centered, evidence-based, and cost-effective care plan.</p> <ol style="list-style-type: none">4. Implementing the Treatment Plan <p>The pharmacist, in collaboration with other healthcare professionals and the patient or caregiver, implements the care plan.</p> <ol style="list-style-type: none">5. Monitoring and Evaluating the Treatment Plan <p>The pharmacist monitors and evaluates the effectiveness of the care plan and, when necessary, collaborates with other healthcare experts and the patient or caregiver to make changes to the plan.</p>	<p>Medication-Related Problems:</p> <ol style="list-style-type: none">1. Unnecessary medication use (the patient does not have a suitable indication for one or more medications they are taking).2. Lack of medication use for a condition with an indication.3. The patient's medication dose being too low (not caused by the patient) (i.e., the correct medication is prescribed, but the dose is too low).4. The patient's medication dose being too high (not caused by the patient) (i.e., the correct medication is prescribed, but the dose is too high).5. The patient not using the medication as prescribed (not taking the medication, not taking it at the prescribed dose or frequency, treatment non-adherence, etc.).6. The patient's medication not being suitable for them.7. The patient experiencing adverse effects while using the medication.8. The patient's medications interacting with other drugs or dietary supplements.
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7.3. Case Scenario

Rx:	
	25.04.2023
Doctor: E. L.	
Patient : N.K.	
Age : 67	
Gender: Female	
Chief Complaint/Diagnose : Intensive headache/Headache - Hypertension	
Rx;	
I- Paracetamol 500 mg tb. 2*1 PO (Panadol Tablet)	
II- Lisinopril/Hydrochlorothiazide 20 mg/12,5 mg tb. 1*1PO	

General Information	
No health insurance	
Height : 160 cm	
Weight : 102 kg	
Fasting glucose : 183 mg/dL	
BP : 144/93mmHg	
The patient urinates frequently at nights.	
The patient gained 4 kg in last 3 months.	
Random glucose : 250 mg/dL	
The patient didn't use her prescribed drug : ASA 81 mg.	
Patient has not gone to Internal Medicine last 9 months.	

Family History	
She is married and has two children.	
Her mother died 23 years ago, 3 months after she was diagnosed with Liver Cancer at the age of 59. Her father died 30 years ago, at the age of 52 due to MI, also he was diagnosed with Diabetes Mellitus. She has 3 brothers. One brother had acute pancreatitis in 2021 and 2022 and was diagnosed with Crown's Disease in 2021.	

Past Medical History	
✓ Hypertension (10 years - II- Lisinopril/Hydrochlorothiazide 20 mg/12.5 mg tb. 1*1 (5 years)	
✓ Dyslipidemia (1 year)	
✓ Diabetes Mellitus (1 Year)	

Vaccination

Sinovac /21.01.2021
Sinovac /27.02.2021
Blontech /06.07.2021
Blontech /09.10.2021

Meds	
Glipizide 5 mg, 1x1 orally (9 months)	
Atorvastatin 20 mg, 1x1 orally (9 months)	
Lisinopril/Hydrochlorothiazide 20 mg/12.5 mg, 1x1 oral (5 years)	
Metformin 1000 mg, 2x1 orally (1 years)	
ASA 81 mg, 1x1 orally (she quit using this drug on her own decision) (9 months)	
The patient states that he started using a multivitamin every morning 3 days ago with the advice of his neighbor in order to relieve her fatigue. (Pharmaton Vitality)	
She does not use any other supplement or OTC drug.	

All	
NKDA	

Habits

Cigarette (35 years, 1 box per day)

Laboratory Results (25.04.2023)	
Blood:	
Hgb: 13 g/dL	
Hct: 41%	
Albumin: 46,30 g/L	
Iron binding capacity: 343,40 mg/dL	
Ferritin: 25,33 mg/L	
Fe: 163 mg/dL	
Phosphorus: 4,0 mg/dL	
25-Hydroxy Vitamin D: 40,3 mg/L	
Potassium 3,6 mEq/L	
Magnesium: 2,11 mg/dL	
Calcium: 9,63 mg/dL	
Folic acid: 12,3 mg/L	
Vitamin B12: 357 ng/L	
Urea: 30,90 mg/dL	
Creatinine: 0,77 mg/dL	
TSH: 1,2 mIU/L	
Free T3: 2,97 ng/dL	
Free T4: 1,09 ng/dL	
CRP: 1,16 mg/L	
ALT: 20,40 U/l	
AST: 12,90 U/l	
Glucose : 269 mg/dL	
HbA1C : %8.0	
Total cholesterol: 245 mg/dL	
LDL : 145 mg/dL	
HDL : 36 mg/dL	
Triglyceride : 220 mg/dL	
Urine Analysis:	
Glucose : ++	
Microalbuminuria : ++	

7.4. Cognitive Interviews

No:	Date:
Time:	
Cognitive Interview Questions	
1. How realistic did you find these prescriptions? I mean, considering the daily pharmacy life, are these patient profiles and cases realistic?	
2. The patient was the same in both cases but the cases were different from each other in terms of patient medical record. Can you reach health records of your patients like second case , in your daily life? (If, your answer is no, please skip to 4. question)	
3. Can you provide optimal pharmaceutical care for your each patient like in the second case?	
4. In your opinion, what are the barriers for the access to patient data in community pharmacies? Please explain briefly. (Workload, time, intimacy etc.)	
5. If you had a chance to reach all patients' data like the second case would you like to provide advanced pharmaceutical care to your patients?	

7.5. Demographic Questions

Demographic Questions					
1. Age					
2. Gender					
3. City/Region					
4. Graduation date as a Pharmacist					
5. Years of experience as a community pharmacist					
6. Do you hold a Master degree or doctorate in Clinical Pharmacy?					
7. Have you joined any training or certificate program related with pharmaceutical care services?		<ul style="list-style-type: none"> • Rehber Eczanem • TEB Eczacı ile Sağlıklı Yaş Alma Projesi 			
8. How often do you attend seminars related to Pharmaceutical Care Services or patient centered pharmacy services? (Rate it from 0 to 2) 0: Never 1: Rarely 2: Sometimes 3: Often		0	1	2	3
		İEO Seminars			
		Trainings supported by drug companies			
		Congress related to Pharmaceutical Care Services			

7.6. Ethical Approval



YEDİTEPE ÜNİVERSİTESİ
GİRİŞİMSEL OLMAYAN KLİNİK ARAŞTIRMALAR
ETİK KURULU

Versiyon No 2.0
13.02.2022
Sayfa 1 / 2

KARAR FORMU

12.04.2022

ETİK KURUL BİLGİLERİ	Etik Kurulun Adı	Yeditepe Üniversitesi Girişimsel Olmayan Klinik Araştırmalar Etik Kurulu
	Açık Adres	Yeditepe Üniversitesi Kayışdağı Kampüsü, Tıp-Mühendislik Binası, Sağlık Bilimleri Enstitüsü, İnönü Mah. Kayışdağı Cad. 326A, 26 Ağustos Yerleşimi 34755 Ataşehir, İstanbul
	İnternet Sayfası	http://goetik.yeditepe.edu.tr/
	Telefon	0216 578 00 00
	E-posta	goetik@yeditepe.edu.tr

DEĞERLENDİRİLEN BELGELER	Islak imzalı başvuru dosyası, CD'si ve elektronik başvuru	<input checked="" type="checkbox"/>
	Araştırma başlığı ve araştırmacıların isimleri	<input checked="" type="checkbox"/>
	Başvuru dilekçesi	<input checked="" type="checkbox"/>
	Başvuru Formu- Araştırmanın;	<input checked="" type="checkbox"/>
	• Niteliği	<input checked="" type="checkbox"/>
	• Önemi ve özgün değeri	<input checked="" type="checkbox"/>
	• Amaç ve hedefleri	<input checked="" type="checkbox"/>
	• Yöntemi	<input checked="" type="checkbox"/>
	• Yönetimi	<input checked="" type="checkbox"/>
	• Yaygın etkisi	<input checked="" type="checkbox"/>
	• Araştırma bütçesi (Mevcutsa)	<input checked="" type="checkbox"/>
	• Süresi ve uygunluğu (Zaman cetveli)	<input checked="" type="checkbox"/>
	• Kaynakları	<input checked="" type="checkbox"/>
	Bilgilendirilmiş Gönüllü Olur Formu (yapılan araştırmaya özel olarak hazırlanmış)	<input checked="" type="checkbox"/>
	Taahhütname-1 Araştırmanın yapılacağı kurumdan izin alma sorumluluğunun araştırmacılara ait olduğuna dair taahhüt	<input checked="" type="checkbox"/>
	Taahhütname-2 Dünya Tıp Birliği Helsinki Bildirgesinin son versiyonunun ve Sağlık Bakanlığı'nın ilgili tüm kılavuzlarının okunmasına dair taahhüt	<input checked="" type="checkbox"/>
	Taahhütname-3 Daha önce yapılmış etik kurul başvuruları mevcut olup olmadığına dair taahhüt	<input checked="" type="checkbox"/>
	Taahhütname-4 Araştırma sırasında araştırma bütçesinde yer almayan ve gönüllünün kendisine veya Sosyal Güvenlik Kurumuna ek yük getirecek hiçbir işlem uygulanmayacağına dair taahhüt	<input checked="" type="checkbox"/>
Taahhütname-5 COVID-19 hastalarında tedavi yaklaşımları ve bilimsel araştırmalar genelgesi okunmasına dair taahhüt	<input checked="" type="checkbox"/>	
Taahhütname-6 Milli Eğitim Bakanlığı Araştırma Uygulama İzinleri konulu yazının okunmasına dair taahhüt	<input checked="" type="checkbox"/>	
Araştırmacıların her birisine ait özgeçmiş formu	<input checked="" type="checkbox"/>	
Ek belgeler (Varsa kullanılan ölçek izinleri vb.)	<input checked="" type="checkbox"/>	

KARAR BİLGİLERİ	Başvuru Numarası	202203Y0230
	Toplantı Tarihi	08.04.2022
	Toplantı Yeri	Çevirim içi (Google Meet)
	Karar No	19

Araştırmanın Başlığı	Serbest Eczanede İlaçla İlgili Sorunların Çözümü İçin Gerekli Hasta Verilerinin Değerlendirilmesi ve Serbest Eczacıların Hastalara Ait Veri Erişimleri Önündeki Kolaylaştırıcıların ve Engellerin Tespit Edilmesi
Araştırmacılar	İrem Çiftçi,Doç.Dr. Abdikarim Mohamed Abdi,Doç.Dr. Betül Okuyan,Prof.Dr. Mesut Sancar



Başkan

Araştırmanın Başlığı	Serbest Eczanede İlaçla İlgili Sorunların Çözümü İçin Gerekli Hasta Verilerinin Değerlendirilmesi ve Serbest Eczacıların Hastalara Ait Veri Erişimleri Önündeki Kolaylaştırıcıların ve Engellerin Tespit Edilmesi
Araştırmacılar	İrem Çiftçi, Doç. Dr. Abdikarim Mohamed Abdi, Doç. Dr. Betül Okuyan, Prof. Dr. Mesut Sancar

8. CURRICULUM VITAE

Personal Informations

Name	İrem	Surname	Çiftçi
E-mail		Phone number	

Education

Degree	Department	The name of the Institution Graduated From	Graduation year
Master	Department of Clinical Pharmacy	Yeditepe University	-
University	Faculty of Pharmacy	Yeditepe University	2019
High school	Anatolian High School	İçel Anatolian High School	2013

Language Skills

Language	Grade
Englih	YÖKDİL (87,50)

Work Experience (Sort from present to past)

Position	Institute	Duration (Year - Year)
Second Pharmacist	Pharmacy of Sultanbeyli	16 months (2019-2020)
Research and Development Assistant	World Medicine Company	6 months (January, 2021- June, 2021)
Lecturer	Galata University	12 months (2021-2022)
Research Assistant	Yeditepe University	2022 - Still working

Computer Skills

Program	Level
Microsoft Office Programs	Good
Mendeley	Good

***Excellent , good, average or basic**

Scientific works

The articles published in the journals indexed by SCI, SSCI, AHCI

Importance of chromatographic and spectrophotometric methods in determining authenticity, classification and bioactivity of honey

Others (Projects / Certificates / Rewards)

Experimental Animal Usage Certification
Best Oral Presentation in MEDPHACON 2019