

2016

Impact of electronic prescription on the job descriptions of community pharmacy staff in Finland - a survey of pharmacy owners

Timonen Johanna

John Wiley & Sons

<info:eu-repo/semantics/article>

© Royal Pharmaceutical Society

All rights reserved

<http://dx.doi.org/10.1111/jphs.12145>

<https://erepo.uef.fi/handle/123456789/2231>

Downloaded from University of Eastern Finland's eRepository

Impact of electronic prescription on the job descriptions of community pharmacy staff in Finland – a survey of pharmacy owners

Johanna Timonen^{1*}, Hanna Kauppinen¹, Riitta Ahonen¹

Address: ¹School of Pharmacy / Social Pharmacy, Faculty of Health Sciences, Kuopio Campus, University of Eastern Finland, P.O.B. 1627, FI-70211 Kuopio, Finland

Email: Johanna Timonen – johanna.timonen@uef.fi; Hanna Kauppinen – hanna.kauppinen@uef.fi; Riitta Ahonen – riitta.ahonen@uef.fi

Phone: +358 40 355 3881/Johanna Timonen, +358 40 355 3669/Hanna Kauppinen, +358 50 363 7902/Riitta Ahonen

*Corresponding author:

Johanna Timonen

School of Pharmacy / Social Pharmacy, Faculty of Health Sciences

Kuopio Campus, University of Eastern Finland

P.O.Box 1627, FI-70211 Kuopio, Finland

Phone: +358 40 355 3881

Email: johanna.timonen@uef.fi

Abstract

Objectives: A fully operational and nationwide electronic prescription (ePrescription) system has been implemented by law in Finland. The aim was to explore the impact of ePrescription on the job descriptions of pharmaceutical and technical staff in Finnish community pharmacies from the pharmacy owners' perspective. The effects of ePrescription on measures related to equipment and furnishings in pharmacies were also explored.

Methods: A postal survey was conducted among a random sample of Finnish pharmacy owners (n = 191) in 2014. Descriptive statistical analyses were performed.

Key findings: The final study material consisted of 155 questionnaires (81% response rate). In many pharmacies the use of ePrescription had affected the job descriptions of technical (73.9%) and pharmaceutical staff (47.4%), and the pharmacy owner's own use of time (44.4%). Prescription processing had decreased among technical staff (92.9%) and increased among pharmaceutical staff (42.3%). Prescription processing and dispensing had become quicker. The implementation of ePrescription had not affected the size of the staff in most of the pharmacies (72.1%). ePrescription had resulted in measures related to furnishings and/or equipment in 60.6% of the pharmacies. Most often, computer equipment had been updated (66.0%) or more computers had been purchased (59.6%).

Conclusions: The implementation of ePrescription has had an impact on the job descriptions of pharmacy staff in Finnish community pharmacies. Particularly affected has been the job description of technical staff, who now process fewer prescriptions. The transition to the new technology has also necessitated investment in computer equipment and furnishings for dispensing work at pharmacies.

Keywords

electronic prescription; community pharmacy; pharmacy staff; job description; impact

Introduction

Prescribing has been undergoing change during the past few decades. Traditional handwritten prescriptions have gradually decreased as computer-based prescriptions have been introduced.^[1,2] More advanced technology allows prescriptions not merely to be issued by computer, but also to be sent electronically from the physician to the community pharmacy.

Electronic prescription (ePrescription) has been considered as a pharmaceutical policy reform in many countries.^[3-5] ePrescription has been viewed as an important strategy for improving the efficacy and quality of the prescribing and dispensing processes and for improving patient safety.^[6-14] In the European Union, an ePrescription is defined as a prescription for medicines that is issued on a computer by a healthcare professional and then electronically transmitted to the pharmacy for retrieval of the medicine by the patient. Dispensation of the medicine is also recorded electronically.^[3] A full ePrescription process is currently in nationwide use in only a few European countries, among them Sweden, Denmark, Estonia, and Finland.^[4,14-16] ePrescription is widely used in the United States,^[5] and pilots employing ePrescription have been carried out in many European countries.^[4]

The implementation of ePrescription affects many parties, including prescribers, pharmacies, and patients. Several studies have evaluated the impacts of ePrescription on the pharmacy staff's work, and most of these studies were conducted from the pharmacists' point of view.^[12,13,17-22] These studies have shown that ePrescription has had an impact on the work of the pharmacy staff, for example by saving time, facilitating workflows, and improving efficiency. ePrescription technology can also promote the professionalization of community pharmacists.^[17] However, in some cases the impact has not been positive, and ePrescription has been experienced as hindering pharmacy workflows.^[20]

ePrescription systems and the operating environment in which they have been adopted vary between countries.^[3-5] There are also differences in the stages of implementation, and thus in the degree of utilization of the systems. It is therefore important to obtain more information from different systems and countries.

The aim of this study was to explore the impact of the implementation of ePrescription on the job descriptions of pharmaceutical and technical staff in Finnish community pharmacies from the pharmacy owners' perspective. Another aim was to examine the impact of ePrescription on measures related to equipment and furnishings in pharmacies.

Methods

Study context

In Finland (excluding the Åland Islands, which constitute an autonomous and monolingual Swedish region of Finland), the ePrescription system has been introduced stepwise by law in all community pharmacies since 2012, in public healthcare since 2013, and in private healthcare since 2015.^[16] From 2017 on, conventional prescriptions (paper, telephone, fax) will be allowed only in exceptional cases, such as technical failures. In 2014, almost 39 million ePrescriptions were dispensed from community pharmacies, which is about 75% of all prescriptions dispensed in Finland.^[23-24] In 2015, Finnish pharmacies dispensed over 49 million ePrescriptions, which is over 90% of all prescriptions dispensed.

In Finland, an ePrescription is defined as a prescription for medicines that is issued and signed electronically by a physician and entered into a centralized nationwide database called the Prescription Centre.^[16] Electronically stored prescriptions can be dispensed from any community pharmacy in Finland.^[15] At the pharmacy, only staff members with a pharmaceutical education are permitted to use the Prescription Centre.^[25] These are pharmacy owners (M.Sc. in pharmacy), pharmacists (M.Sc. in pharmacy), and dispensers (B.Sc. in pharmacy). A pharmacist has a five-year and a dispenser a three-year university education. Both pharmacists and dispensers are licensed pharmacy practitioners who dispense medicines independently and ensure the safe and proper use of medicines among the public. Pharmacists also act as managers. In this paper, the term pharmaceutical staff refers to licensed pharmacy practitioners in Finland, i.e. dispensers and pharmacists.

Other pharmacy staff, such as pharmacy technicians, are not permitted to use the Prescription Centre or dispense medicines.^[16,25] However, technical staff can take part in the dispensing of conventional prescriptions. They can enter prescription information into the pharmacy data system and collect prescribed medicines for dispensing. The latter is also possible in the ePrescription dispensing process. Technical staff may also work as cashiers and as handlers of medicine orders at the pharmacy.

In Finland, ePrescription has represented a major pharmaceutical policy reform for those involved in the prescribing and dispensing of medicines and their use (prescribers, pharmacies, and patients). The objective of ePrescription was to make the prescribing and dispensing of medicines easier and more efficient and to improve patient safety.^[16,26] However, there was also discussion about the other impacts that the implementation of ePrescription would have.^[26]

It was argued that ePrescription would lead to changes in operating practices at pharmacies, for example because technical staff are not allowed to process ePrescriptions or help in the dispensing process. It was argued that there would be a need for investments and changes related to equipment and furnishings in pharmacies.

Data collection

A postal survey was conducted in the autumn of 2014. A questionnaire was sent to a random sample (to one-third) of pharmacy owners (n = 192) taken from the register of the Association of Finnish Pharmacies. The Åland Islands were excluded from the study because ePrescription was not commonly used there. One reminder was sent. The questionnaire was available in Finnish and Swedish, both of which are official languages in Finland.

The four-page questionnaire contained 20 structured or open-ended questions and three Likert-scale questions. The questions were developed on the basis of the objectives of ePrescription as set by law,^[16] the impacts anticipated from ePrescription before it was introduced,^[26] and some previous studies.^[12,27-28] The questionnaire was pilot-tested with some pharmacist colleagues who had experience in processing ePrescriptions and in two local pharmacies in spring 2014. Minor adjustments were made based on the pilot. The questions reported in this paper related to the impact of the implementation of ePrescription on the pharmacy owner's own use of time at the pharmacy, the job description of pharmaceutical staff, the job description of technical staff, the size of the pharmacy's staff, and measures related to furnishings and/or equipment in the pharmacy.

The impacts of ePrescription on the pharmacy owner's own use of time at the pharmacy and on the pharmaceutical and technical staff's job descriptions were elicited using similar structured questions. For example, the impact of ePrescription on the job description of pharmaceutical staff was investigated with the question, "Has the implementation of ePrescription affected the job description of your pharmacy's pharmaceutical staff?" The question had two response options: 1. No, 2. Yes. In the second response option, the respondents were also asked to report on the effects of ePrescription. The impact of ePrescription on the size of the pharmacy's staff and measures related to furnishings and/or equipment in the pharmacy was also measured using similar structured questions. For example, the impact of ePrescription on the size of the pharmacy's staff was elicited with the question, "Has the implementation of ePrescription affected the size of your pharmacy's staff?" The question had two response options: 1. No, 2. Yes. If the respondents answered "Yes", they

were asked to specify using a list of several fixed answers and there was also a space for a freely worded answer. Structured questions were asked to obtain background information (gender, age, location of the pharmacy, number of prescriptions dispensed per year at the pharmacy, what proportion of the prescriptions dispensed daily at the pharmacy are ePrescriptions, how often the respondent personally processes ePrescriptions, and the pharmacy data system).

Data analysis

The data were analyzed using SPSS Statistics for Windows, Version 21.0 (SPSS Inc., Chicago, IL, USA). A descriptive approach was used in the analyses, using frequencies, percentages, and cross-tabulations. Pearson's χ^2 test and Fisher's exact test were used when categorical variables were compared. A significance level of <0.05 was set. Questions with an open-ended choice were categorized according to the most commonly mentioned points, stored in SPSS, and then analyzed using a descriptive approach.

Ethical statement

The study setting and research process complied with the local and national ethical instructions for research (Finnish Advisory Board on Research Integrity: <http://www.tenk.fi/en/ethical-review-human-sciences>). According to the instructions, this study did not require ethical approval.

Results

The study flow is shown in Figure 1. After one reminder, 156 questionnaires were returned. However, one of these was not included in the study because the respondent reported that he/she is Ålandian. Consequently, the final study sample was 191 pharmacy owners, of whom 155 (81%) returned the completed questionnaire.

Figure 1.

The characteristics and representativeness of the study population are presented in Table 1. Some differences were found in the gender and age distributions: men ($p = 0.002$) and age ≥ 60 ($p = 0.043$) were under-represented and females were over-represented ($p = 0.002$) in the study population compared with the target population. In most (64.9%) of the pharmacies over 75% of the prescriptions dispensed daily were ePrescriptions, and a majority (94.2%) of the responding pharmacy owners personally processed ePrescriptions daily or weekly.

Table 1.

Many (44.4%) of the pharmacy owners reported that ePrescription has affected their own use of time at the pharmacy (Figure 2). Women reported this more often than men (49.2% versus 18.2%; $p = 0.007$). There were no statistically significant differences in reported impacts between age, the number of prescriptions dispensed per year at the pharmacy, the percentage of ePrescriptions dispensed daily and how often the pharmacy owner personally processed ePrescriptions. Most often (40.3%) the respondents thought that ePrescription has streamlined and speeded up their prescription processing and dispensing (Table 2).

Figure 2.

Table 2.

Of the pharmacy owners, almost half (47.4%) reported that the implementation of ePrescription has affected the job description of their pharmaceutical staff (Figure 2). There were no statistically significant differences in reported impacts between the number of prescriptions dispensed per year at the pharmacy and the percentage of ePrescriptions dispensed daily. Most commonly (42.3%) pharmacy owners reported that ePrescription has increased prescription processing among their pharmaceutical staff (Table 2).

Most (73.9%) of the pharmacy owners reported that the implementation of ePrescription has affected the job description of their technical staff (Figure 2). There were no statistically significant differences in reported impacts between the number of prescriptions dispensed per year at the pharmacy and the percentage of ePrescriptions dispensed daily. The vast majority (92.9%) of pharmacy owners reported that prescription processing by their technical staff has decreased since the introduction of ePrescription (Table 2).

Most (72.1%) of the pharmacy owners reported that the implementation of ePrescription has not affected the size of their pharmacy's staff (Figure 2). However, at pharmacies where the proportion of ePrescriptions dispensed daily was over 75%, the use of ePrescription has affected the size of the staff more often than at pharmacies where the proportion of ePrescriptions dispensed daily was 75% or under (34.3% versus 16.7%; $p = 0.020$). There were no statistically significant differences in reported impacts between the number of prescriptions dispensed per year at the pharmacy. Of the respondents who reported that ePrescription has affected the size of their pharmacy's staff, many (35.7%) said that the technical staff had been downsized (Table 2).

Of the pharmacy owners (n = 155), 60.6% reported that the implementation of ePrescription has resulted in measures related to furnishings and/or equipment in their pharmacy, while the remaining 39.4% reported it has not resulted in such measures. There were no statistically significant differences in reported impacts between the number of prescriptions dispensed per year at the pharmacy and the percentage of ePrescriptions dispensed daily. In the pharmacies where ePrescription has resulted in measures related to furnishings and/or equipment, in most cases computer equipment had been updated (66.0%) or more computer equipment had been purchased (59.6%) (Table 3).

Table 3.

Discussion

In this study the impact of ePrescription on the job descriptions of pharmaceutical and technical staff and measures related to equipment and furnishings in Finnish community pharmacies was explored from the pharmacy owners' perspective. The implementation of ePrescription has had an impact on the pharmacy staff's job descriptions. In many pharmacies it has particularly affected the job description of technical staff, but also that of pharmaceutical staff, as well as the pharmacy owners' own use of time. In addition, the transition to ePrescription has generally resulted in measures related to furnishings and/or equipment in the pharmacies. The study adds some new information to previous studies in this field^[12,13,17-22]. First, the implementation of ePrescription could lead to changes in operating practices and thus job descriptions at pharmacies, if as a consequence, one staff group is no longer allowed to take part in process prescriptions. Second, to the best of our knowledge, there are no published studies dealing with the impact of ePrescription on measures related to equipment and furnishings in pharmacies.

ePrescription has led to a significant change in the technical staff's job description at Finnish pharmacies. In the Finnish system, the right of technical staff to process ePrescriptions is restricted by law^[16,25] and prescription processing has therefore decreased among them since the implementation of ePrescription. In the case of conventional prescriptions, technicians have normally processed prescriptions ready for dispensing, for example prescriptions for nursing homes that are clients of the pharmacy and non-urgent prescriptions. In the future, this work will have to be done entirely by the pharmaceutical staff. In addition, the job description of the technical staff will center more on other duties, such as work at the cashier's counter, handling medicine orders, or customer service in non-medical products (e.g. cosmetics). A few earlier studies have explored the impact of ePrescription on the work of technical staff at

pharmacies.^[19-21] However, in those studies the systems differ from those in the present study as technical staff are involved in processing ePrescriptions.

The fact that technical staff members are not permitted to process ePrescriptions has also affected the job description of pharmaceutical staff by increasing their prescription processing in many community pharmacies. On the other hand, prescription processing and dispensing have become more streamlined and quicker, which is in line with many previous studies.^[12-13,19,21-22] However, the present study did not provide information on how these changes have affected the workload or capacity of pharmaceutical staff to exercise their professional pharmaceutical services (e.g. medication counseling). In other words, has the workload of pharmaceutical staff increased or not, and do they have more or less time for other services than prescription processing after these changes? It has been suggested that ePrescription can have a positive effect on the professionalization of community pharmacists by enhancing the quality of information available and by facilitating the prescription processing that may release time from the technical part of prescription processing for professional pharmaceutical services.^[17] However, we do not know how the pharmacists use this additional time, for example for medicine counseling and communicating with patients about their medication or for processing more prescriptions during the day. These questions need more research in the future.

According to this study, although ePrescription has affected the job description of pharmacy staff, it has not generally had an impact on the size of the staff in community pharmacies in Finland. This finding is in line with data concerning the number of staff members in Finnish community pharmacies between 2012 and 2014.^[29] However, in one-third of the study pharmacies the technical staff has been downsized and/or additional pharmacists have been hired, which is in accordance with the other finding of this study concerning the impact of ePrescription on the job descriptions of technical and pharmaceutical staff. The change in staff structure also leads to changes in labor costs at the pharmacy.

The transition to ePrescription has created a need to update and/or purchase more computer equipment and furnishings for dispensing work in many pharmacies. However, the study did not provide information on the costs of these measures. In addition, in the Finnish system pharmacies are obliged to pay a proportion of the maintenance cost of the ePrescription system.^[16] The cost of the ePrescription system to pharmacies would be an interesting topic to study in the future.

This study had some strengths and some limitations. One strength is that the findings are based on the ePrescription system, which is fully operational and in nationwide use. In addition, the study sample was randomly selected from an affiliate register that covers most of Finland's pharmacy owners. Furthermore, the response rate in this study was 81%, which is higher than in some survey studies sent to pharmacists^[12,18,27,30-31] in which the response rate has varied between 48% and 71%. Besides, the respondents represented the target population quite well according to age, pharmacy location, and the number of prescriptions dispensed per year at the pharmacy. However, some differences were seen in the age (age group ≥ 60) and especially the gender distributions of the pharmacy owners, which is one limitation. Differences in the gender distribution could result from the fact that women tend to respond to surveys more than men.^[32] It should also be noted that the results of this study are based on self-reports from pharmacy owners; it would therefore be important to examine the views of other employees such as technical and pharmaceutical staff. Furthermore, this study reported on the experiences in Finland, whereas ePrescription practices, the operating environments in which ePrescription has been implemented (e.g. pharmacy system, legislation) and the stage of implementation vary between countries.^[3-5] This means caution is needed when comparing the experiences from other countries. However, policymakers in different countries, and especially in countries planning to implement the ePrescription system in the near future can benefit from the findings of this study. For example, when considering who are allowed to process ePrescriptions at pharmacies, and whether the system would lead to changes in operating practices and thus the job descriptions of pharmacy staff. Also, the kind of investments in equipment and furnishings that the transition to ePrescription might necessitate in pharmacies.

Conclusions

The implementation of ePrescription in Finland has had an impact on the job descriptions of community pharmacy staff. Particularly affected has been the job description of technical staff, who now process fewer prescriptions. Conversely, prescription processing has increased among pharmaceutical staff since the introduction of ePrescription. However, prescription processing and dispensing had become more streamlined and quicker. Furthermore, the transition to ePrescription had generally resulted in the need to update and/or purchase more computer equipment and furnishings for dispensing work at the pharmacies.

Conflict of interest

The Authors have no conflicts of interest to disclose.

Funding

The work was supported by The Social Insurance Institution of Finland (Kela).

Acknowledgements

The authors would like to thank the Association of Finnish Pharmacies for their help with the study sample.

Authors' contributions

All authors participated in designing the study, collecting the data and discussing the findings. JT conducted the data analysis and drafted the first version of the manuscript. All authors contributed to the critical revision of the manuscript, and read and approved the final manuscript.

References

1. Bell DS et al. A conceptual framework for evaluating outpatient electronic prescribing systems based on their functional capabilities. *J Am Med Assoc* 2004; 11: 60–70.
2. Åstrand B. ePrescribing - Studies in Pharmaco-informatics. Kalmar: University of Kalmar, 2007 (dissertation).
3. Stroetmann KA et al. European countries on their journey towards national eHealth infrastructure. Final European progress report. eHealth Strategies Report, European Commission, 2011.
4. Kierkegaard P. E-prescription across Europe. *Health Technol* 2013; 3: 205–209.
5. SureScripts. National progress report on e-prescribing and safe-Rx rankings, year 2013. http://surescripts.com/docs/default-source/national-progress-reports/surescripts_2013_national_progress_report.pdf?sfvrsn=2 (accessed 18 February 2016).
6. Pizzi LT et al. Factors related to physicians' adoption of electronic prescribing: results from a national survey. *Am J Med Qual* 2005; 20(1): 22–32.
7. Donyai P et al. The effects of electronic prescribing on the quality of prescribing. *Br J Clin Pharmacol* 2007; 65(2): 230–237.

8. Ammenwerth E et al. The effect of electronic prescribing on medication errors and adverse drug events: a systematic review. *J Am Med Inform Assoc* 2008; 15(5): 585–600.
9. Hellström L et al. Physicians' attitudes towards ePrescribing – evaluation of a Swedish full-scale implementation. *BMC Med Inform Decis Mak* 2009; 9:37.
10. Streinschaden T et al. Physicians' attitudes towards ePrescribing: a comparative web survey in Austria and Sweden. *Inform Prim Care* 2009; 17: 241–248.
11. Kaushal R et al. Electronic prescribing improves medication safety in community-based office practices. *J Gen Intern Med* 2010; 25(6): 530–536.
12. Hammar T et al. Swedish pharmacists value ePrescribing: a survey of nationwide implementation. *J Pharm Health Serv Res* 2010; 1: 23–32.
13. Rahimi B, Timpka T. Pharmacists' views on integrated electronic prescribing systems: association between usefulness, pharmacological safety, and barriers to technology use. *Eur J Clin Pharmacol* 2011; 67: 179–84.
14. Parv L et al. An evaluation of e-prescribing at a national level. *Inform Health Soc Care* 2014; 12; 1–18.
15. National Archive of Health Information Services (Kanta): Electronic prescription at the pharmacy. <http://www.kanta.fi/en/web/ammattilaisille/ereseptin-esittely-ap> (accessed 18 February 2016).
16. The Act on Electronic Prescriptions 61/2007.
17. Motulsky A et al. The impact of electronic prescribing on the professionalization of community pharmacists: A qualitative study of pharmacists' perception. *J Pharm Pharmaceut Sci* 2008; 11(1): 131–146.
18. Rupp MT, Warholak TL. Evaluation of e-prescribing in chain community pharmacy: best-practice recommendations. *JAPhA* 2008; 48: 364–70.
19. Odukoya O, Chui MA. Retail pharmacy staff perceptions of design strengths and weaknesses of electronic prescribing. *J Am Med Inform Assoc* 2012; 19: 1059–65.
20. Odukoya O, Chui MA. Relationship between e-prescriptions and community pharmacy workflow. *J Am Pharm Assoc* 2012; 52:e168–74.

21. Garfield S et al. English community pharmacists' experiences of using electronic transmission of prescriptions: a qualitative study. *BMC Health Serv Res* 2013; 13:435.
22. Harvey J et al. A qualitative study of community pharmacy perceptions of the electronic prescription service in England. *Int J Pharm Pract* 2014; 22: 440–4.
23. National Archive of Health Information Services (Kanta): Statistics. <http://www.kanta.fi/en/web/ammattilaisille/tilastot> (accessed 18 February 2016).
24. Finnish Medicines Agency Fimea and Social Insurance Institution. *Finnish Statistics on Medicines 2014*. Helsinki: Edita Prima Oy, 2015.
25. Finnish Medicines Agency. The Administrative regulation of medicine dispensing (5/2011).
26. Finnish Government. The Government Bill (250/2006) to the Parliament. Government proposal. 2006.
27. Hartikainen-Herranen K, Ahonen R. The impact of generic substitution on the finance and activities of pharmacies. In: Ahonen R, Martikainen J, eds. *The first year of generic substitution*. Social Security and Health Reports 68. Helsinki: Research Department of the Social Insurance Institution, 2005: 69–78 [in Finnish, abstract in English].
28. Hännikäinen K. Apteekkien käsitykset järjestelmän käytettävyydestä ja toimivuudesta. In: Hyppönen H, editor: *Evaluation of the national electronic prescribing pilot II (2005–2006)*. STAKES reports 11/2006. Helsinki: The National Research and Development Centre for Welfare and Health, 2006: 37–47 [in Finnish, abstract in English].
29. The Association of Finnish Pharmacies. *Annual review 2014*. Helsinki: The Association of Finnish Pharmacies; 2014. http://www.apteekkariliitto.fi/media/3-apteekkariliitto.fi/liitto/vuosikatsaukset/vuosikatsaus_2014_en.pdf (accessed 18 February 2016).
30. Rubak SLM et al. [Pharmacists' evaluation of the substitution system for prescription]. *Ugeskr Læger* 2000; 162(45): 6074–6077 [in Danish, abstract in English].
31. Tiuhonen M et al. [Pharmacists' perceptions of treating insomnia and the utilization of hypnotics in Finland]. *Dosis* 2013; 29: 75–83 [in Finnish, abstract in English].

32. Tolonen H. Towards the High Quality of Population Health Surveys. Helsinki: National Public Health Institute Helsinki and Faculty of Medicine, University of Kuopio, 2006 (dissertation).

Table 1. Characteristics and representativeness¹ of the study population.

	Responding pharmacy owners % (n)	Pharmacy owners in Finland ² % (n)
<i>Gender</i>	n = 152 ³	n = 581
Female	84.2 (128)	72.0 (418)
Male	15.8 (24)	28.0 (163)
<i>Age, years</i>	n = 154 ³	n = 569
≤ 39	1.9 (3)	1.1 (6)
40–49	20.8 (32)	17.9 (102)
50–59	52.6 (81)	47.8 (272)
≥ 60	24.7 (38)	33.2 (189)
<i>Pharmacy location</i>	n = 155	n = 615
Southern Finland	32.3 (50)	35.1 (216)
Western Finland	30.3 (47)	24.4 (150)
Eastern Finland	13.5 (21)	13.2 (81)
Southwestern Finland	10.3 (16)	14.1 (87)
Northern Finland	9.0 (14)	9.6 (59)
Lapland	4.5 (7)	3.6 (22)
<i>Number of prescriptions dispensed per year at the pharmacy</i>	n = 154 ³	n = 594
≤ 30 000	16.2 (25)	16.7 (99)
30 001–60 000	30.5 (47)	32.8 (195)
60 001–100 000	31.8 (49)	30.8 (183)
≥ 100 000	21.4 (33)	19.7 (117)
<i>Pharmacy data system</i>	n = 155	
Salix	56.8 (88)	
Maxx	41.9 (65)	
PD3	1.3 (2)	
<i>Proportion (%) of prescriptions dispensed daily at the pharmacy which are ePrescriptions</i>	n = 154 ³	
≤ 75	35.1 (54)	
> 75	64.9 (100)	
<i>Personally processing ePrescriptions</i>	n = 154 ³	
Daily	82.5 (127)	
Weekly	11.7 (18)	
Less than weekly	3.2 (5)	
Never	2.6 (4)	

¹ Representativeness was assessed by gender, age, the location of the pharmacy, and the number of prescriptions dispensed per year at the pharmacy.

² Information based on the affiliate register of the Association of Finnish Pharmacies in 2014 (gender, age, number of prescriptions dispensed per year) and in 2012 (location of the pharmacy).

³ Some of the respondents did not report their gender, age, the number of prescriptions dispensed per year at the pharmacy, how often they personally processed ePrescriptions, and the proportion (%) of prescriptions dispensed daily at the pharmacy which are ePrescriptions.

Table 2. Reported impacts of ePrescription on the pharmacy owners' own use of time at the pharmacy and the job descriptions of pharmaceutical and technical staff and the size of the staff at the pharmacy.

	% (n) ¹
<i>How has the implementation of ePrescription affected the pharmacy owner's own use of time at the pharmacy? (n = 67)</i>	
Prescription processing and dispensing have become more streamlined and quicker	40.3 (27)
Prescription processing has increased	21.0 (14)
Implementation of the ePrescription system has been laborious and time-consuming	19.0 (13)
There is more time for office work now	10.4 (7)
Prescription dispensing has been slower	7.5 (5)
Some other effect	17.9 (12)
<i>How has the implementation of ePrescription affected the job description of pharmaceutical staff at the pharmacy? (n = 71)</i>	
Prescription processing has increased	42.3 (30)
Prescription processing and dispensing have become more streamlined and quicker	19.7 (14)
Pharmacists have more time for patient counseling and customer service	19.7 (14)
Pharmacists need to give customers ePrescription-related information	5.6 (4)
Renewal of prescriptions has changed	5.5 (4)
Some other effect	14.1 (10)
<i>How has the implementation of ePrescription affected the job description of technical staff at the pharmacy? (n = 112)</i>	
Prescription processing has decreased	92.9 (104)
Other duties have increased (e.g. cashier's work, customer service in non-medical products)	5.4 (6)
Some other effect	5.4 (6)
<i>How has the implementation of ePrescription affected the size of the staff at the pharmacy? (n = 42)</i>	
The technical staff has been downsized	35.7 (15)
Additional pharmacists have been hired	33.3 (14)
Departing staff members (e.g. retired) have not been replaced or some staff have gone part-time	14.6 (6)
The technical staff will be downsized in the future	9.5 (4)
The pharmaceutical staff has been downsized	4.8 (2)
Additional technical staff have been hired	2.4 (1)
Some other effect	7.1 (3)

¹ Respondents could report several effects.

Table 3. Reported measures related to furnishings and/or equipment resulting from the implementation of ePrescription at the pharmacy (n = 94).

Measure	% (n) ¹
Computer equipment has been updated	66.0 (62)
More computer equipment has been purchased	59.6 (56)
Furnishings have been purchased (e.g., desks, direct dispensing points ²)	38.3 (36)
The pharmacy's prescription dispensing model (conventional, direct dispensing) ² has been changed	30.9 (29)
The pharmacy system (e.g., Maxx, Salix) has been replaced	18.1 (17)
Something else	8.5 (8)

¹ Respondents could choose several measures.

² Finnish community pharmacies have had two kinds of dispensing models. In conventional dispensing, the customer leaves a prescription at the counter and waits in a waiting area while the prescription is processed in a back room. A pharmacist then dispenses the medicine to the customer at the counter and gives medicine counseling. In direct dispensing, pharmacists and customers are face to face throughout the dispensing process (the pharmacist processes the prescription, dispenses the medicine to the customer, and gives medicine counseling). Dispensing of ePrescriptions favors the direct dispensing model.

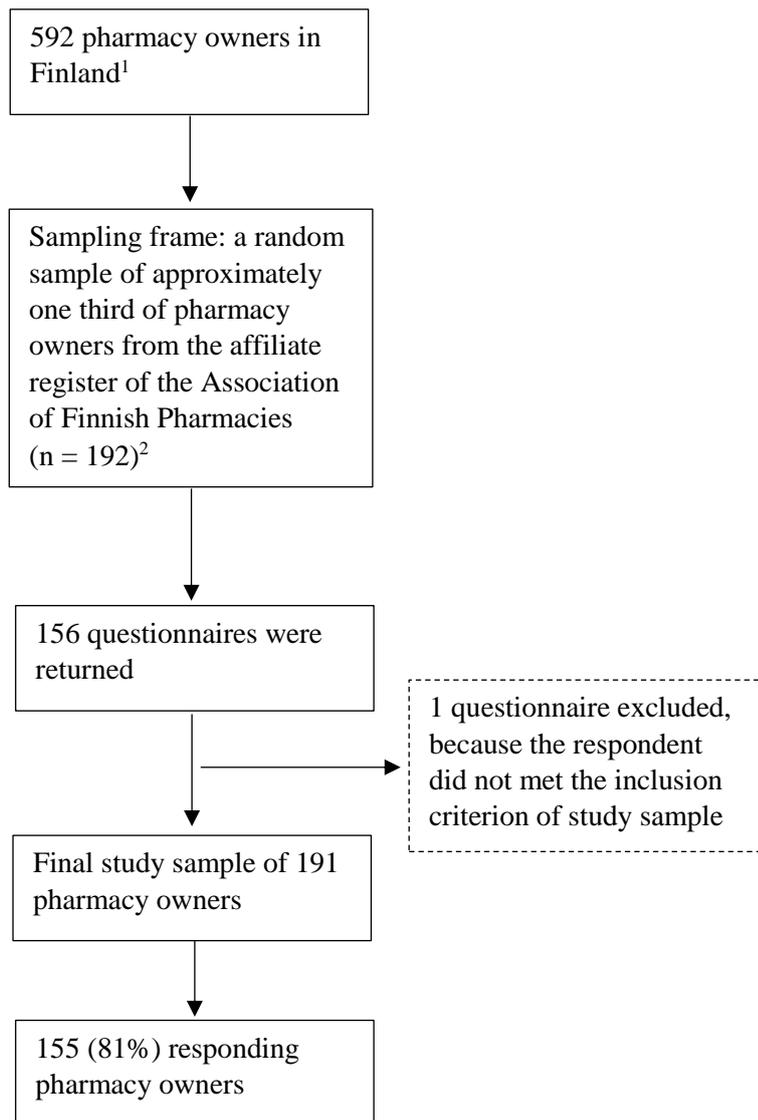


Figure 1. Study flow.

¹ Information based on the number of pharmacy owners in 2014²⁶

² Sampling from August 2014.

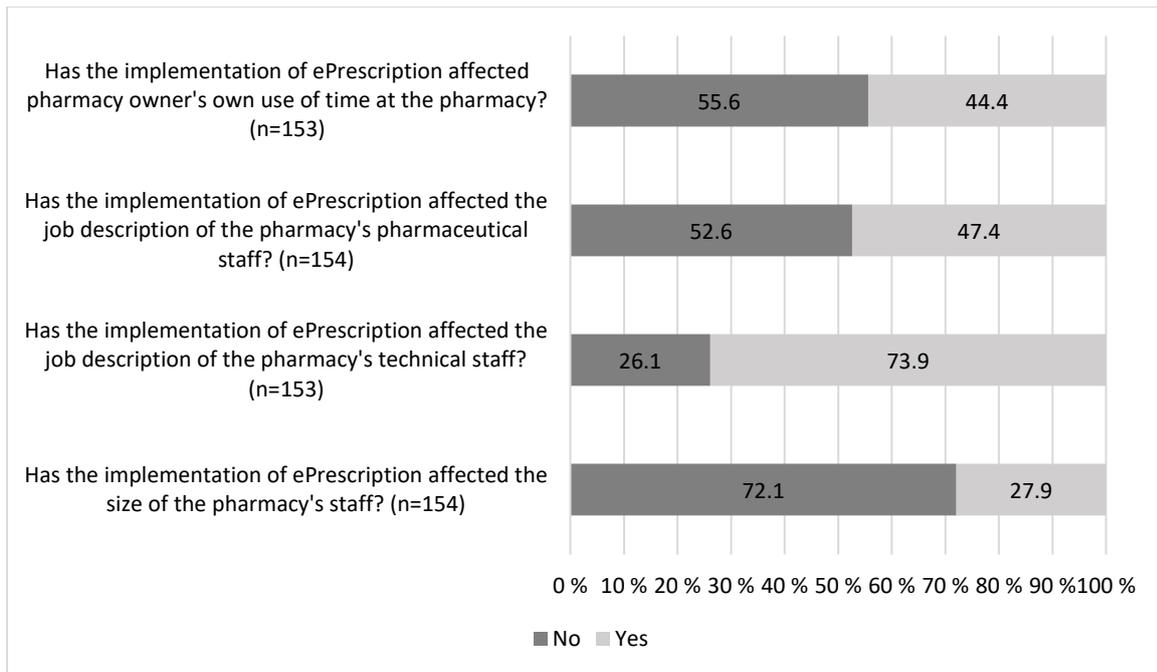


Figure 2. Pharmacy owners’ opinions about the impacts of the implementation of ePrescription on their own use of time at the pharmacy, on the job descriptions of pharmaceutical and technical staff at the pharmacy, and the size of the staff at the pharmacy.