MEDINFO 2019: Health and Wellbeing e-Networks for All
L. Ohno-Machado and B. Séroussi (Eds.)
© 2019 International Medical Informatics Association (IMIA) and IOS Press.
This article is published online with Open Access by IOS Press and distributed under the terms of the Creative Commons Attribution Non-Commercial License 4.0 (CC BY-NC 4.0).
doi:10.3233/SHTI190696

An Evaluation of the Belgian Community Pharmacist's Satisfaction with the Implementation of the Electronic Prescription Within a Pharmacist's Software

Sven Van Laere[a], Pieter Cornu[b], Ronald Buyl[a]

[a] Department of Public Health (GEWE), Vrije Universiteit Brussel, Brussels, Belgium,
[b] Centre for Pharmaceutical Research (CePhar), Vrije Universiteit Brussel, Brussels, Belgium

Abstract

In a cross-sectional study, we evaluated the perception of the community pharmacist in Belgium about his satisfaction with the implementation of the electronic prescription in his software. 246 community pharmacists scored the implementation in their software with an average of 6.46±2.16(SD) on a score of 10. This satisfaction is associated with the software used ($p<0.001$), the frequency of slow responses ($p<0.001$), the perception of unavailability of systems ($p=0.003$) and the knowledge of the pharmacist ($p=0.036$).

Keywords:

Electronic Prescribing; Pharmacies; Belgium

Introduction

Electronic prescribing, or "e-prescribing" is the computer-based electronic generation, transmission, and filling of a prescription, taking the place of paper and faxed prescriptions [1]. Often the terms electronic prescribing, e-prescribing, ePrescribing and eRx are used interchangeably.

ePrescribing was introduced in healthcare primarily for increasing patient safety and reducing prescription errors. Another reason for introducing ePrescribing was the potential administrative simplification for healthcare practitioners, healthcare insurance institutions and other governmental institutions [2].

In Belgium, the government started the e-MED project in April 2007 with the intention of developing a coherent action plan for making the ePrescription of medicines in ambulatory care possible [2]. During a pilot phase in 2009-2012, infrastructure was tested. In 2013, software vendors of both physicians and pharmacists were invited for mini-labs to test all use cases related to ePrescribing and in 2014, the project was introduced to the Belgian public. As of 2017, a unique barcode (i.e., the Recip-e ID (RID)) was added on the paper proof of ePrescription. Independently, the organization Recip-e is responsible for the temporary storage of encoded ePrescriptions on a national server.

In the flow of ambulatory ePrescribing, there are three main actors: the prescriber, the patient and the pharmacist; they are sometimes referred to as the 3 Ps within ePrescribing [3, 4]. Since pharmacists are at the end of the chain and thus are most likely the party that observes the most problems and hindrance in processing ePrescriptions, we are interested in the perception of the implementation of the ePrescription within his software package and what other factors that influence this.

Methods

A cross-sectional study was conducted among pharmacists working in community pharmacies in Belgium, between March and May 2018. The survey included self-administered questions about demographic characteristics, pharmacy software characteristics, satisfaction with the implementation of the ePrescription in the software, knowledge about the ePrescription workflow (tested with 7 questions about the ePrescribing workflow and the handling with ePrescriptions inside the pharmacy), and frequency and hindrance of problems encountered in practice. The questions of problems in practice were based on an evaluation of pharmacist fora [5], where pharmacists reported the problems they encountered in practice during a one-year period, ranging from January 2017 to December 2017. In total six problems were identified: (1) unavailability of the eHealth system; (2) slow response of the software; (3) differences between paper proof and digitally stored prescription; (4) unclear error messages; (5) incorrect use of codes linked to medication; and (6) not allowed manual additions of the prescriber on the paper proof of prescription.

The survey was sent to all pharmacists that were members of the national pharmacy organization, i.e. Algemene Pharmaceutische Bond (APB), via a newsletter in their language of preference.

Multivariable linear regression was conducted to investigate what variables are associated with the pharmacist's satisfaction with the implementation of the ePrescription in their software, verifying the underlying assumptions of linearity and homoscedasticity. All p-values were 2-sided and $p < 0.05$ were considered statistically significant. For model building, both forward and backward model selection using AIC was used. Afterward, a significance check was performed for each covariate that was included in the model; covariates with a P-value of less than 0.10 were included in the final model.

Ethical clearance and approval were obtained from the Ethical Review Committee of the university hospital UZ Brussel, Brussels Health Campus (reference number B.U.N. 143201835300).

Results

The survey was distributed to 7,487 pharmacists [6] of respectively 4,943 community pharmacies. In total 4,200 newsletters were sent in Dutch (56.1%) and 3,287 newsletters sent in French (43.9%) (Table 1). A total number of 246 respondents completed the survey (response rate of 3.3%).

Respondents were asked to score how satisfied they are with the implementation of the ePrescription in their software on a scale of 1 to 10, where a score of 1 indicates very poor satisfaction and 10 indicates excellent satisfaction.

Belgian pharmacists rated the implementation of the ePrescription in their software with an average score of 6.46±2.16 (SD) out of 10 (Table 2). The minimum score obtained was 1 and the maximum score obtained was 10.

This satisfaction score was significantly associated with the software used in the pharmacy ($p < 0.001$, Table 3). For privacy reasons, no information about software vendors (n=6) was given. The perceived frequency of occurrence of a slow responsive system was associated with satisfaction, adjusted for other covariates ($p < 0.001$). A better knowledge of the workflow was associated with higher satisfaction with the implementation in their software package, adjusted for all other covariates ($p = 0.036$). A trend was observed for the perceived frequency of unavailability ($p = 0.086$). When both of these problems were perceived to occur less frequently, the community pharmacist's satisfaction was higher. If a pharmacist indicated to have problems with the unavailability of the system, the community pharmacist was asked to estimate the percentage of time that the services were down. This covariate was also significantly negatively associated with satisfaction ($p = 0.003$).

Table 1– Characteristics of mailing and respondents

	Belgium	Respondents
Pharmacists		
- Mail messages sent	7,487	-
- Language used		
Dutch	4,200 (56.1%)	143 (58.1%)
French	3,287 (43.9%)	103 (41.9%)
- Community pharmacies	4,943	246 (3.3%)

Table 2– Satisfaction of the implementation

	Score (n = 246)
Satisfaction	
Mean (± SD)	6.46 (±2.16)
Median	7
Min – Max	1 – 10
Q1 – Q3 (IQR)	5 – 8 (3)

Conclusions

In this study, the satisfaction of the Belgian community pharmacists about the implementation of the ePrescription in their software along with their knowledge and problems with it was questioned. The relation between these factors and the community pharmacist's satisfaction was observed. In general, Belgian community pharmacists are moderately satisfied with the implementation of the ePrescription in their software package. Satisfaction with the implementation of ePrescribing is mostly associated with the software package itself, the frequency of a slow responsive system, the knowledge a pharmacist has about the ePrescribing process, and perception about the percentage of unavailability of the system. A limitation of the study is that 3.3% response rate might limit the generalizability of the study. Moreover, causal associations cannot be inferred due to the cross-sectional study design.

Table 3– Multivariable analysis of satisfaction (squared transformation was applied)

	Beta ± SD	p-value
Intercept	30.950 (±3.850)	< 0.001
Software [a]	-	**< 0.001**
Frequency of slow responses		**< 0.001**
Daily (reference)	-	-
Weekly	13.644 (±3.392)	< 0.001
Monthly	16.710 (±4.005)	< 0.001
Less than monthly	13.823 (±4.868)	0.005
Never	14.155 (±6.091)	0.021
Knowledge	**2.563 (± 1.222)**	**0.036**
Frequency of unavailability		**0.086**
Daily (reference)	-	-
Weekly	8.787 (±3.610)	0.016
Monthly	6.053 (±4.100)	0.141
Less than monthly	9.742 (±5.422)	0.074
Never [b]	NA	NA
Perception of the percentage of unavailability	**-0.225 (±0.076)**	**0.003**

[a]: For privacy reasons no detail about the software is given;

[b]: One observation was dropped out of the analysis, because when a pharmacist indicated he never faced problems with unavailability of the system, he never obtained the question about the perception of the percentage of unavailability. (n = 245)

Acknowledgements

We are thankful to the senders of the survey to the community pharmacists on a national basis.

References

[1] eHealth Initiative (eHI), and the Center for Improving Medication Management (CIMM), A clinician's guide to electronic prescribing (2008).

[2] J. Van Calster and M.-L. Bouffioux, E-MED of het project rond het elektronisch voorschrijven van geneesmiddelen en de "authentieke bron" geneesmiddelen van het FAGG (2009), Available: https://www.fagg-afmps.be/sites/default/files/downloads/newsletter_actua_01012009_nl.pdf [Accessed on March 19, 2019].

[3] M. Samadbeik, M. Ahmadi, F. Sadoughi, and A. Garavand, A Comparative Review of Electronic Prescription Systems: Lessons Learned from Developed Countries, J Res Pharm Pract 6(1) (2017), 3-11.

[4] P. Esmaeil Zadeh and M. C. Tremblay, A review of the literature and proposed classification on e-prescribing: Functions, assimilation stages, benefits, concerns, and risks, Res Social Adm Pharm 12(1) (2016), 1-19.

[5] L. Maus, FarmaWiki (2013). Available: http://www.farmawiki.be [Accessed on March 19, 2019]

[6] Sirius Insight, Aantal apotheken in België (2017). Available: http://siriusinsight.be/nl/whitepaper-nl/spreiding-apotheken/ [Accessed on March 19, 2019]

Address for correspondence

Sven Van Laere, Department of Public Health (GEWE), Vrije Universiteit Brussel, Laarbeeklaan 103, 1090 Brussel, Belgium.
Email: Sven.Van.Laere@vub.be – Phone: (0032) 2 477 44 24