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Frequency, Nature and Impact of the Consultations Provided by Community Pharmacists in Quebec

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2018RP-17
RAPPORT DE PROJET



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Rapport de projet *Project report*

Montréal
Octobre/October 2018

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ISSN 1499-8629 (Version en ligne)

Frequency, nature and impact of the consultations provided by community pharmacists in Quebec

Research Report #18-01

Research Chair in Digital Health – HEC Montréal

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August 1, 2018

How to cite this report:

Boulenger, S., Motulsky, A. & Paré, G. (2018). **Frequency, nature and impacts of the consultations provided by community pharmacists in Quebec**. *Research Report #18-01*, Research Chair in Digital Health, HEC Montréal, 65 pages.

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EXECUTIVE SUMMARY

This report presents results from a study of the nature, frequency and impacts of the consultations provided by community pharmacists at the patient's initiative. Carried out in 2017 and 2018, the study comprises three complementary parts, each of which is summarized below.

The **first part** concerns a population-based survey carried out on a sample of 913 Quebec adults that was designed to answer the following questions: (1) What is the profile of Quebec adults who seek the consultation of community pharmacists? (2) What is the nature and frequency of the consultations provided by community pharmacists? (3) What are the perceived impacts of consultations with community pharmacists on the health status of clients and their consumption of health services? and (4) What is the satisfaction rate among Quebec adults regarding the consultations provided by community pharmacists?

The results of this survey highlight the key role played with the Quebec public by community pharmacists. The public's reasons for consulting a pharmacist are many and varied, concerning both drugs (prescription or nonprescription), prescriptions, health problems or conditions, and the other products available in pharmacies. The results attest to a very high level of satisfaction among Quebec adults regarding the consultations provided by pharmacists. It is worth noting that 38% of patients believe that having consulted a pharmacist helped them avoid a visit to a walk-in clinic or emergency room, and 23% believe that it spared them a visit to a family physician. Among the patients who consulted a pharmacist, 85% had a family physician, but whether or not participants had a family physician was not associated with a higher number of consultations with a pharmacist. Furthermore, even though 22% of participants had tried to reach another health professional before going into a pharmacy, and 86% of this group had managed to speak to that health professional, they nevertheless contacted a pharmacist to discuss the same subject. In sum, the role played by pharmacists does not appear to be a substitute for the roles played by family physicians and other health professionals, and it represents significant value added for the health system.

The **second part** of the study was designed to: (1) document the nature and frequency of consultations initiated by patients in Quebec community pharmacies, (2) characterize patients' experience with these consultations, (3) measure the impacts of these consultations on patient's consumption of health services and satisfaction, and (4) estimate the health system costs that were avoided through these consultations. To attain these objectives, a mobile app was developed for the *Association québécoise des pharmaciens propriétaires* (AQPP, the Quebec association of pharmacist-owners). The app was used to collect data in real time from a sample of 19 community pharmacies. The 95 pharmacists who agreed to participate in the study used the app to capture a total of 7,996 consultations. This second part of this study was also based on two periods of interviews with hundreds of patients who had consulted a pharmacist in a pharmacy or by telephone.

The results indicate that 44% of the consultations entered in the mobile app concerned pharmacotherapy (30% was about nonprescription drugs and 14% about prescription drugs). The other consultations consisted of providing relevant information related to natural health

products, non-pharmacological measures or action to be taken. Bill 41 was used for only 3.5% of all the consultations. The results also indicate that pharmacists rarely recommend that their patients (only 14% of them) consult another professional resource in the health system. A large majority of the patients (74%) reported that they had consulted a pharmacist for a health problem, and 18% for advice related to a drug or prescription. Only 8% of respondents mentioned a reason other than a health problem or a drug. The reason for the consultation that was most often reported was pain. Most patients (77%) had not tried to consult another resource before going to see the pharmacist (for the same problem). Among those who did, 82% succeeded in consulting with another resource, but they nevertheless felt the need to consult a pharmacist afterward.

Concerning the consumption of health services, many participants indicated that consulting a pharmacist in person allowed them to avoid: making a call to Info-Santé, the government's health help line (49%); making an appointment with their family physician (44%); going to a walk-in clinic (41%); consulting another type of health professional (30%), or going to a hospital emergency room (17%). The potential health system costs that were avoided represent approximately \$707 per community pharmacy per business day, based on the average consultations carried out per day in the participating pharmacies (13 consultations). These results indicate that community pharmacists are well equipped to manage most of the consultations initiated by patients and that they could participate more systematically in primary care triage, due to both their competencies and their great availability.

The **third part** of the study had four main objectives: (1) to describe the use experience of the community pharmacists who participated in the research project, (2) to analyze the factors that influenced this use, (3) to analyze the agreement between the information entered by the pharmacists in the AQPP app and that reported by the patients, and (4) to analyze the potential for transferring this app to Quebec's community pharmacies.

In terms of the methodology employed, telephone interviews were conducted with one pharmacist in each participating pharmacy (n=19). At the same time, the data on a subset of consultations and collected during Part 2 of the study (n=600) were used to conduct an in-depth agreement analysis, comparing what was reported by the pharmacists (information entered in the mobile app) with what was reported by the patients (one week after their consultation in a pharmacy). There were two dimensions to this analysis: (1) the action to be taken, in which the pharmacist's *recommended resource* was compared with the patient's report of what the pharmacist had recommended; and (2) the impact of the consultation, or the *avoided resource* according to the pharmacist, which was compared to the patient's perception of what the consultation allowed him or her to avoid.

The interviews with pharmacists revealed that the vast majority of participating pharmacists appreciated their involvement in the project, in particular the user-friendliness of the mobile app and the relevance of documenting the value added by consultations in community pharmacies. However, a very wide range of use levels was observed among the pharmacists. Most pharmacists reported that the data on consultations was collected in real time, except during very busy periods. The best way to encourage regular use and real-time data entry would be to make the app an integral part of the pharmacists' primary work tool, i.e. the electronic

patient record, because this would make it simpler to use and because the clinical benefits would be enhanced. Lastly, even though the pharmacists were motivated to participate in the project, the lead pharmacists on the project nevertheless had to invest considerable effort to maintain the level of motivation among their troupes.

As mentioned above, we also compared the content of the 600 consultations entered by the pharmacists in the mobile app with remarks made by the patients concerned. With respect to the pharmacists' *recommended resources* (e.g. going to see the family physician or a hospital emergency room), there was strong agreement between the patients and the pharmacists in 64% of the consultations (i.e. on the fact that no resource was recommended or that the same recommended resource was reported). However, for slightly less than one third of the consultations, the patient reported that the pharmacist had recommended a resource whereas the pharmacist reported that he or she had not recommended a resource. This may be due to the fact that the pharmacist had recommended that the patient consult the resource *only if* the problem did not clear up within a given amount of time, and not as a principal recommendation, such that this recommendation was not entered in the app. As for *avoided resources*, strong agreement was found for only 42% of the consultations (i.e. no resource had been avoided as a result of the consultation or the same resource was reported as having been avoided). In 23% of the consultations, the patient reported an avoided resource but not the pharmacist. Lastly, in 14% of the consultations, the pharmacist reported an avoided resource but not the patient. Therefore certain pharmacists overestimated the impacts of their consultations, while others underestimated such impacts.

BACKGROUND

Quebec community pharmacies have experienced some major upheavals in the last decade. A broadening of pharmacists' scope of practice (to include clinical activities such as consultations for minor ailments with Bill 41) and the problems faced accessing other resources in the health system have placed community pharmacists at the heart of primary care (Morrison 2015; Morrison 2013). More specifically, it is now possible to mobilize their unique expertise on health problems, on the alarm signals that should trigger an emergency consultation with a physician, and on the use of various health products (including over-the-counter drugs). With their geographic proximity and ready availability, pharmacists are being asked to be responsible for much more than drug distribution: for consultations of all kinds, whether or not the consultation is related to the sale of a product in the pharmacy, and for a variety of patients, from the prevention needs of young children to chronic illnesses in multimorbid patients. Even though this role has not been formalized and is often played in a silo, apart from other resources in the health system, increasingly the public is acknowledging this role, and it is drawing attention in various jurisdictions (Bishop et al. 2015; Donald et al. 2017). For example, a recent study carried out in Alberta suggests that the public perceives that the role played by pharmacists is transitioning and is becoming increasingly centered on care rather than on drugs (Schindel et al. 2017).

Yet very little is known about the nature, frequency and impacts of community pharmacists' daily activities, beyond those related to the sale of drugs and chargeable services. In Quebec, the databases of the *Régie de l'assurance maladie du Québec* (RAMQ, the health care insurance agency) and private insurers are useful for describing the acts charged to the payers, but they do not include data on all the activities of pharmacists. Even though Bill 41 has led to a billing agreement for certain clinical activities such as consultations for minor conditions, the statistics show that these activities are small in scope when compared with others. From June 2016 to June 2017, Quebec pharmacists invoiced consultations for less than 10% of the people insured under the public health insurance plan (Leduc, 2017). Furthermore, 40% of these consultations concerned extending a prescription, while only 26% were consultations for minor ailments. These results highlight the fact that little is known about the nature of the consultations made by community pharmacists in Quebec, while those that can be charged under Bill 41 are infrequent since they concern a limited number of minor conditions and are subject to several restrictions.

In England, there has been more research on the clinical activities of pharmacists in primary care. For example, a study carried out in 2014 reveals that pharmacists believe that they spend 6.6% of their time carrying out patient consultations that are unrelated to the prescriptions distributed (Davies, Barber et Taylor, 2014). Similarly, a study conducted in 2012 and 2013 in the United Kingdom measured the costs related to consultations for minor ailments¹ comparing

¹ Musculoskeletal pains (legs, back, arms, hands, feet), eye discomfort, gastrointestinal disturbance (nausea, vomiting, diarrhea, constipation), or upper respiratory tract-related symptoms (sore throat, congestion, cough or the common cold).

those carried out in pharmacies with consultations for the same conditions carried out in medical clinics and emergency rooms (Watson et al., 2015). The study found that a two-week period for resolution of the symptoms is similar, independent of the setting in which the patient consults, while the costs of consulting in a pharmacy are one third of that in a physician's office and one fifth of that in an emergency room (average cost per consultation of £29.30 in a pharmacy compared to £82.34 in a physician's office and £147.09 in an emergency room). The United Kingdom's National Health Services ran a mass advertising campaign to encourage the public to turn to a community pharmacist first as its best resource for addressing minor problems. This campaign is accompanied by a training kit for pharmacists (FEB, 2018). This initiative represents a major turning point for community pharmacy in the country, where it is becoming part of primary care triage as never before.

We found no Quebec or Canadian data on the nature and volume of consultations provided by pharmacists, whether or not at the patient's initiative, in relation to the distribution of a prescription. A recent review of the literature carried out by the Canadian Pharmacists Association found not a single study that measured impacts related to the consultations on minor conditions provided in community pharmacies (CPA, 2016). Our own review of the literature (see Appendix I) identified only one study (Watson, 2014) that examined the costs associated with these consultations. Rather the current literature presents data related to therapeutic or health promotion/management programs, in which the pharmacists' activities are structured in research projects or pilot projects that target a group of patients (e.g. diabetics or smokers) or a type of drug (e.g. an antihypertensive drug), but whose implementation conditions (e.g. dedicated resources) are far from the context of the current practice in most settings (Laliberté, 2012).

In order to close the gaps in the evidence described above, a study comprising three complementary parts was carried out over the last year. The first part involved a population-based survey of a large sample of Quebec adults, and relates their experience consulting in community pharmacies. The second part addressed the nature, frequency and impacts of these consultations, according to the data collected through a mobile app developed as part of the research project – the AQPP application – and through interviews with a sample of patients who consulted with pharmacists. The third and last part examined the pharmacists' experience in using the AQPP app in the various pharmacies, as well as the perceptions of pharmacist-owners of this mobile app's transferability to Quebec community pharmacies. The pages that follow provide a detailed presentation of each of the three parts of the study.

The study design associated with each of the three parts of this study was examined by the members of the research ethics committee of HEC Montréal. The committee issued a notice of compliance on August 14, 2017.

Objectives

The objectives of Part 1 of this study were to describe the types of consultations provided in community pharmacies, and initiated by patients, and to characterize the patients' experience with these consultations. To this end, the Quebec population was surveyed in the fall of 2017 to obtain answers to the following questions:

- What is the profile of Quebec adults seeking consultation from community pharmacists?
- What is the nature and frequency of the consultations provided by community pharmacists?
- What do community pharmacists perceive as the consultations' impacts on the health status of clients and their consumption of health services?
- What is the satisfaction rate among Quebec adults with respect to the consultations provided by community pharmacists?

Methodology

A population-based survey was conducted on a sample of Quebec adults who were able to express themselves in French or English and who had sought the advice of a community pharmacist in the previous four weeks, either for themselves or for a child or close relative (such as a father, mother, sister or aunt). The consultation could be about a prescription drug, a nonprescription drug, advice on a general health issue, or a pharmacological treatment for an illness or minor condition. This consultation had to have been initiated by the patient and could not have been limited to the renewal of one or more drugs. The discussion with the pharmacist could have taken place in person at the pharmacy, over the telephone, or through a secure website.

The questionnaire was based on a review of the scientific literature on the subject, pretested with 10 respondents and then approved by AQPP management. Data was collected by the Léger Marketing polling company in the period from October 25 to November 4, 2017. The questionnaire took approximately 5 minutes, on average, to complete. A notice of compliance was issued by the research ethics committee of HEC Montréal on August 14, 2017.

Respondents were randomly selected from the polling company's web-based panel. The company then sent an invitation email to 4,369 panelists who met the above-mentioned inclusion criteria. This email contained a personalized hyperlink to the questionnaire. Since each link was only active for a limited period of time and was unique to each panelist, it could only be used once. Of all the panelists approached, a total of 1,104 agreed to participate in this survey, representing a 25% response rate. Of this group, 93 had to be removed from the sample due to incomplete data. In addition, questionnaires were not considered if the sole purpose of the consultation was related to a prescription renewal ($n = 98$). As a result, the final sample consisted of 913 respondents.

The representativeness of the sample was ensured through quota sampling (sex, age) after stratifying by region. The maximum margin of error associated with our sample size is estimated

at 3.3%, 19 times out of 20. The results were weighted based on the following variables: sex, age, region, mother tongue, level of education and children in the household. More than eight out of ten respondents used the French version of the questionnaire. Table 1 presents a profile of the respondents.

		Number of respondents	%
Sex	Male	428	47
	Female	485	53
Age group	18-24	76	8
	25-34	157	17
	35-44	145	16
	45-54	159	17
	55-64	159	17
	65+	217	24
Mother tongue	French	706	77
	English	139	15
	Other	68	7
Highest level of education attained	Primary school	5	<1
	Secondary school	343	38
	College	257	29
	University	298	32
Current place of residence	Bas St-Laurent	18	2
	Saguenay Lac-Saint-Jean	38	6
	Capitale-Nationale	76	8
	Mauricie	19	2
	Estrie	54	6
	Montreal	254	28
	Outaouais	44	5
	Abitibi-Témiscamingue	22	3
	Côte-Nord	11	1
	Gaspésie	6	<1
	Chaudière-Appalaches	56	6
	Laval	37	4
	Lanaudière	51	6
	Laurentides	47	5
	Montréal	151	17
Centre-du-Québec	29	3	
Number of persons in the household	1	203	22
	2	366	40
	3	145	16
	4	122	14
	5	58	6
	6+	15	2
Gross family income	Less than \$20,000	93	12

	\$20,000 – \$39,900	166	21
	\$40,000 – \$59,900	174	22
	\$60,000 – \$79,900	141	18
	\$80,000 – \$99,900	95	12
	\$100,000 or more	125	16
Family physician	Yes	776	85
	No	137	15
Type of drug plan	Public only	397	44
	Private only	350	38
	Public and private	145	16
	Don't know	21	2
Number of consultations with a pharmacist in the previous four weeks	1	495	54
	2	203	22
	3	101	11
	4	52	6
	5	18	2
	6+	45	5
Chronic illness (in the person who was the subject of the consultation in a pharmacy)	No diagnosis	449	49
	One diagnosis	282	31
	More than one diagnosis	182	20

Table 1. Profile of the Respondents (n=913)

As part of this survey, we asked the respondents to indicate (in free text) why they had consulted with a pharmacist in the previous four weeks (their primary consultation). Following a close examination of all the responses, we recoded them into three major categories, according to whether they sought to obtain: (1) advice on drugs or prescriptions, (2) advice related to health problems or conditions, or (3) other types of consultation. One of the team members trained two research assistants on how to code all the reasons. A total of 100 cases were used to train the two assistants, who then independently coded a total of 400 cases. The rate of agreement between the two coders was very high: 94%. Given this high rate, the other 413 cases were coded by only one of the two research assistants. The main reasons associated with the category “other types of consultation” are presented in Appendix II.

Results

Over the four-week period preceding the data collection, our participants had consulted a community pharmacist 2.1 times (on average) (S.D. = 2.0). Overall, one quarter of the respondents (24%) consulted the pharmacist three times or more. The results presented in Table 2 indicate that women consult a community pharmacist somewhat more often (2.20 visits on average) than men (1.97 visits on average). This difference appears to be mainly due to the fact that women consult a pharmacist more often for another person, i.e. for their children, than men do ($p < .05$). In terms of age, baby boomers (55+) consult community pharmacists more often and millennials (18-34) consult the least. However, this difference is not statistically significant.

		Average number of consultations with a pharmacist in the four weeks preceding the survey				
		For oneself	For a child	For a close relative	Average total number	
Sex	Male	1.37	0.26	0.34	1.97	t=3.6 p<.10
	Female	1.51	0.38	0.31	2.20	
Age group	18-34	1.31	0.64	0.38	2.33	F=4.0 p<.05
	35-54	1.44	0.44	0.30	2.18	
	55+	1.53	0.04	0.30	1.87	
University degree	No	1.51	0.32	0.35	2.17	t=2.02 p<.05
	Yes	1.28	0.34	0.25	1.86	
Region	Greater Montreal	1.50	0.32	0.37	2.19	F=1.2 p=.296 (ns)
	Greater Quebec City	1.70	0.27	0.18	2.15	
	Other regions	1.33	0.34	0.29	1.97	
Chronic disease(s)	No	1.19	0.47	0.28	1.94	t=5.7 p<.05
	Yes	1.69	0.19	0.36	2.18	
Drug insurance plan	Public	1.52	0.30	0.37	2.18	F=1.5 p=.223 (ns)
	Private	1.47	0.40	0.25	2.13	
	Both	1.32	0.17	0.30	1.78	
Family physician	Yes	1.46	0.34	0.32	2.12	t=1.06 p=.291 (ns)
	No	1.35	0.25	0.33	1.92	

ns = test was not significant

Table 2. Determinants of consulting with a community pharmacist

Taking into consideration all the consultations rather than only consultations for oneself, it was nevertheless the millennials who consulted pharmacists most often and the baby boomers who consulted the least (p<.05). In terms of the respondents' level of education, we broke the sample down into two sub-groups: those with a university degree and those without. Our results show that Quebec adults without a university degree consult pharmacists more than those with a university degree (p<.05). The fact that one lives in Montreal, Quebec City or elsewhere in the province does not appear to have any impact on seeking advice in a community pharmacy. Unsurprisingly, we found that adults who have received one or more diagnoses for chronic illnesses consult a pharmacist more than those without a chronic disease (p<.05). Furthermore, even though individuals with a family physician consult a community pharmacist somewhat more often than those who do not, the difference is not statistically significant. Lastly, the type of drug insurance plan – private, public or mixed – had no impact on seeking the advice of a community pharmacist.

We then asked our participants to answer a series of questions related to a single consultation, the one they considered the most important. The data in Table 3 show that these consultations mainly took place in person at the pharmacy.

		Number of respondents	%
Type of consultation	In person	856	94
	Over the telephone	50	6
	Through a secure website	7	< 1
Principal reason	Drugs	528	58
	Health problems	297	33
	Other	77	9
For whom?	The respondent himself/herself	736	81
	A child	95	10
	A close relative	82	9
Did you try to consult another professional first?	Yes	199	22
	No	714	78
If yes, which one?	Family physician	94	47
	Physician or nurse in a walk-in clinic	41	21
	Emergency physician	25	13
	Specialist physician	13	6
	Info-811 line	14	6
	Other	12	6
If yes, did you reach this professional?	Yes	171	86
	No	28	14

Table 3. Context of the primary consultations

The reasons for these consultations revolved mainly around information or advice on one or more drugs (over the counter or prescription), health problems and, to a lesser extent, other types of general consultation (e.g. pregnancy tests, natural products, probiotics). The great majority of these consultations were for the respondents themselves; few concerned a child or a close relative. It is nevertheless interesting to note that the consultations whose principal reason was related to a health problem were more likely to be for a child, while those related to a drug were mostly for the person himself/herself ($p < .001$). It is also important to note that a minority of respondents had tried to consult another health professional before going to the pharmacy. This was especially the case when the reason for the consultation involved a health problem as opposed to one or more drugs ($p < .001$). Given these results, it would appear that our respondents consider the community pharmacist to be an important resource in primary care.

We then looked at the nature of the consultations provided by the community pharmacists. As indicated in Table 4, pharmacists most often make recommendations on the use of one or more new drugs (33%). Naturally, recommendations about dosage adjustments are most often provided when the main reason for the consultation concerns a drug. Lastly, less than 5% of the consultations led to a recommendation to stop taking a drug or to avoid taking it (contraindications). Pharmacists also provide considerable general consultations on health (31%) related to physical activity, nutrition, hygiene and sleep.

	All consultations (n=825)	By primary reason for the consultation		
		Primary reason: drugs (n=528)	Primary reason: health problem (n=297)	Chi square test
Take one or more new drugs	33%	22%	86%	p<.001
Discontinue one or more drugs	3%	4%	2%	p=.327 (ns)
Adjust the dose of a drug	17%	23%	8%	p<.001
Avoid taking a drug that is contraindicated	4%	5%	4%	p=.416 (ns)
Follow general advice on health	31%	29%	36%	p<.05
ns = test was not significant				

Table 4. Nature of the recommendations made by community pharmacists

During consultations, community pharmacists need to make recommendations that go well beyond taking, discontinuing or adjusting drugs. According to the data in Table 5, in 16% of their consultations pharmacists recommend that the client make an appointment with the family physician. This recommendation is more frequent when the client has come in to the pharmacy to discuss a health problem than when the primary reason for the consultation is related to a drug or a prescription. In 5% of cases, or in 11% of the consultations concerning a health problem and 2% of the consultations on one or more drugs, the pharmacists recommended that the client see a physician or a nurse at a walk-in clinic. Much less frequently, the pharmacists also recommended that the client visit an emergency room (3%), make an appointment with a medical specialist (2%) or call the Info-santé 811 line (<1%).

	All consultations (n=825)	By primary reason for the consultation		
		Primary reason: drugs (n=528)	Primary reason: health problem (n=297)	Chi square test
Visit an emergency room	3%	2%	5%	p<.005
Visit a walk-in clinic	5%	2%	11%	p<.001
Make an appointment with a family physician	16%	14%	21%	p<.05
Make an appointment with a medical specialist	2%	2%	3%	p=.706 (ns)
Call the Info-santé 811 line	<1%	<1%	<1%	p=.103 (ns)
ns = test was not significant				

Table 5. Pharmacists' recommendations unrelated to drugs

We then asked our respondents to tell us if they had perceived one or more impacts following their consultation with a community pharmacist. The results, shown in Table 6, show a wide range of benefits. First we see that in 23% of cases, consulting with a pharmacist allowed the respondent to avoid a visit to his or her family physician. In addition, visits to a hospital emergency room or a walk-in medical clinic were avoided in 19% of cases. These two types of visits were avoided more often when the consultation with a pharmacist concerned a health problem. To a lesser extent, consultations in a community pharmacy also resulted in avoidance of a call to the Info-Santé 811 line (9%) or an appointment with a medical specialist (5%). Overall, these results indicate that community pharmacists, through their role as clinical counselors, help reduce overcrowding in the Quebec health system.

It is also important to underscore that the consultations with the community pharmacists resulted in several positive impacts on the health status of these clients: an improved quality of life (27%), reduced anxiety (23%), stabilized or improved health status (22%) and a faster recovery (18%). Apart from the impact on anxiety, all the other benefits related to health status are more pronounced in cases of consultations concerning a health problem as compared to consultations about one or more drugs. So through their consultations, community pharmacists often help stabilize or even improve their clients' health status while reassuring them. We also asked respondents if their consultations with pharmacists had allowed them to avoid missing work or school. This was true in 8% of the cases analyzed. Here again, this rate is higher in cases where the consultations were for a health problem (13%).

<i>The consultation resulted in...</i>	All consultations (n=825)	By type of reason		
		Primary reason: drugs (n=528)	Primary reason: health problem (n=297)	Chi square statistical test
Avoidance of a visit to the emergency room	19%	11%	34%	p<.001
A visit to a walk-in clinic	19%	16%	25%	p<.005
An appointment with a family physician	23%	24%	20%	p=.146 (ns)
An appointment with a medical specialist	5%	5%	6%	p=.371 (ns)
A call to the Info-santé 811 line	9%	9%	10%	p=.820 (ns)
A faster recovery	18%	13%	27%	p<.001
Avoidance of an even greater deterioration of health status	22%	16%	33%	p<.001
An improved quality of life	27%	25%	30%	p<.10
A lower level of anxiety	23%	26%	18%	p<.05
Missing work or school	8%	5%	13%	p<.001
ns = test was not significant				

Table 6. Impacts associated with the consultations provided by pharmacists

Given the positive impacts mentioned above, it is not surprising that the Quebec adults who participated in this study have a very high level of satisfaction with the consultations provided by their community pharmacists. The average level of satisfaction was 8.75 on a scale of 10 (standard deviation = 1.63). The results presented in Table 7 indicate certain variations in satisfaction according to the nature of their consultations and their profile. First it is interesting to note that the primary reason for the consultation had an impact on level of satisfaction. Consultations about one or more drugs show a higher level of satisfaction than those associated with consultations for health problems.

In terms of a demographic profile, it is noteworthy that women are slightly more satisfied with the consultations provided by community pharmacists than men. Age is also positively correlated with level of satisfaction. Since age is associated with chronic illness, it is normal to see that respondents with one or more diagnoses of chronic illnesses reported a higher level of satisfaction than those without such a diagnosis. It is also important to note that respondents who had a family physician were more satisfied with the consultations provided by the community pharmacist than those without a family physician. Lastly, our results show that having or not having a university degree; living in Montreal, Quebec City or elsewhere in Quebec; and having a private or public drug insurance plan had no impact on the expressed level of satisfaction with the consultations provided by pharmacists.

		Average	Standard deviation	Statistical test t or F
Sex	Men	8.62	1.68	t=2.4
	Women	8.88	1.57	p<.05
Age	18-34	8.31	1.66	F=22.0
	35-54	8.61	1.76	p<.001
	55+	9.15	1.39	
University degree	No	8.79	1.59	t=1.0
	Yes	8.67	1.72	p=.309 (ns)
Region	Greater Montreal	8.67	1.63	F=1.6
	Greater Quebec City	8.72	1.61	p=.197 (ns)
	Other regions	8.87	1.63	
Chronic illness(es)	No	8.56	1.72	t=3.6
	Yes	8.94	1.51	p<.001
Drug insurance plan	Public	8.84	1.60	t=1.82
	Private	8.62	1.69	p<.10
Family physician	Yes	8.84	1.54	t=3.8
	No	8.28	1.99	P<.001
Primary reason for the consultation	Drug	8.91	1.48	t=3.6
	Health problem	8.50	1.74	p<.001
ns = test was not significant				

Table 7. Satisfaction with the consultations provided by pharmacists

Conclusions

The data collected in this population-based survey highlight the central role played by community pharmacists with the population of Quebec. There are many and varied reasons for consulting a pharmacist, including drugs, prescriptions, health problems and conditions, and other products available in pharmacies. Our results attest to a very high level of satisfaction among the adult Quebec population with the consultations provided by pharmacists. It is worth noting that 46% of the sample consulted a pharmacist twice or even more often during the period covered by the survey. Furthermore, 38% of the patients who consulted a pharmacist believe that the consultation spared them a visit to a walk-in clinic or an emergency room, and 23% believe that it spared them a consultation with a family physician. Among the patients who consulted a pharmacist, 85% had a family physician, but whether or not a respondent had a family physician was not associated with more or fewer consultations. In addition, even though 22% of respondents had tried to reach another health professional before visiting the pharmacy, and 86% had managed to speak to that professional, they nevertheless contacted the pharmacist on the same subject. So pharmacists have a place that is not a substitute for the space occupied by family physicians or other health professionals. Rather it would appear that pharmacists provide added value, and it would be interesting to qualify this added value through a more thorough investigation of the path that patients take through the health system. Future studies will also be able to quantify the savings associated with the reduced consumption of health services observed in this survey, as well as the costs avoided in terms of reduced absenteeism from work.

Objectives

The objectives of the second part of the study were to: (1) document the nature and frequency of consultations initiated by patients in Quebec community pharmacies, (2) characterize the patients' experience with these consultations, (3) measure the impacts of these consultations on the patients' consumption of health services and satisfaction, and (4) estimate the health system costs that were avoided through these consultations. To attain these objectives, a mobile app was developed by Carré Technologies Inc. This app, known as the AQPP app, was used to collect data in real time from a sample of community pharmacies.

The content of the mobile app was developed by AQPP management in collaboration with the members of the research team and some volunteer pharmacists. To this end, a logic tree was developed in order to ensure that detailed and well-targeted information would be collected and to encourage integration of the app into the daily flow of activities in a pharmacy (see Appendix III).

Once a patient consultation was complete, the information was entered into the mobile app as follows:

1. First the pharmacist had to indicate the principal recommendation made to the patient during the consultation, as well as the type of drug involved (prescription or nonprescription), as applicable. The recommendations could be about pharmacotherapy or could provide some other type of consultation.
2. The pharmacist then had to enter detailed information on this principal recommendation:
 - a. For recommendations related to pharmacotherapy, the pharmacist had to indicate why the recommendation was made (e.g. the dosage of a drug was too high, there were adverse effects), followed by the action taken (e.g. the prescriber was contacted);
 - b. For recommendations related to some other type of consultation, the pharmacist had to indicate the nature of this recommendation (e.g. directing the client to another health resource, providing information on a natural health product).
3. The pharmacist then needed to indicate his or her perception of the consultation's impacts on health service consumption (e.g. a visit to an emergency room was avoided, a medical visit was avoided).
4. The pharmacist could also enter a second recommendation, as required (secondary recommendation).

The AQPP's management was responsible for validating the content of the mobile app and for its deployment in participating pharmacies, in collaboration with CEFRIO, Carré Technologies Inc. and the members of the research team.

Methodology

Recruitment and profile of the participating pharmacies

Recruitment of the community pharmacies was handled jointly by the AQPP and the research team. First a call for applications was sent out to all members of the association in June 2017. This produced a list of 62 pharmacies that were interested in participating. The pharmacist-owner of each pharmacy that expressed interest was then asked to provide some general information on the pharmacy (e.g. region, average volume of prescriptions per day, number of full-time and part-time pharmacists, banner, whether or not the pharmacy was near a medical clinic). This information allowed the research team to select a sample of pharmacies with a varied range of characteristics. Then, in early July 2017, pharmacies were informed of whether or not they had been selected to take part in the study. In order to participate in the study, all the pharmacists practising in the pharmacy had to formally commit to use the mobile app over a four-week period. Table 8 presents a profile of the 19 pharmacies that participated in this study.

Data collection

The data was collected from October 16 to December 15, 2017. As presented in Figure 1, this period was broken down into three parts. The process began when a patient asked to meet with a pharmacist, or to speak to a pharmacist on the telephone, for any type of advice or information. Once the consultation was over, the pharmacist had to enter in the mobile app a certain amount of information on the recommendation(s) made to the patient. For each consultation entered in the mobile app, a record was automatically generated with the following information:

- A unique identifier for the consultation
- An identifier for the pharmacy
- An identifier for the pharmacist
- The start and end time of the consultation

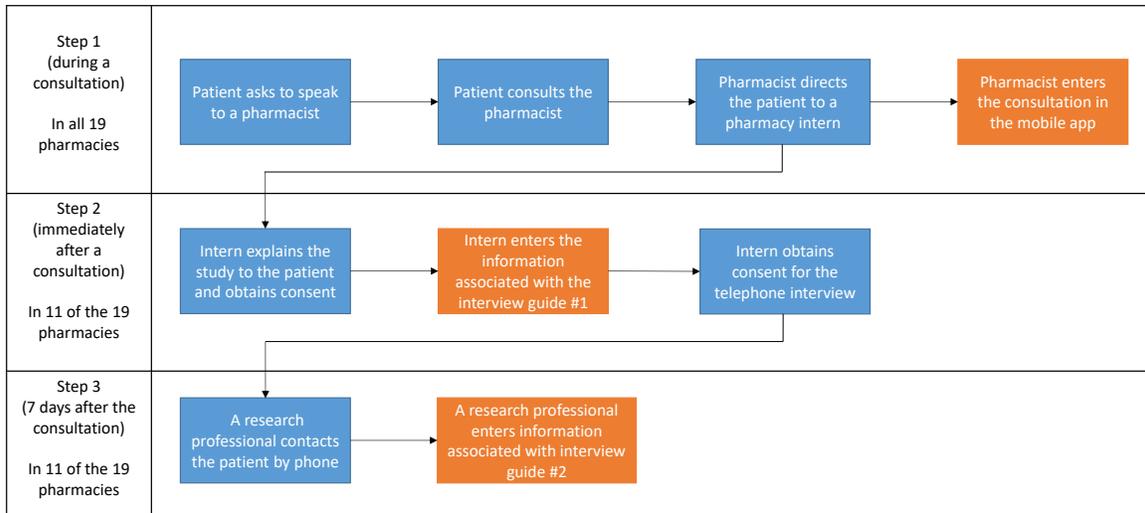


Figure 1. Overview of the data collection process

A total of 7,996 consultations were entered in the mobile app by the 95 pharmacists who had agreed to participate in the study. The data entry period lasted four consecutive weeks in each of the pharmacies.

Once the consultation with the patient was complete, the pharmacist decided whether or not to ask the patient to participate in the next steps of the study. To participate, patients had to be 18 years of age or older and could not be suffering from a cognitive disorder. If a patient agreed to participate, he or she had to meet with a pharmacy intern who explained the study’s objectives and how it would be conducted, obtained the patient’s consent to participate in the study, and collected the data.

This study required the participation of pharmacy students from Université de Montréal and Université Laval. For this project, a total of 11 fourth-year students completed internships lasting three to four weeks (a commitment of four days per week). The members of the research team assigned the interns to the participating pharmacies. The interns received two hours of training so that they would understand the objectives of the study, the importance of their role and the tasks required of them. This training was given by one of the members of the research team.

	Banner	Region	Number of pharmacists trained	Volume of prescriptions[†]	Medical clinic nearby	Presence of an intern in the pharmacy[‡]
A	Jean Coutu	Chaudière Appalaches	8	High	No	Yes
B	Brunet	Capitale Nationale	9	High	Yes	Yes
C	Pharmaprix	Mauricie	7	High	No	Yes
D	Proximed	Saguenay Lac St Jean	3	Medium	Yes	No
E	Familiprix	Saguenay Lac St Jean	5	High	No	Yes
F	Uniprix	Montreal	11	High	No	No
G	Brunet	Abitibi Témiscamingue	7	High	No	No
H	Walmart Pharmacy	Montreal	5	Low	No	Yes
I	Pharmaprix	Montreal	5	Medium	Yes	Yes
J	Proxim	Laurentides	3	Low	No	No
K	Brunet	Outaouais	2	Medium	No	No
L	Centre Santé	Montreal	4	Low	No	Yes
M	Uniprix clinique	Montreal	2	Low	No	No
N	Uniprix	Montreal	2	Medium	Yes	Yes
O	Brunet clinic	Laval	6	Medium	Yes	Yes
P	Pharmaprix	Montreal	7	High	Yes	Yes
Q	Jean Coutu	Montérégie	3	Medium	No	Yes
R	Pharmaprix	Lanaudière	7	High	No	Yes
S	Jean Coutu	Centre du Québec	7	High	Yes	No

[†] Low: Less than 150 prescriptions per day. Medium: 150 to 500 prescriptions per day. High: Over 500 prescriptions per day.

[‡] One of the 11 interns was assigned to two pharmacies that were located near each other.

Table 8. Profile of the participating pharmacies

Once written consent had been obtained from the patient, the intern collected the data using an interview guide (see Appendix IV). The signed consent forms were temporarily kept by each intern. Once the data collection was complete in all the pharmacies, one of the researchers collected all the signed forms and placed them in a secure place. The information collected during the patient interviews included:

- Each respondent's sex, age category, occupation and language spoken at home,
- The reason for the consultation (health problem, drug, other),
- The person the consultation was for (the patient himself or herself, a child, a close relative),
- Use of prescription drugs (by the person the consultation was for),
- Any diagnosis of chronic illness(es) (in the person the consultation was for),
- Whether or not the person the consultation was for had a family physician,
- Whether or not an attempt had been made to consult with another health professional before coming in to the pharmacy.

Figure 2 indicates that 900 of the 4,046 patients (22%) who sought advice from a pharmacist in person (in pharmacies with an intern) participated in the second phase of data collection. This represents a very high participation rate for this type of study. Most of the interviewed patients had consulted the pharmacist for themselves (80%), while the others had consulted for their child (15%) or for a close relative (5%).

Table 9 presents a profile of the 900 patients interviewed. Most of them were women (67%) and over one quarter of them were 65 years of age or older (27%). Most of the participants (53%) were active in the labour market. Close to 8 out of 10 participants had a family physician at the time of the interview. Approximately half of the participants did not have a chronic illness, while 1 in 4 had one chronic illness and 1 in 5 had two or more chronic illnesses.

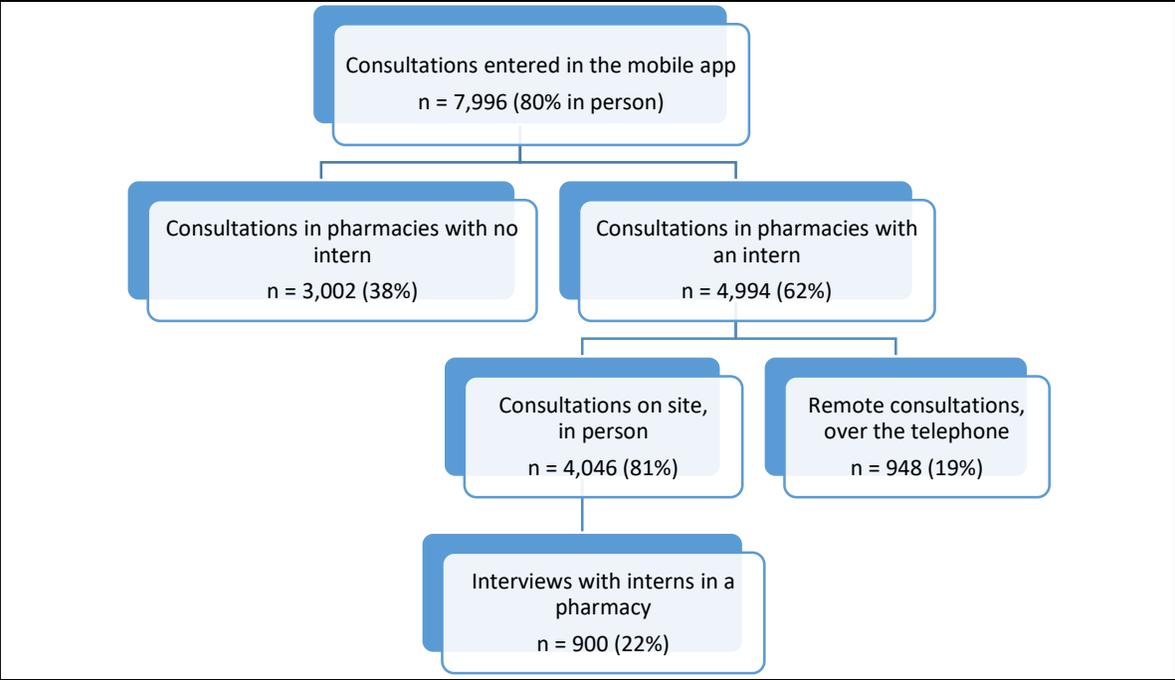


Figure 2. Number and percentage of consultations (Step 1) and interviews carried out in a pharmacy (Step 2)

		Percentage (%)	Number of participants
Sex	Women	67%	607
	Men	33%	293
Language spoken at home	French	84%	752
	English	6%	51
	No response	11%	97
Age	18 - 24 years	8%	74
	25 - 34 years	19%	169
	35 - 44 years	18%	160
	45 - 54 years	10%	90
	55 - 64 years	13%	116
	65 years or older	27%	241
	No response	6%	50
Principal occupation	Employed	53%	475
	Retired	27%	247
	Student	8%	69
	At home or seeking employment	7%	59
	Other	2%	18
	No response	4%	32
Family physician	Yes	78%	698
	No	19%	170
	No response	4%	32
Chronic illness	No	51%	461
	Yes, one	26%	232
	Yes, more than one	19%	174
	No response	4%	33

Table 9. Profile of the participants in Step 2 (n=900)

At the end of the patient interview, the pharmacy intern asked if the patient would agree to be contacted by a member of the research team by telephone within the next few days, to follow up on the consultation with the pharmacist. If written consent was obtained from the patient, the patient was contacted by a research professional seven days after the consultation. During this telephone interview, the following data were collected using a second interview guide (see Appendix V):

- What the consultation with the pharmacist allowed the patient to avoid (e.g. a visit to the emergency room, a visit to a walk-in clinic, a call to the Info-Santé 811 line),
- The recommendation(s) made by the pharmacist (e.g. a visit to the emergency room, an appointment with one's family physician, a call the Info-Santé 811 line),
- Whether the patient follow the pharmacist's recommendation(s),
- The perceived impacts associated with the consultation (e.g. reduced level of anxiety, better quality of life, faster recovery),
- The general level of satisfaction associated with the consultation with the pharmacist.

As shown in Figure 3, 774 of the 900 participants (86%) agreed to be contacted by telephone. A research professional was able to contact 607 individuals in this group (78%) before the end of the data collection period.

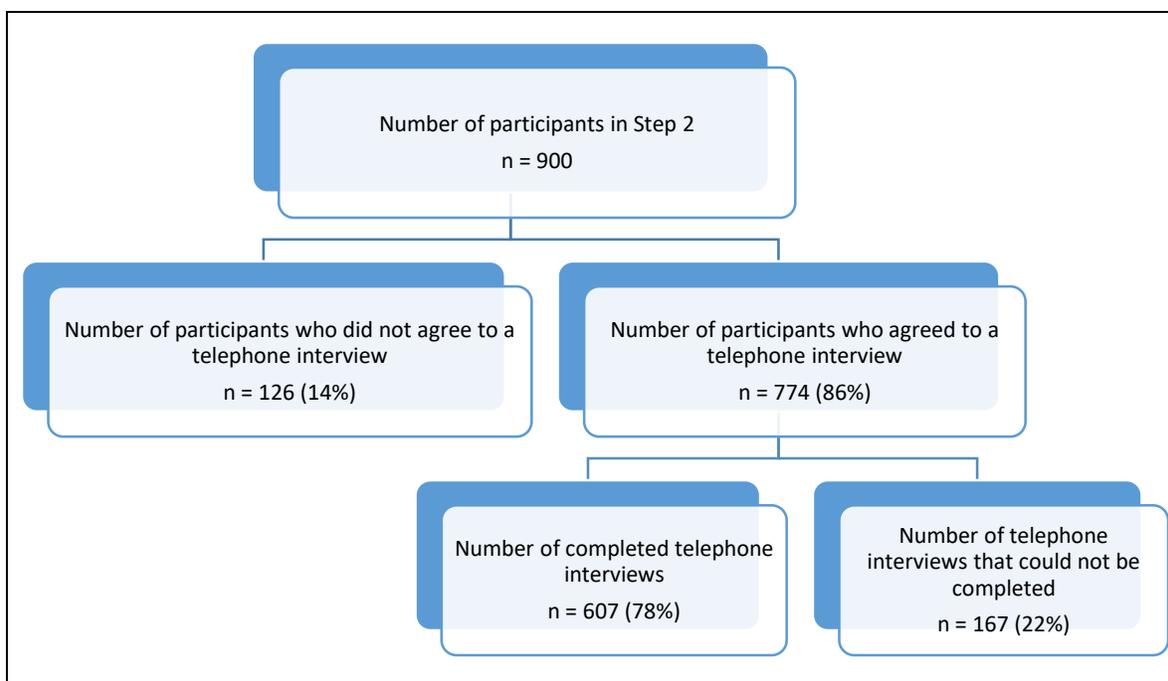


Figure 3. Number and percentage of post-consultation telephone interviews (Step 3)

Table 10 summarizes the study’s data collection process.

Step	Data collected	Data collection tools	Data collected – by whom and when
1	Use of a mobile app	Mobile app	Automatically generated by the mobile app
	Characteristics of the consultation		Information entered directly in the mobile app by the pharmacist following the consultation with the patient
2	Characteristics of the patient and the consultation	Interview Guide #1	Information entered by the pharmacy intern in an Excel file immediately after the consultation
3	Impacts and level of satisfaction associated with the consultation	Interview Guide #2	Information entered in an Excel file by a research professional one week after the consultation in a pharmacy

Table 10. Summary of the data collection process

Results

This section consists of three subsections, one for each of the three major objectives of Part 2 of the study. First we present data related to the nature and frequency of the consultations initiated by the patients. Then we document the perceived impacts of the consultations on the consumption of health services and certain other aspects, including patient satisfaction. Lastly, we estimate the health system costs that were avoided through these consultations.

Nature and frequency of the consultations initiated by patients

The mobile app was used by the 95 pharmacists-users² to capture a total of 7,996 consultations during the data collection period. Entering a consultation in the mobile app took 46 seconds, on average.³ This represents an average of 17 consultations entered per pharmacy per day, and 7 consultations entered per pharmacist per day (see Table 11). It is also interesting to note that the number of consultations entered in the mobile app each day is positively and significantly correlated with the proximity of a medical clinic⁴ ($t = 18.16$; $p < 0.001$), and with the volume of prescriptions filled at the pharmacy ($r_s = 0.62$; $p < 0.001$).

Concerning the volume of prescriptions, it should be noted that the average number of consultations entered each day in a pharmacy was 26.1 (standard distribution of 7.8) in the high-flow pharmacies, 8.5 (standard distribution of 5.8) in the medium-flow pharmacies and 8.8 (standard distribution of 3.0) in the low-flow pharmacies. This result suggests that the number of consultations initiated by patients depends on other factors than a pharmacy's volume of prescriptions, such as the type of practice at the pharmacy. For example, a pharmacy that prepares magistral may have a high volume of prescriptions but few patients presenting for consultations. However, since no data was available on the type of practice at each pharmacy, our analyses took into consideration only the volume of self-reported prescriptions. In addition, changes in the average number of consultations entered daily per pharmacy and per pharmacist are shown in Appendix VI. Our data shows that the volume of consultations entered varies over time and from one pharmacy to the next.

² This figure may underestimate the number of pharmacists who actually used the mobile app, since the pharmacists in some pharmacies shared a single user account.

³ We excluded the 52 consultations for which data capture took more than 30 minutes. These long periods may well be due to an interruption in the use of the app rather than the actual time of the consultation.

⁴ Even though the proximity of a clinic is associated with a greater *volume* of consultations entered per day, no relationship was found regarding the *nature* of the consultation as the reason for patient consultations ($t = 0.27$; $p = 0.78$) and the principal recommendation arising from the consultations ($t = 1.01$; $p = 0.30$).

Pharmacy	Total consultations entered	Days of active use [†]	Average number of consultations entered per <u>pharmacist</u> , per active day [†] (standard deviation)		Average number of consultations entered per <u>pharmacy</u> , per active day [†] (standard deviation)		Number of patients interviewed	Number of patients followed up by telephone
A	652	26	6	(2.4)	25	(8.3)	119	87
B	865	26	7	(1.9)	33	(9.6)	89	63
C	863	26	13	(6.4)	33	(9.2)	104	78
D	32	15	2	(0.3)	2	(1.7)	0	0
E	247	21	4	(0.6)	12	(5.9)	58	34
F	750	26	6	(2.3)	29	(11.9)	0	0
G	542	25	7	(4.4)	22	(9.4)	0	0
H	277	26	11	(0)	11	(4.3)	64	35
I	303	22	5	(3)	14	(4.8)	49	22
J	121	20	5	(0.8)	6	(3.5)	0	0
K	170	23	7	(1.8)	7	(3.5)	0	0
L	300	25	6	(1.4)	12	(6.1)	0	0
M	130	20	5	(0.4)	7	(3.9)	0	0
N	254	25	7	(2.8)	10	(5.8)	67	52
O	36	18	1	(0.6)	2	(1.3)	16	6
P	523	25	8	(1.9)	21	(8.7)	145	93
Q	360	23	9	(0.2)	16	(5.6)	104	66
R	614	26	9	(2.9)	24	(10.7)	76	64
S	957	26	9	(2.6)	37	(11.4)	0	0
Average for all the consultations	421	23	7	(1.9)	17	(6.6)	50	33
Average for in-person consultations only	335	23	6	(0.8)	13	(5.3)	50	N/A
Total	7,996	62	7,996	-	7,996	-	891 [‡]	600 [‡]

[†] An active day was a day during which at least one consultation was entered in the mobile app.

[‡] Although 900 patients participated in face-to-face interviews with interns in their pharmacy, we were only able to associate 891 of them with a pharmacy. Nine respondents were removed from the sample because the consultation number transcribed during the interview with the intern did not match the consultation number generated by the mobile app, thereby preventing a match between the patient and the pharmacy. Among these 9 respondents who were not matched with a pharmacy, 7 completed the telephone follow-up, thereby reducing the number of observations from 607 to the 600 shown in the last column.

Table 11. Summary of mobile app use in each of the participating pharmacies

Figure 4 indicates that 44% of the consultations (3,477/7,996) led to a recommendation related to pharmacotherapy (to add, adjust or discontinue a drug, whether prescribed or not), while 56% (4,519/7,996) led to another type of recommendation, such as providing the patient with information on the action to be taken or on a nonprescription drug. Note that 20% (1,678/7,996) of the consultations led to a second recommendation.

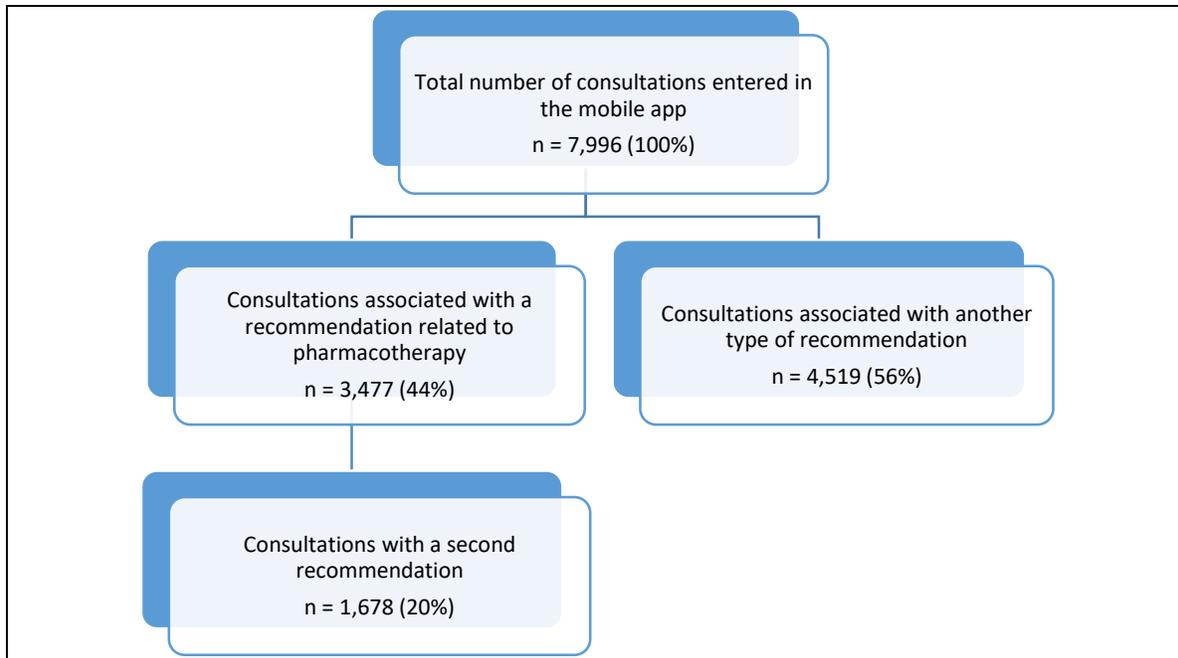


Figure 4. Distribution of consultations entered into the mobile app per principal recommendation

Recommendations related to pharmacotherapy

Table 12 presents detailed information on the 3,477 recommendations related to pharmacotherapy. The great majority of these recommendations (80%) concerned the addition of a new drug that, in most cases, was related to a non-prescribed drug. In addition, 15% of the recommendations concerned an adjustment to an existing drug, while 5% dealt with the discontinuance of an existing drug (mainly related to an adverse effect).

According to the data entered in the mobile app, only 8% of the 3,477 recommendations related to pharmacotherapy required contacting the prescribing physician. Among the pharmacists who reported having contacted prescribers (n=271), most recommended an adjustment to a drug or the addition of a new drug.

Recommendation "Take one or more new drugs" (N=2746)	Type of drug <ul style="list-style-type: none"> • Prescription: n = 467 (17%) • Non-prescription: n = 2279 (83%) Reason for the recommendation <ul style="list-style-type: none"> • The patient presents an indication for a drug but has not received one: n = 2457 (89%) • The patient needs a different drug: n = 289 (11%) Action taken by the pharmacist <ul style="list-style-type: none"> • I contacted the prescriber to recommend that the drug be added: n = 104 (4%) • I prescribed the drug (Bill 41): n = 227 (8%) • I recommended to the patient that the drug be added: n = 2415 (88%)
Recommendation "Adjust one or more existing drugs" (N=531)	Type of drug <ul style="list-style-type: none"> • Prescription: n = 446 (84%) • Non-prescription: n = 85 (16%) Reason for the recommendation <ul style="list-style-type: none"> • The patient is taking too low a dose: n = 193 (36%) • The patient is taking too high a dose: n = 125 (24%) • Other change (form, posology, etc.): n = 213 (40%) Action taken by the pharmacist <ul style="list-style-type: none"> • I contacted the prescriber to recommend an adjustment to the drug: n = 115 (22%) • I prescribed the adjustment to the drug (Bill 41): n = 55 (10%) • I recommended an adjustment to the drug to the patient: n = 361 (68%)
Recommendation "Discontinue one or more existing drugs" (N=200)	Type of drug <ul style="list-style-type: none"> • Prescription: n = 160 (80%) • Non-prescription: n = 40 (20%) Reason for the recommendation <ul style="list-style-type: none"> • The patient presents with adverse effects: n = 118 (59%) • The patient is receiving a drug that is not indicated or ineffective: n = 82 (41%) Action taken by the pharmacist <ul style="list-style-type: none"> • I contacted the prescriber to recommend discontinuance of the drug: n = 52 (26%) • I recommended discontinuance of the drug to the patient: n = 148 (74%)

Table 12. Characteristics of the consultations entered in the app by pharmacists whose principal recommendation concerned an adjustment to pharmacotherapy

Other types of recommendations

In the text that follows we describe consultations that included another type of recommendation, either in terms of the principal recommendation (4,519 consultations) or a second recommendation (1,678 consultations).

First we present the types of recommendations made by the pharmacist during these consultations (see Table 13). The objective of these consultations was, above all, to provide information on over-the-counter drugs (43%), non-pharmacological measures (34%) and prescribed drugs (23%). It should be noted that 13% of these consultations dealt with a type of information that was not included among the possible selections in the app. It is interesting to note that there were relatively few consultations (4%) about insurance or the new invoicing, as the data collection period coincided with a period when certain pharmacies were implementing a new detailed invoice.

Information/consultation about...	Percentage⁵	Number of observations
A non-prescription drug	43%	2,639
A non-pharmacological measure	34%	2,079
A prescription drug	23%	1,439
Another type of consultation	17%	1,039
An NHP or vitamin	8%	480
Another type of product (floor)	8%	480
A technical subject (insurance, price, etc.)	4%	240
Not taking a contraindicated drug	3%	160
None of the above	13%	789

Table 13. Other types of recommendations concerning the information (data collected through the app and entered by the pharmacists) (n = 6 197)

Lastly, for 14% of the 7,996 consultations, the pharmacist recommended that the patient consult another professional resource (see Table 14). The walk-in clinic and the family physician were the resources recommended most often (5% and 4%, respectively) by the pharmacists, while the emergency room was only recommended in 2% of the consultations.

Type of resource/professional	Percentage	Number of consultations
Walk-in clinic	5%	362
Family physician	4%	348
Emergency room	2%	150
Other health professional	2%	179
Medical specialist	1%	84
Info-santé 811 line	0%	15
No resource was referred to the patient [†]	86%	6,858

[†] This percentage includes consultations whose principal recommendation, related to an adjustment to pharmacotherapy, was not accompanied by a second recommendation (n = 1,799).

Table 14. Pharmacists' recommendations to consult another professional resource in the health network (n=7,996)

Bill 41 was used in 3.5% (282/7,996) of all the consultations entered in the mobile app (see Table 15). More use was made of Bill 41 when the patient needed a new drug (80%). This illustrates the extent to which community pharmacists are engaged in activities that go beyond those covered by Bill 41.

⁵ More than one type of recommendation could be selected by the pharmacist as a way to more accurately portray the subject of a single consultation. This is why the sum of percentages presented in Table 13 is greater than 100% and the sum of observations is greater than 6,197.

Patient's behaviour before going to consult the pharmacist

Of the 900 patients who participated in Step 2 of the study, close to one out of five (19%) had tried to consult another health professional for the same problem before going to meet with the community pharmacist (see Table 16). It should be noted that in the vast majority of these cases (82%), this approach had worked (78% had consulted a family physician and 91% had reached the Info-santé 811 line). Lastly, it is important to point out that no relationship was found between the fact that a patient had tried to consult with another professional before meeting with a pharmacist and the pharmacy's location near a medical clinic ($t=0.41$; $p=0.34$).

Variable		Percentage	Number of patients
Person for whom the consultation was made	Patient himself or herself	83%	744
	Child of the patient	14%	124
	Close relative of the patient	4%	32
Age of the child for whom the consultation was made	Less than 1 year old	3%	27
	1 - 5 years	5%	43
	6 - 10 years	3%	28
	11 - 15 years	1%	11
	16 years or older	1%	10
Prior attempt to see another professional	No	77%	694
	Yes	19%	169
	Prefer not to answer	4%	37
Professional contacted during the attempt (n=169)	Family physician	40%	68
	Other	20%	34
	Member of the clinical team that regularly follows the patient	13%	22
	Physician/nurse at a walk-in clinic	11%	18
	Physician at a hospital emergency room	9%	15
	Nurse on the Info-santé 811 line	7%	11
	Prefer not to answer	1%	1
Attempt succeeded	Yes	82%	138
	No	17%	28
	Prefer not to answer	2%	3

Table 16. Characteristics of the consultations as perceived by patients (n=900)

Perceived impacts and behaviour of patients after the consultation

The second objective of this study was to collect patients' perceptions of the impacts associated with their consultations with community pharmacists. As mentioned above, the results presented below concern only the data collected in Part 3 of the study (n = 607).

First, the results presented in Table 17 indicate that for 77% (466/607) of the respondents, the consultation with a community pharmacist allowed them to avoid consuming at least one

additional resource. More specifically, 49% of respondents believed that the consultation allowed them to avoid a call to the Info-santé 811 line, 44% a visit to the office of their family physician, 41% a visit to a walk-in clinic, 30% a consultation with another health professional, 17% a visit to a hospital emergency room, and 5% a meeting with a member of the clinical team.

<i>The consultation with the pharmacist allowed the patient to avoid...</i>	Percentage⁶	Number of patients⁶
A call to Info-santé 811	49%	295
A visit to the office of my family physician	44%	269
A visit to a walk-in medical clinic	41%	250
A consultation with another health professional	30%	184
A visit to a hospital emergency room	17%	104
A meeting with a member of the clinical team that is following me	5%	30
None of the above	23%	141

Table 17. Perceived impacts of the consultations with pharmacists on resource consumption (n=607)

In the week following their consultation with a pharmacist, 15% (92/607) of the patients stated that they had used the services of another professional resource. Of this group, 43% (40/92) went to see this resource on the pharmacist's recommendation. Among other things, it is noteworthy that 5% of the patients said that they had consulted their family physician, and 1% said that they had been to a hospital emergency room (see Table 18).

<i>Following my consultation with the pharmacist...</i>	Percentage⁶	Number of patients⁶
I saw a physician or a nurse in a walk-in medical clinic	5%	31
I saw my family physician	5%	30
I saw another health professional	5%	30
I went to a hospital emergency room	1%	9
I called the Info-santé 811 line	< 1%	1
None of the above	85%	515

Table 18. Post-consultation resource consumption behaviour (n=607)

Besides the impacts on consumption of health services, the data in Table 19 indicate that a majority of patients consider their consultation with a pharmacist had resulted in a lower level of anxiety (89%), an improved quality of life (67%), a faster recovery (61%) or the prevention of a deterioration in health status (58%). Approximately one quarter of respondents felt that the consultation allowed them to avoid missing work or one or more classes. Only 5% of respondents believed that the consultation that they had with a pharmacist gave them none of these benefits.

⁶ Since the respondents could choose more than one resource (avoided or consulted), the sums of the percentages presented in Tables 17 and 18 are greater than 100%, and the sum of patients is greater than 607.

<i>The consultation with the pharmacist led to...</i>	Percentage⁷	Number of patients
A lower level of anxiety	89%	539
An improved quality of life	67%	407
A faster recovery	61%	369
The prevention of a deterioration in my health status	58%	352
Avoid missing work or my classes	26%	155
None of the above	5%	32

Table 19. Other perceived benefits associated with the consultations with pharmacists (n=607)

Lastly, on a scale of one to five, the respondents assessed their level of satisfaction with their consultation with a community pharmacist. The great majority of them (93%) indicated a high or very high level of satisfaction with the consultation (see Table 20). These results are similar to the results from a recent survey of 1,000 Quebecers, which found an average rate of satisfaction of 8.8 on a scale of 10 (see Part 1 of the study).

Level of satisfaction	Percentage	Number of respondents
Very high	61%	368
High	32%	196
Moderate	7%	40
Low or very low	< 1%	3

Table 20. Patients' satisfaction with community pharmacists (n = 607)

Impact of the consultations

The third and last objective of this study was to provide an estimate of the costs avoided in the health system due to the consultations provided by the community pharmacists. First, it is worth noting that this estimate is based on the behaviour of the 607 patients who had participated in Step 3 of the study; according to what they reported one week after the consultation with the pharmacist. More specifically, the patients had to indicate whether they had consulted another professional resource following their consultation with a pharmacist, and whether the consultation with the pharmacist had allowed them to avoid consulting another professional resource.

Our estimates are based on several assumptions that we consider conservative. First, even if over half of the respondents (54%) indicated that their consultation with a pharmacist had allowed them to avoid consulting more than one type of resource, we considered only one consultation avoided per patient, in the following order: a visit to an emergency room, a visit to

⁷ Since the respondents could select more than one benefit, the sum of the percentages presented in Table 19 is greater than 100% and the sum of patients is greater than 607.

a walk-in clinic, a visit to the family physician and a call to the Info-santé 811 line. For example, if a patient had answered that he had called the Info-santé 811 line and been to a walk-in clinic, we took only the visit to the walk-in clinic as the resource avoided.

Then, in order to associate a monetary value with each of the resources avoided, we applied the most conservative rate, since we did not have the necessary data to select the applicable rate based on the characteristics of each situation. First, to estimate the costs avoided for visits to family physicians, we considered that these visits: (1) were follow-up visits (rather than initial case management visits, which are more involved), (2) concerned patients who were not vulnerable and under 80 years of age, and (3) were carried out by physicians with 500 patients or less. In addition, for avoided visits to walk-in clinics, we assumed that they were minor, occasional visits (which are less involved than complex occasional visits) by patients who were not vulnerable and were under 80 years of age, and that they were carried out by physicians with 500 patients or less. Lastly, with the exception of physicians' fees, no other costs were compiled for dispensation for these services (e.g. the fees of other professionals). Table 21 presents the unit cost associated with each of the health services considered in this study.

Furthermore, it should be noted that we do not know the cost of the pharmacist's consultation, which prevented us from comparing the cost of the pharmacy consultations with the costs avoided by following this consultation.

As indicated in Table 22, for 100 face-to-face consultations with a pharmacist, 17.1% of the patients stated that they did not need to go to a hospital emergency room, 28.7% to a walk-in clinic, 15.3% to meet with their family physician, and 13.3% to call the Info-santé 811 line. Hence 74% of all the patients interviewed stated that the consultation with a pharmacist had allowed them to avoid consuming at least one other resource. The costs associated with the avoided consumption of additional resources, following a consultation with a pharmacist, are estimated at \$707.04 per pharmacist per day. This amount is based on the conservative assumption that only 13 consultations were made in person per day in the same pharmacy (based on the data collected in Step 1).

Type of resource / professional	Service	Unit cost
Consultation with a pharmacist	Face-to-face consultation with a pharmacist	Unknown
Visit to an emergency room	Ambulatory services, emergency care	\$231.83 ¹
Visit to a walk-in clinic	Minor, occasional visit (non-vulnerable patient, 80 years of age or younger, office with 500 patients or less)	\$19.50 ²
Visit with the family physician	Follow-up visit with appointment (non-vulnerable patient, 80 years of age or younger, office with 500 patients or less)	\$41.00 ³
Call to the Info-santé 811 line	Telephone consulting service	\$21.62 ⁴

¹ Appendix 1 - Circular 2017-021 (03.01.42.19) – Invoicing external services for responsibilities other than MSSS responsibilities. MSSS. (2017). p.2

² Quick reference guide on billing. Santé Inc. (2017). P.32 code 15765

³ Quick reference guide on billing. Santé Inc. (2017). P.32 code 15803

⁴ Annual financial reports for health facilities 2016-2017 – main activities. MSSS. (2017). p. 650. Calculation by the authors: average net unit cost at 15 Quebec integrated university health and social service centres (CIUSSS), as at March 31, 2017.

Table 21. Unit cost of health care services

	(A) Unit cost for the health care system	(B) Percentage of consultations that allowed the respondent to avoid visits/services ¹	(C) Average number of visits/services avoided, per pharmacy per day (B * 13 ²)	(D) Costs avoided (per pharmacy per day) (A * C)
One visit to an emergency room	\$231.83	17.1%	2.22	\$515.36
One visit to a walk-in clinic	\$19.50	28.7%	3.73	\$72.75
One visit with a family physician	\$41.00	15.3%	1.99	\$81.55
One call to the Info-santé 811 line	\$21.62	13.3%	1.73	\$37.38
			Total	707,04 \$³

¹ Data from Step 3.

² Data from Step 1 (average number of consultations in person per day in a pharmacy).

³ Does not take into account costs related to consultations carried out by the pharmacists themselves.

Table 22. Costs avoided related to consultations with community pharmacists

Methodological limitations

This second part of the study is based on an impressive amount of data collected from a broad sample of patients recruited in 19 pharmacies located in various Quebec regions. As far as we know, this is the first Canadian study to provide data on the nature, frequency and perceived impacts of consultations in community pharmacies initiated by patients. The results presented in this report must nevertheless be interpreted with due consideration for certain

methodological limitations. First, several confounding variables (influencing the consumption of health services) could not be taken into consideration because they were unavailable. This includes patient characteristics (e.g. severity of illness, socio-economic status) and characteristics of the regions where the pharmacies are located (e.g. resource availability and accessibility). Furthermore, even if we endeavoured to have a diversified sample of pharmacies (in terms of banners, regions, etc.), we cannot be sure that the sample represented the entire Quebec population, given the available data. In addition, the short observation period in each of the pharmacies—four consecutive weeks—did not allow us to consider the seasonal variances that may be associated with the types of consultations initiated by patients. It is also possible that the consultations collected in the app do not exactly represent the actual consultations carried out in the pharmacies (e.g. non-entered consultations, consultations classified in the wrong category), or they concerned a consultation that was not eligible according to the inclusion criteria. In order to limit the impact of such problems, the participating pharmacists and students were given exhaustive training and they were closely monitored. The results on avoided consumption of resources and related costs were based solely on the word of patients, and for pragmatic reasons of time and money, this data could not be validated in the RAMQ database. As mentioned above, the costs associated with consultations in a pharmacy (e.g. professional fees) could not be taken into consideration in our estimate of costs avoided since the data was not available. Lastly, certain patients said that they had consumed various health services following their consultation with a pharmacist. Our calculations did not take into account the costs associated with this post-consultation consumption of services.

Conclusions

This second part of our study has developed a detailed portrait of the consultations provided by community pharmacists. Two sources of complementary data – pharmacists and patients – were used to attain our research objectives. Over a period of four consecutive weeks, close to 100 pharmacists in 19 pharmacies located in various regions of Quebec entered data in a mobile app developed for the AQPP. This data detailed consultations initiated by their patients. Ultimately, data on 7,996 consultations were captured using the mobile app.

Overall, 44% of the consultations issued by the pharmacists concerned pharmacotherapy (30% on nonprescription drugs and 14% on prescription drugs). The other consultations consisted of providing relevant advice on natural health products, non-pharmacological measures or the appropriate action to take. Bill 41 was used in only 3.5% of all the 7,996 consultations analyzed in this study. Our results also indicate that pharmacists rarely make a recommendation to their patients to consult another professional resource in the health system (14% of the pharmacists).

Among the 900 patients recruited in the pharmacies, 74% reported that they had consulted a pharmacist for a health problem, and 18% for consultations related to a drug or prescription. Only 8% of respondents mentioned a reason other than a health problem or a drug. The most often reported reason for consulting was pain (14%). Most of the patients (77%) had not tried to consult another resource before going to consult the pharmacist (for the same problem). Among those who did try, 82% succeeded, but they nevertheless felt the need to consult a pharmacist afterward.

Concerning the consumption of health services, many patients interviewed in Step 3 of the data collection (n = 607) indicated that consulting a pharmacist in person allowed them to: avoid calling the Info-Santé 811 line (49%), make an appointment with their family physician (44%), go to a walk-in clinic (41%), consult another type of health professional (30%), or go to a hospital emergency room (17%). The health system costs that were avoided represent \$707 per community pharmacy per business day.

Beyond the economic benefits, it is important to add that the great majority of patients (89%) indicated that their consultation with a pharmacist had resulted in a lower level of anxiety, and more than a quarter (26%) said that it kept them from missing work or school. Overall, 93% of respondents reported that they were very satisfied or satisfied with their meeting with the pharmacist.

In conclusion, pharmacists appear to be well equipped to manage the great majority of the consultations initiated by patients, and almost all the patients who avail themselves of the advice of pharmacists appear to be satisfied. This leads us to believe that pharmacists could participate more systematically in primary care triage, due to both their competencies and their great availability.

PART 3: QUALITATIVE SURVEY OF PHARMACISTS

The third and last part of the study reports on the experience of using the mobile app in the various pharmacies that participated in the project, and the pharmacist-owners' perceptions of the app's transferability to Quebec's community pharmacies. More specifically, the objectives of Part 3 were:

1. To describe the use experience of the community pharmacists who participated in the research project;
2. To analyze the factors that influenced this use;
3. To analyze the level of agreement between the information entered in the AQPP app by the pharmacists and the information reported by the patients;
4. To analyze the potential for transferring this app to Quebec's community pharmacies.

Methodology

Recruiting participants

Table 23 presents the characteristics of the participating pharmacies. Each pharmacy had to designate a lead pharmacist for the project who would be responsible for coordinating the use made of the app by all the pharmacists practising in his or her pharmacy. All the lead pharmacists for the project were sent an email requesting a telephone interview, to take place in the months following the project.

No	Banner	Region	Type of region [†]	Prescription volume ^{††}	Number of business hours per week	Number of pharmacists trained	Number of business days during the project
A	Jean Coutu	Chaudière Appalaches	RBUR	High	89.5	8	26
B	Brunet	Capitale Nationale	UR	High	92.0	9	26
C	Pharmaprix	Mauricie	IR	High	84.0	7	26
D	Proximed	Saguenay Lac St Jean	IR	Average	58.5	3	23
E	Familiprix	Saguenay Lac St Jean	IR	High	68.0	5	23
F	Uniprix	Montreal	UR	High	94.5	11	26
G	Brunet	Abitibi Témiscamingue	RR	High	77.0	7	26
H	Accès Santé Walmart	Montreal	UR	Low	95.0	5	26
I	Pharmaprix	Montreal	UR	Average	76.0	5	26
J	Proxim	Laurentides	RBUR	Low	73.0	3	26
K	Brunet	Outaouais	RI	Average	51.0	2	26
L	Centre Santé	Montreal	UR	Low	76.0	4	26
M	Uniprix clinique	Montreal	UR	Low	56.5	2	23
N	Uniprix	Montreal	UR	Average	78.5	2	26
O	Brunet clinique	Laval	RBUR	Average	81.0	6	26
P	Pharmaprix	Montreal	UR	High	105.0	7	26
Q	Jean Coutu	Montérégie	RBUR	Average	85.0	3	26
R	Pharmaprix	Lanaudière	RBUR	High	89.0	7	26
S	Jean Coutu	Centre du Québec	IR	High	83.0	7	26

[†]Type of region: University region (UR); Region bordering a university region (RBUR); Intermediate region (IR); Remote region (RR)

^{††}Self-reported by the pharmacists; Low: less than 150 prescriptions per day. Average: 150 to 500 prescriptions per day. High: over 500 prescriptions per day.

Table 23. Profile of the participating pharmacists

Data source and analysis

A mixed approach was used in this study. First, daily reports on use of the app were employed to perform a descriptive analysis of use. These reports included the following:

- A unique identifier for the consultation;
- An identifier for the pharmacy;
- An identifier for the pharmacist;
- The start and end times of the consultation.

The pharmacists all received training and had been instructed to use the app to capture data on all the consultations initiated by patients, in person or by telephone, and ideally in real time. A descriptive longitudinal analysis of use was performed per user, per pharmacy, for the four weeks of the project. A total of 7,996 consultations were entered in the mobile app by the 95 pharmacists who participated in the study. In 11 of the 19 participating pharmacies, patients who had requested a consultation were recruited, applying the following inclusion criteria: 18 years of age or older and not suffering from a cognitive disorder. A total of 600 of the patients who had agreed to participate could be reached by telephone in the week following the consultation for a detailed interview. These 600 consultations were then subject to a detailed analysis of the agreement between what was reported by the pharmacist and what was reported by the patient, along the following dimensions: (1) the action to be taken, or the *resource recommended* by the pharmacist, was compared to what the patient said that the pharmacist had recommended as a course of action; and (2) the impact of the consultation, or the *resource avoided* according to the pharmacist, was compared to the patient’s perception of what the consultation had allowed him or her to avoid. The level of agreement between what was reported by the patient and what was reported by the pharmacist was measured based on the four types of agreement described in Table 24.

Type of agreement	Definition
Strong agreement	The pharmacist and the patient reported the same resource, recommended or avoided
Weak agreement	The pharmacist and the patient reported a resource recommended or avoided, but did not necessarily report the same one
No agreement, Type 1	The patient reported a resource recommended or avoided, but not the pharmacist
No agreement, Type 2	The pharmacist reported a resource recommended or avoided, but not the patient

Table 24. Types of agreement between what was reported by the pharmacist and the patient for a given consultation

Following the period in which the app was used in each pharmacy, semi-directed interviews were held with the lead pharmacist for the project in each of the 19 participating pharmacies. The interview guide (presented in Appendix VII) consisted of eight open questions on the following subjects: their role as lead on the project, their use of the app and the use made by the other pharmacists of the app, their perception of the quality of the app and the obstacles to its routine use, and their perception of the app’s usefulness and its dissemination to all of Quebec’s pharmacies. The interviews were conducted in February and March 2018. All 19 interviews were conducted over the telephone, and individual consent was obtained from the participants so that the interviews could be recorded. The interviews lasted nine minutes, on average. Summary transcriptions were prepared and analyzed alongside the notes of the manager responsible for the app implementation project. For each pharmacy, a descriptive

analysis was prepared of the use experience, the factors facilitating and limiting use, and transferability. The next section presents consolidated results from these analyses.

Results

The app was deployed for a period of four consecutive weeks. The period began on a Monday and ended on a Friday for a total of 26 days in each pharmacy. The following subsection presents the use experience in each pharmacy and an analysis of the factors facilitating and limiting this use, based on the interviews. This is followed by an analysis of the app's transferability.

Use experience

Here we present a descriptive analysis of the app's use in each pharmacy based on the data on app use. This is followed by an analysis of the use experience as reported during the interviews, targeting those factors that facilitated or adversely affected regular and sustained use of the app, in order to collect data on all the consultations provided in the pharmacies.

Descriptive analysis of use

Table 25 presents the number of users per pharmacy (total number of active pharmacists), the number of days of use (active days), and frequency of use, per active day and per pharmacy. Concerning the number of users, the data shows that there was an average of five different users entering consultations per pharmacy, and that three pharmacies (K, M and N) had only two users. In Pharmacy H all the consultations were entered on the same tablet, so the number of different users was not available for this pharmacy (five pharmacists had been trained as users in this pharmacy). In pharmacies B, F, I, and R, the number of pharmacists trained as users was greater than the number of user pharmacists.

Pharmacy	During the entire study				Per day	
	Total number of active pharmacists	Total number of active days	Total number of active <i>days per pharmacist</i>		Number of consultations entered <i>per pharmacist</i>	Number of consultations entered by <i>all the pharmacists</i>
			Median	Min; Max	Average (SD)	Average (SD)
A	8	26	12	5;20	6 (2)	25 (8)
B	8	26	15	6;19	7 (2)	33 (10)
C	7	26	11	3;16	13 (6)	33 (9)
D [†]	3	15	7	3;8	2 (0)	2 (2)
E [†]	5	21	13	2;17	4 (1)	12 (6)
F	9	26	12	3;19	6 (2)	29 (12)
G	7	25	13	1;15	7 (4)	22 (9)
H [‡]	N/A	26	N/A	N/A	N/A	11 (4)
I	4	22	12	8;19	5 (3)	14 (5)
J	3	20	8	6;11	5 (1)	6 (4)
K	2	23	13	9;16	7 (2)	7 (4)
L	4	25	15	8;17	6 (1)	12 (6)
M [†]	2	20	12	9;15	5 (0)	7 (4)
N	2	25	16	13;19	7 (3)	10 (6)
O	6	18	4	1;8	1 (1)	2 (1)
P	7	25	10	4;15	8 (2)	21 (9)
Q	3	23	13	13;17	9 (0)	16 (6)
R	5	26	11	8;20	9 (3)	24 (11)
S	9	26	13	7;16	9 (3)	37 (11)
Overall (average, (SD))	5 (1)	23 (3)	12 (1)		7 (2)	17 (7)

[†] Pharmacy closed on Sundays.

[‡] It was not possible to characterize individual use by the pharmacists in this pharmacy since all the pharmacists used the same tablet.

Colour legend: < 1 standard deviation of the mean = low use; > 1 standard deviation = high use.

Table 25. Number of users and frequency of use, per pharmacist, per pharmacy and overall

The number of days during which the pharmacists entered consultations varied from 15 to 26 days per pharmacy. In seven pharmacies (A, B, C, F, H, R and S), consultations were entered on every one of their business days. In contrast, in three pharmacies (D, J and O) consultations were entered on less than 80% of their business days. It was also in these three pharmacies that the number of active days per pharmacist was the lowest, with medians of 7, 8 and 4 days, respectively. It is also noteworthy that in five pharmacies (C, D, E, F and G), certain pharmacists

were only very occasional users, entering consultations on three days or less. This suggests that these pharmacists were casual workers, i.e. they made very little use of the app. No data was available on the hours worked by each pharmacist.

Lastly, concerning the number of consultations entered, each participating pharmacist entered 7 consultations per day, on average, but with a wide range of rates between the different pharmacies. In the pharmacies with the lowest level of use (D and O), the pharmacists averaged less than 2 consultations per active day. In contrast, Pharmacy C stood out by averaging over 12 consultations per pharmacist per active day. On average, pharmacists in the same pharmacy entered a total of 17 consultations per active day. The most active were Pharmacies B, C, and S, where an average of over 30 consultations were entered per day by all their respective pharmacists.

Use experience

The telephone interviews with the 19 lead pharmacists were used to develop a general profile of the pharmacists' use experience. Combined with the data on use of the app, these interviews present a portrait of the overall use experience, including the reliability of the data captured on the consultations as well as associated factors.

➤ Overall experience

The use experience was described as generally positive, with the great majority of respondents indicating that the project went well, both for them personally and for their pharmacist colleagues. In general, users reported sustained and regular use when they were in the pharmacy, despite certain challenges related to capturing the consultations in the app in real time and, in particular, during very busy periods.

Overall, the factor with the greatest influence over sustained and regular use of the app appeared to be the users' motivation. The pharmacies where the app was used daily throughout the period of the study were those where the pharmacists were the most motivated to participate in the project. In contrast, the pharmacies where less use was made of the app (D, J and O) stood out from the others in terms of either the type of practice or the lead pharmacist's limited presence in the pharmacy. Pharmacy D was a compounding pharmacy that carries out few consultations initiated by patients, so in this case the type of practice appears to have played a significant role in use of the app. In Pharmacies J and O, the most influential factor was the absence of the pharmacist-owner, i.e. the lead pharmacist for the project, who was rarely on site during the four-week study period. This serves as a reminder of the crucial role played by a champion clinician user who can stimulate use of this type of tool.

The following subsections present a detailed analysis of the reliability of the consultations entered and of factors related to sustained use of the mobile app. Appendix VIII presents detailed information on the factors reported in each pharmacy.

- Reliability of the data on consultations entered by the pharmacists

Number

Overall, the interviews suggest that the number of consultations entered in the app paints a relatively accurate picture of the consultations provided by pharmacists in most of the participating community pharmacies. In 15 of the pharmacies, the lead pharmacists reported that approximately 80% to 90% of the consultations were entered in the app, either in real time or within a few hours of the encounter. The number of consultations entered is therefore slightly underestimated in these pharmacies. However, the pharmacists in 3 of the 19 participating pharmacies had difficulty entering their consultations, with two-thirds (N) or less than half (D and O) of their consultations reported as having been entered. In these specific pharmacies, the data entered in the app underestimate the number of consultations provided by the pharmacists. One lead pharmacist did not quantify the percentage of consultations entered, but nevertheless reported that the use closely resembled reality, although it was underestimated for the pharmacy's busy periods.

Timing of data capture

Overall, it would appear that real-time data entry was a challenge, particularly during busy periods (see below). In certain pharmacies, the data on consultations were generally entered in real time, while certain other pharmacies reported that they used memory aids or notes in order to enter the information later, and at times even after their shift had ended.

Nature and impact of the recommendation

When entering a consultation in the app, the pharmacist had to indicate the nature of the recommendation, including whether the patient had been encouraged to consult another resource, and the impact of the consultation, meaning whether the consultation had allowed the patient to avoid consulting other professional resources (e.g. a visit to a family physician or an emergency room). As explained in the previous report, we compared these data with the data collected from the 600 patients, for the recommended resources as well as for the avoided resources.

With respect to the recommended resources, strong agreement was found between the patients and the pharmacists in 384 consultations (64%) on the fact that no resource had been recommended or that they had reported the same recommended resource. The same resource was not reported (weak agreement) in only 18 consultations (3%). For 186 consultations (31%), the patient reported that the pharmacist had recommended a resource, but the pharmacist said that he or she had not recommended one. This could be linked to the fact that the pharmacist had recommended that the patient consult *only if* the problem was not resolved within a given period of time, not as a principal recommendation, and therefore this recommendation had not been entered in the app. Overall, only 2% of the consultations in which the pharmacist had entered a recommended resource were not in agreement (no agreement, Type 2), i.e. the patient did not report that a resource had been recommended.

Concerning avoided resources, there was strong agreement on 254 consultations (42%), meaning that no resource had been avoided through the consultation, or that the same resource had been avoided. There was weak agreement on 121 consultations (20%), meaning that the patient and the pharmacist reported that the consultation led to a resource being avoided, but not the same resource. In 140 consultations (23%), the patient reported an avoided resource, but not the pharmacist. Lastly, in 85 consultations (14%), the pharmacist reported an avoided resource, but not the patient. It therefore becomes apparent that certain pharmacists slightly overestimated the impacts of their consultations in 14% of the cases, but that others underestimated the impact of their consultations in 23% of cases. Detailed information on agreement is provided in Appendix IX.

➤ Factors associated with use

An analysis was performed of the factors influencing sustained and regular use by the pharmacists, taking into account the telephone interviews conducted at the end of the project and the notes collected during the deployment phase in each of the pharmacies. This section presents the factors grouped in three major categories: factors associated with the app, factors related to users, and factors associated with the organization of work.

User-friendliness, performance and flexibility of the mobile app

Respondents were unanimous in reporting that the app was very user-friendly, and this appears to have promoted its use by the pharmacists. The vast majority of respondents found the tool easy, simple and quick to use. Some pharmacists nevertheless needed a short adjustment period and mentioned that they faced certain challenges at the outset of the project (e.g. installing the app, and creating user names and passwords for pharmacists who did not have email addresses). However, the resources dedicated to this project facilitated the learning process in the participating pharmacies.

Respondents were very appreciative of the app's flexibility – meaning how it could be used either through mobile tools (a smartphone or tablet PC) or the work station. Most of the pharmacists reported a preference for entering their consultations on a work station, including due to the larger screen and for its speed, given that the app was better integrated with the other tools they use on their work stations (e.g. the electronic patient record). Some pharmacists noted that having an app that was distinct from the electronic patient record hindered routine use. Lastly, certain respondents reported that using the work station also addressed their discomfort with using a personal mobile phone at the workplace.

Design of the app's tree structure (its logic)

Most of the pharmacists interviewed questioned the design of the app's tree, saying that the path used to enter the different types of consultation was poorly aligned with their practices. This generated certain problems when trying to select the right category of consultation provided. As a result, many types of consultations were collected in the "Other" section. These concerns underscore the importance of the app's ability to provide a good representation of the wide range of consultations initiated by patients in community pharmacies.

Motivation/perceived utility

The main factor that appears to have influenced regular use of the app is the pharmacists' extrinsic motivation, and in particular the extrinsic motivation of the lead pharmacist on the project. In the pharmacies that made the most use of the app, motivation was mentioned as a key success factor. While eight pharmacies reported that their motivation was high and sustained over time, five other pharmacies had difficulty maintaining their motivation as the project progressed, and two others acknowledged that they had difficulty motivating all the pharmacists to participate. Some of the expressions used by the lead pharmacists demonstrate the effort required to sustain participation in the project: "duty fulfilled," "we took all the time needed to do it," "we put our shoulder to the wheel," "it was for a good cause."

For many respondents, their motivation grew out of the pharmacists' desire to demonstrate the value of their work. For most of the lead pharmacists we interviewed, the participating pharmacists felt that they were contributing somehow to the advancement of their profession by participating in this research project, more specifically by objectively and transparently describing the clinical activities of a pharmacist that are not recognized or compensated but that are nevertheless an important part of their daily lives. Several respondents reported that these data could eventually be used in negotiations with the departmental authorities.

Lastly, it needs to be mentioned that the interviews with the lead pharmacists on the project underscored a collective commitment to the project's performance. Successful execution of the project required the participation of all the pharmacists and even of other staff members: "everyone got on board," "we had everyone's cooperation," "everyone participated." On the other hand, beyond their participation in the research project, the participants had not seen direct benefits in their pharmacy. However, 8 of the 19 lead pharmacists reported that their participation had made them aware of the number of consultations that was provided daily in their pharmacies, which they found to be an interesting statistic.

Habits

More than half of the lead pharmacists spoke of having difficulty making a habit out of taking note of their consultations, in two different ways: noticing that they had engaged in a consultation activity, and then entering the consultation in the app. Despite the fact that the practice standards of the *Ordre des pharmaciens* recommend making a note of consultations in

the file, even if they are not accompanied by the sale of a drug, this practice does not appear to be widely followed, and this added to the difficulty of making a habit out of documenting these consultations. In addition, some respondents mentioned that having students in the pharmacy facilitated the capture of data on consultations in the mobile app (the students were charged with collecting data from the patients).

Work load and busy periods

The lead pharmacists also reported that, despite the fact that the app was considered simple and quick to use, its use nevertheless represented an additional task for the staff. In other words, it added to the pharmacists' daily work load. Most of the lead pharmacists said that it became difficult to use the app during busy periods. There is a paradox here: a busy period may have increased the number of consultations, since more people were visiting the pharmacy, but it also could have led to the consultations being under-documented during these periods. This paradox could be explored by cross-referencing data on counts of actual traffic levels in the pharmacy (data not available here).

Transferability of the app

The perceived utility of the app beyond this research project is considered limited. Virtually all the pharmacists interviewed do not really believe that it can be transferred beyond the specific setting of this research project. Even though the vast majority of lead pharmacists agree on the importance of participating in the research project, they had difficulty imagining using the app outside of this setting. Many did not understand why they would use the app in the future, unless this use was directly associated with financial compensation.

This perceived lack of utility was exacerbated by the fact that the app was not integrated into the electronic patient record used in the pharmacies. Close to half of the lead pharmacists reported that documenting these consultations could have value, on the condition that it is made an integral part of the electronic patient record for clinical follow up of the consultation given. Furthermore, the app was itself another work tool, effectively increasing the pharmacists' work load.

As part of the research project, the participants' motivation came out of a specific, short-term objective, and long-term use does not appear to be possible without a specific motivation. Some respondents could perceive motivation in terms of a potential clinical benefit (better patient follow-up), or if compensation were to be associated with the documented activity. Others also mentioned that in these situations, long-term use of the app would be possible, since the tool was simple and easy to use. It is nevertheless difficult to know whether all the pharmacists who used the app had similar perceptions to the lead pharmacists, who were intrinsically motivated.

Lastly, some respondents looked positively on the prospect of a larger-scale research project that would paint a more general picture of the consultations given by pharmacists in all of Quebec's community pharmacies.

Methodological limitations

This analysis is based on a variety of data collected in the 19 pharmacies that participated in this research project. Certain methodological limitations nevertheless merit our attention. First, the interviews were conducted with only one person per pharmacy, i.e. the person who had assumed the role of lead pharmacist on the project. The monetary compensation for participating in the project was tied to completing the final interview. This may have given rise to responses that did not necessarily represent the respondent's experience (a social desirability bias known as the Hawthorne effect). The respondents' comments must therefore be considered in this context. To address this bias, a larger number of interviews with pharmacists from a variety of pharmacies would have been desirable. Furthermore, it was not possible to interview all the pharmacists who participated in this project. As mentioned above, only the points of views of the lead pharmacists on the project were collected, even though they were asked about their colleagues' experience. A descriptive analysis was performed of data related to use of the app in each pharmacy, but a detailed analysis by pharmacist was not possible, since no data characterizing each pharmacist (e.g. age, work schedule, years of experience) was available.

Conclusions

In summary, this research project was appreciated by its participants, in particular for the app's user-friendliness and for the relevance of documenting the value added by the consultations provided in Quebec's community pharmacies. There were nevertheless considerable variations in level of use among the pharmacist-users. This deserves a more in-depth investigation by collecting detailed information on the participating pharmacies, working hours and individual characteristics of the pharmacists. Despite some of the challenges faced in certain pharmacies, the great majority of them reported that they entered their consultations in the app in real time, except during very busy periods. The best way to foster regular use and real-time data capture would be to integrate the app into the principal work tool, i.e. the electronic patient record, because this would make it simpler to use, and the potential clinical benefits would be greater (alignment with the OPQ's practice standards). Furthermore, the logic tree for types of consultations should be reviewed. Lastly, intrinsic motivation appears to be the most important factor for encouraging sustained use by the pharmacists. Even though most of the pharmacists were motivated to participate in this research project, as the weeks progressed the lead pharmacists invested less effort in keeping their troupes motivated. These factors will need to be considered if a broader deployment is considered.

CONCLUSIONS

This report presents a three-part study conducted in Quebec in 2017 and 2018 on the nature, frequency and impacts of consultations received from community pharmacists and requested by patients. Its main findings are as follows:

Part 1:

- The reasons for consulting a pharmacist are many and varied, concerning over-the-counter drugs, prescriptions, health problems or conditions, and other products available in pharmacies.
- The results attest to a very high level of satisfaction among Quebec adults regarding the consultations provided by community pharmacists.
- A full 38% of patients who consulted a pharmacist believe that it helped them avoid a visit to a walk-in clinic or emergency room, and 23% believe that it spared them a visit to a family physician.
- Even though 22% of participants had tried to reach another health professional before going into a pharmacy, and 86% of this group had managed to speak to that health professional, they nevertheless contacted a pharmacist to discuss the same subject.
- The role played by pharmacists does not appear to be a substitute for the roles played by family physicians and other health professionals, and it represents distinct value added.

Part 2:

- Overall, 44% of the consultations given by the pharmacists concerned pharmacotherapy, i.e. consultation to add, discontinue or modify the use of a drug (30% prescribed and 14% not prescribed). The other consultation (56%) consisted of providing relevant information related to drugs, natural health products, non-pharmacological measures or action to be taken.
- Bill 41 was used for only 3.5% of all the consultations analyzed in this study.
- Pharmacists rarely recommend that their patients (only 14% of them) consult another professional resource in the health system.
- Among the patients recruited in the pharmacies, 74% reported that they had consulted a pharmacist for a health problem, and 18% for advice related to a drug or prescription. Only 8% of respondents mentioned a reason other than a health problem or a drug. The reason for the consultation that was most often reported was pain. Most patients (77%) had not tried to consult another resource before going to see the pharmacist (for the same problem). Among those who tried, 82% succeeded in consulting with another resource, but they nevertheless felt the need to consult a pharmacist afterward.
- Concerning the consumption of health services, many patients (interviewed one week after their consultation with a pharmacist) indicated that consulting a pharmacist in person allowed them to avoid: making a call to the Info-santé 811 line (49%), making an appointment with their family physician (44%), going to a walk-in clinic (41%), consulting another type of health professional (30%), or going to a hospital emergency room (17%).

- The potential health system costs that were avoided represent approximately \$707 per community pharmacy per business day.
- The great majority of patients (89%) indicated that their consultation with a pharmacist had resulted in a lower level of anxiety, and more than a quarter (26%) said that it kept them from missing work or school.
- Overall, 93% of patients reported that they were very satisfied or satisfied with their meeting with the pharmacist.

Part 3:

- Despite the fact that the vast majority of participating pharmacists appreciated their involvement in the project, in particular the user-friendliness of the app and the relevance of documenting the value added by consultations in community pharmacies, a very wide range of use levels was observed among the pharmacists.
- Most of the participating pharmacists were able to enter their consultations in real time, except during very busy periods.
- The best way to encourage regular use and real-time data entry would be to make the app an integral part of the pharmacists' primary work tool, i.e. the electronic patient record, because this would make it simpler to use and because the clinical benefits would be enhanced.
- With respect to the pharmacists' *recommended resources* (e.g. going to see the family physician or a hospital emergency room), there was strong agreement between the patients and the pharmacists on most of the consultations (64%), i.e. on the fact that no resource was recommended or that the same recommended resource was reported. As for *avoided resources*, strong agreement was found for only 42% of the consultations (i.e. no resource had been avoided as a result of the consultation or the same resource was reported as having been avoided). Therefore certain pharmacists overestimated the impacts of their consultations, while others underestimated such impacts.

ACKNOWLEDGEMENTS

We would like to thank the three main partners who contributed to this study: the management of the AQPP for its financial support and trust, Carré Technologies Inc. for developing the mobile app, and CEFRIO for coordinating and carrying out the project in the participating pharmacies. We would also like to extend warm thanks to Ramy Fahmy-Demian, Carole Desrosiers and Marie-Ève Lamoureux at the AQPP for their valuable insights throughout this study. Similarly, we would like to thank the members of the research team who helped carry out this study: Annabelle Lamy, Émilie Savaria-Archambault, Marie-Pierre Moreault and ManQing Liang.

Heartfelt thanks to Guylaine Leclerc (Université Laval) and Isabelle Boisclair (Université de Montréal) for their support through the process of recruiting ten pharmacy students (Bélynda Amarouche, Vanessa Dao, Raphaël Gagnon-Paradis, Ann-Frédéric Gosselin, Justin Grenier, Marie-Justine Lord, Rimon Mikhail, Fabiano Pandozzi, Jean-David Parent and Geneviève Virgili), whom we would also like to thank for their valuable contributions. Lastly, we extend our sincere thanks to the pharmacist-owners, who served as project leaders in each pharmacy, and all the pharmacists who used the mobile app and made this study possible.

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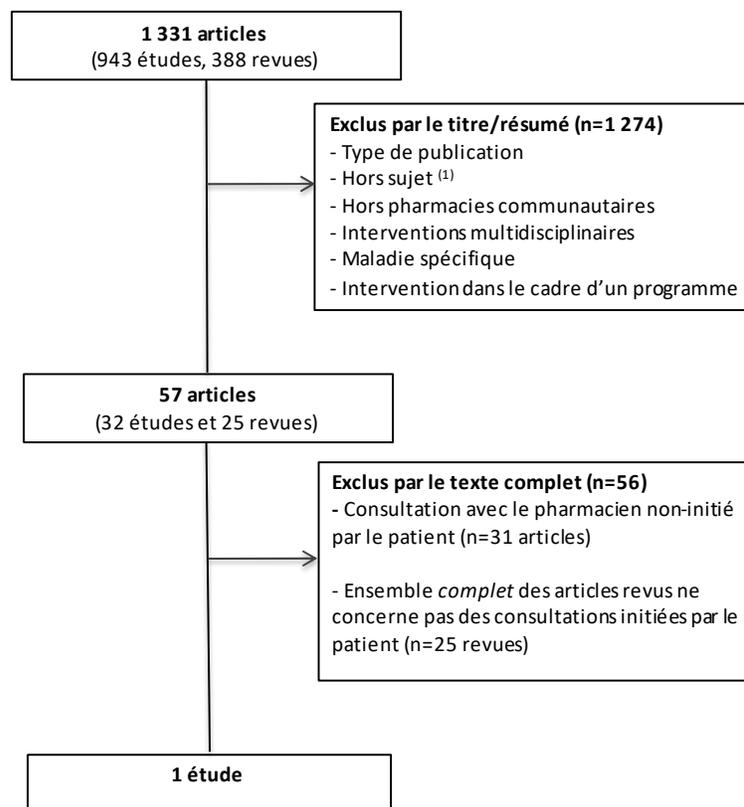
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Annexe I : Stratégie de recherche (revue de littérature)

Deux requêtes distinctes ont été lancées. Premièrement, la recherche de revue de littérature à partir de la chaîne de requête « TITLE-ABS-KEY (pharmac* AND (care OR consul* OR profession*) AND (community OR retail OR outpatient) AND (evalua* OR impact* OR effect*)) » lancée le 20 juin 2017 dans la méta base de données SCOPUS. Étant donné l'absence de documents concordant précisément avec le sujet de recherche, une deuxième requête portant sur des articles scientifiques plutôt que des revues, a été lancée le 4 septembre 2017 dans la même base de données : TITLE-ABS-KEY(pharmaci* OR pharmacy) AND TITLE-ABS-KEY(care OR consul* OR profession*) AND TITLE-ABS-KEY(community OR retail OR outpatient) AND TITLE-ABS-KEY(econom* OR cost).

Les critères d'inclusion des études sont détaillés ci-dessous.

Population	Les patients des pharmacies communautaires
Type d'intervention	Les services pharmaceutiques habituels offerts dans les pharmacies communautaires aux patients qui ont <i>initié volontairement</i> la demande pour le service.
Variables de résultats	Coûts, économies de coûts, niveau de satisfaction, indice QALY.
Type d'analyse	Analyse d'impact économique, avantage-coût, coût-efficacité
Type d'étude	Étude de cohorte prospective, observationnelle ¹



(1) Télé-pharmacie, outils technologiques, coût ou performance de médicaments, réglementation, programme de compensation, etc.

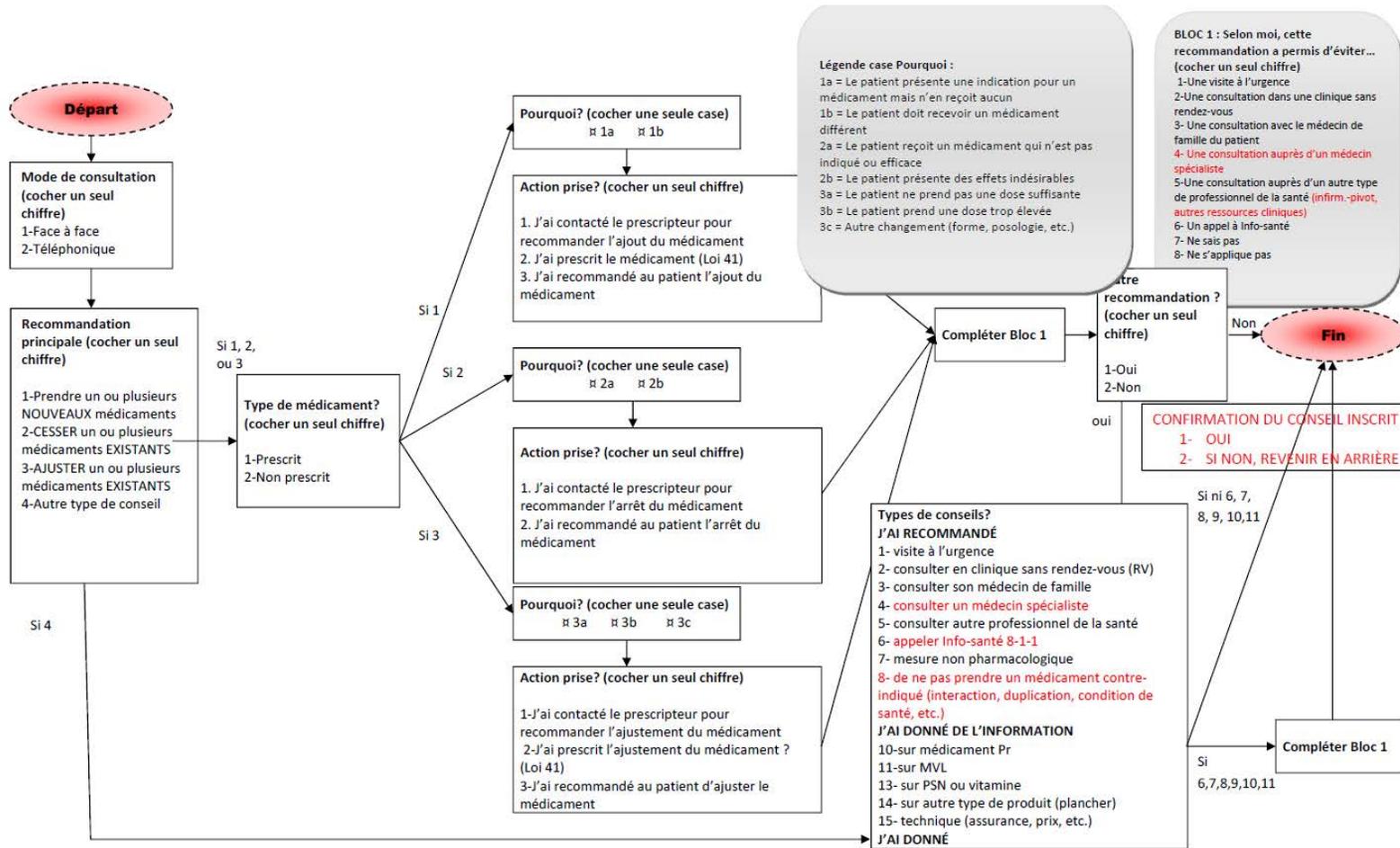
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Article	Watson <i>et al.</i> , A cohort study of influences, health outcomes and costs of patients' health-seeking behaviour for minor ailments from primary and emergency care settings, 2014
Région	Grampian, Écosse et East Anglia, Angleterre
Intervention	Intervention pour au moins l'un des symptômes de conditions mineures identifiées comme les plus fréquentes (douleurs musculosquelettiques (jambes, dos, bras, main, pied), inconfort oculaire, perturbation gastro-intestinale (nausées, vomissements, diarrhée, constipation), ou des symptômes liés aux voies respiratoires supérieures (mal de gorge, congestion, toux ou rhume).
Nombre de patients	95 patients
Autres milieux analysés	Services d'urgence (n=2 urgences, 51 patients). Cabinet de médecin généraliste (n=6 cabinets, 116 patients).
Type d'analyse	Analyse de coûts
Variables de résultats	Résolution des symptômes, qualité de vie, coûts, satisfaction et influence sur le comportement de recherche de soins.
Principaux résultats	- Coût global moyen de £ 29,30 significativement plus bas en pharmacie communautaire. - Score QALY moyen de 67.9% plus élevé en pharmacie, mais non significatif.

Annexe II : Principaux motifs associés à la catégorie « autres types de conseils »

- Obtenir des renseignements sur des produits en vente libre (aider le client à faire un choix)
- Obtenir des conseils concernant le vaccin contre la grippe
- Obtenir des conseils concernant l'achat d'un glucomètre, d'un tensiomètre ou tout autre appareil du genre (aider le client à faire un choix)
- Obtenir des informations sur un traitement (ex. biopsie) ou une chirurgie (ex. colonoscopie)
- Obtenir des conseils sur l'achat de produits pour désinfecter des plaies ouvertes
- Obtenir des renseignements sur les contraceptifs, les tests de grossesse, etc.
- Connaître les précautions à prendre avant de partir à l'étranger
- Obtenir des renseignements sur les probiotiques
- Obtenir des conseils sur le choix des vitamines
- Obtenir des conseils afin d'arrêter de fumer
- Obtenir l'aide du pharmacien avec de valider la fiabilité des résultats d'un instrument de mesure (ex. glucomètre, tensiomètre)
- Obtenir des conseils concernant la consommation de magnésium, de potassium, etc.
- Obtenir des renseignements sur des vaccins (ex. Twinrix)
- Obtenir des renseignements sur des produits naturels
- Savoir quoi faire dans le cas d'un changement au niveau de la police d'assurance
- Savoir comment interpréter les résultats d'un bilan de santé annuel
- Obtenir des conseils sur la pose de pansements
- Savoir comment activer un compte personnel en ligne

Annexe III : Arborescence de l'application mobile



Annexe IV : Guide d'entrevue utilisé lors de l'étape 2

Numéro de la consultation : → Voir numéro sur la fiche pharmacien	
1.	Quel était le principal motif de la consultation auprès du pharmacien? <i>What was the main reason for consulting the pharmacist today?</i> → Vous le saurez via la fiche pharmacien ou parce que vous étiez au côté du pharmacien lors du conseil. Sinon poser la question au patient/patient.
2.	Nom de famille/ <i>Last name</i> → Voir formulaire de consentement et retranscrire
3.	Prénom / <i>First name</i> → Voir formulaire de consentement et retranscrire
4.	Sexe du patient / <i>Gender</i> <input type="checkbox"/> Homme / <i>male</i> <input type="checkbox"/> Femme / <i>female</i>
5.	La consultation était pour vous personnellement, votre enfant ou un proche? <i>Did you consult for yourself, your child or a relative?</i> <input type="checkbox"/> Moi-même / <i>Myself</i> → passer à la question 6 <input type="checkbox"/> Mon enfant / <i>My child</i> → passer à la question 5.1 <input type="checkbox"/> Un proche / <i>A relative</i> → entrevue terminée. Remercier le patient.
5.1.	S'il s'agit d'un enfant, quel âge a-t-il/elle? <i>If the consultation concerns a child, how old is s/he?</i>
6.	Dans quelle catégorie d'âge êtes-vous? <i>In which age category are you?</i> <input type="checkbox"/> 18-24 ans / <i>years old</i> <input type="checkbox"/> 25-34 ans / <i>years old</i> <input type="checkbox"/> 35-44 ans / <i>years old</i> <input type="checkbox"/> 45-54 ans / <i>years old</i> <input type="checkbox"/> 55-64 ans / <i>years old</i> <input type="checkbox"/> 65 et plus/ <i>and over</i>
7.	Quelle est votre principale occupation? <i>What is your main occupation?</i> → Cocher une seule case, soit l'occupation principale <input type="checkbox"/> Retraité / <i>Retired</i> <input type="checkbox"/> Travailleur / <i>Worker</i> <input type="checkbox"/> Étudiant / <i>Student</i> <input type="checkbox"/> À la maison ou à la recherche d'un emploi / <i>At home or looking for a job</i> <input type="checkbox"/> Autre / <i>Other</i> <input type="checkbox"/> Ne souhaite pas répondre / <i>Prefers not to answer</i>
8.	Prenez-vous en ce moment un ou plusieurs médicaments sous ordonnance (oui ou non) ? <i>Are you currently taking one or more prescribed drugs (yes or no)?</i> **Consultation pour un enfant : Votre enfant prend-il en ce moment un ou plusieurs médicaments sous ordonnance ? <i>Is your child currently taking one or more prescribed drugs?</i> → Note : La pilule contraceptive est un médicament d'ordonnance <input type="checkbox"/> Oui / <i>yes</i> <input type="checkbox"/> Non / <i>no</i>
9.	Avez-vous été diagnostiqué(e) avec une ou plusieurs maladies chroniques ? <i>Have you been diagnosed with one or more chronic diseases?</i> **Consultation pour un enfant : Votre enfant a-t-il été diagnostiqué avec une ou plusieurs maladies chroniques ? <i>Has your child been diagnosed with one or more chronic diseases?</i>

	<p>→ Exemples de maladie chronique : diabète, hypertension, arthrose, douleur chronique, cancer, trouble de l'anxiété. En général, si quelqu'un ne sait pas s'il a une maladie chronique, la réponse est non...</p> <p><input type="checkbox"/> Non / <i>no</i></p> <p><input type="checkbox"/> Oui, une maladie chronique / <i>Yes, one chronic disease</i></p> <p><input type="checkbox"/> Oui, plusieurs maladies chroniques / <i>Yes, several chronic diseases</i></p>
10.	<p>Avez-vous présentement un médecin de famille? <i>Do you currently have a family doctor?</i></p> <p>**Consultation pour un enfant : Votre enfant a-t-il présentement un médecin de famille ou un pédiatre? <i>Does your child currently have a family doctor or pediatrician?</i></p> <p><input type="checkbox"/> Oui / <i>yes</i></p> <p><input type="checkbox"/> Non / <i>no</i></p>
11.	<p>Avez-vous tenté d'obtenir de l'aide auprès d'un autre professionnel de la santé (dans une clinique, à l'urgence, ligne 811) en lien avec le motif que vous avez mentionné au début de cette entrevue avant de venir consulter le pharmacien ? <i>Did you try to see or talk to a doctor or another health professional (medical clinic, ER, 811 phone line) before coming to the pharmacy for the reason mentioned at the beginning of this interview?</i></p> <p><input type="checkbox"/> Oui → aller à la question 11.1</p> <p><input type="checkbox"/> Non → aller à la question 12</p>
11.1	<p>Qui avez-vous consulté ou tenté de consulter? <i>Whom did you consult or try to consult?</i></p> <p><input type="checkbox"/> Médecin de famille / <i>Family doctor</i></p> <p><input type="checkbox"/> Un membre de l'équipe clinique qui vous suit régulièrement (médecin spécialiste, infirmière pivot, autre ressource) / <i>A member of the medical team that follows me on a regular basis (specialist physician, nurse liaison, other resource)</i></p> <p><input type="checkbox"/> Médecin/infirmière à une clinique sans rendez-vous / <i>Doctor or nurse at a walk-in clinic</i></p> <p><input type="checkbox"/> Médecin à l'urgence d'un hôpital / <i>Doctor at the ER</i></p> <p><input type="checkbox"/> Infirmière sur la ligne Info-santé (811) / <i>Info-santé 811 phone line</i></p> <p><input type="checkbox"/> Un autre professionnel de la santé / <i>Another health professional</i></p>
11.2	<p>Avez-vous réussi à voir ou à parler à la personne indiquée à la Q11.1? <i>Did you actually see or talk to that person?</i></p> <p><input type="checkbox"/> Oui / <i>yes</i></p> <p><input type="checkbox"/> Non / <i>no</i></p>
12.	<p>Le patient (ou parent) a-t-il consenti à ce qu'on le recontacte pour un suivi? → Voir si le patient a coché oui à la section 5 du formulaire de consentement et retranscrire. Donc, pas la peine de reposer la question.</p> <p><input type="checkbox"/> Oui / <i>yes</i> → répondre aux questions suivantes</p> <p><input type="checkbox"/> Non / <i>no</i> → Entrevue terminée, remercier le patient/patient</p>
12.1	<p>Nous allons vous rappeler dans environ une semaine pour le questionnaire de suivi. Quel jour (date) préférez-vous qu'on vous contacte? <i>We will call you in about one week for the follow-up questionnaire. Which day (date) would you prefer to be contacted?</i></p> <p>→ Inscrire la date</p>
12.2	<p>Il y a une plage horaire qui vous convient mieux? <i>What time would work best for you?</i></p> <p>Heure début/start time : _____ Heure fin/finish time : _____</p>
12.4	<p>Préférez-vous qu'on vous appelle sur votre cellulaire ou votre téléphone de maison? <i>Do you prefer we call you on your cellphone or landline?</i></p>

	<p>→ Poser la question uniquement si le patient a fourni les deux numéros de téléphone dans le formulaire de consentement.</p> <p><input type="checkbox"/> Cellulaire / <i>cell phone</i> <input type="checkbox"/> Téléphone maison / <i>landline</i> <input type="checkbox"/> Non applicable, un seul numéro a été fourni / <i>not applicable</i></p>
12.3	<p>Indiquez ci-dessous la langue à utiliser lors de l'appel de suivi sans nécessairement poser la question au patient.</p> <p><input type="checkbox"/> Français / French <input type="checkbox"/> Anglais / English</p>

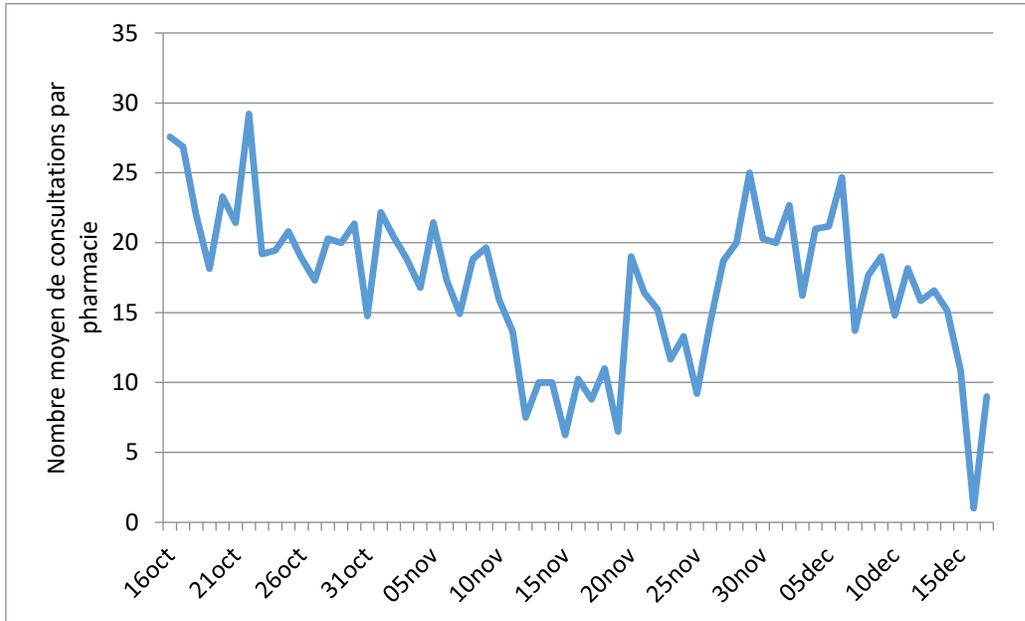
Annexe V : Guide d'entrevue utilisé lors de l'étape 3

Numéro de la consultation : → Voir fichier Excel envoyé par le stagiaire en pharmacie	
La consultation auprès du pharmacien la semaine dernière vous a-t-elle permis d'éviter... (répondez par oui ou non) / Did the consultation with the pharmacist last week allow you to avoid.. (answer by yes or no)	
1a.	De vous rendre à l'urgence d'un hôpital? / <i>Going to the ER?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
1b.	De vous rendre dans une clinique sans rendez-vous? / <i>Going to a walk-in clinic?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
1c.	De prendre rendez-vous avec votre médecin de famille? / <i>Scheduling an appointment with your family physician?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/> 2= Ne s'applique pas (pas de médecin de famille)/not applicable <input type="checkbox"/>
1d.	De prendre rendez-vous avec un membre de l'équipe clinique qui vous suit sur une base régulière (médecin spécialiste, infirmière pivot, autre ressource? / <i>Scheduling an appointment with a member of the clinical team that follows you on a regular basis (specialist physician, nurse liaison, other resource)</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/> 2= Ne s'applique pas car pas d'équipe médicale/not applicable <input type="checkbox"/>
1e.	De prendre rendez-vous avec un autre professionnel de la santé? / <i>Scheduling an appointment with another health professional?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
1f.	De vous absenter du travail ou de manquer un ou plusieurs cours? / <i>Being absent from work or school?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
1g.	D'appeler la ligne Info-santé (811)? / <i>Calling the 811 Info-santé line?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
Lors de votre visite à la pharmacie la semaine dernière, le pharmacien vous a-t-il recommandé les actions suivantes? (répondez par oui ou non) / When you went to the pharmacy last week, did the pharmacist recommend any of the following actions? (answer by yes or no)	
2a.	De vous rendre à l'urgence? / <i>To go to the ER?</i> 1= Oui/yes <input type="checkbox"/> → go to 2b 0= Non/no <input type="checkbox"/> → go directly to 3a
2b.	Y êtes-vous allé? / <i>Did you go?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
3a.	De vous rendre à une clinique sans rendez-vous? / <i>To go to a walk-in clinic?</i> 1= Oui/yes <input type="checkbox"/> → go to 3b 0= Non/no <input type="checkbox"/> → go directly to 4a
3b.	Y êtes-vous allé? / <i>Did you go?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
4a.	Prendre un rendez-vous avec votre médecin de famille? / <i>To schedule an appointment with your family physician?</i> 1= Oui/yes <input type="checkbox"/> → go to 4b 0= Non/no <input type="checkbox"/> → go directly to 5a 2=ne s'applique pas (pas de médecin de famille)/not applicable <input type="checkbox"/> → go to 5a
4b.	Avez-vous pris ce rendez-vous? / <i>Did you schedule an appointment?</i> 1= Oui/yes <input type="checkbox"/> → go to 4c 0= Non/no <input type="checkbox"/> → go directly to 5a
4c.	Avez-vous vu le médecin? / <i>Did you see the doctor?</i> 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
5a.	Prendre un rendez-vous avec un membre de l'équipe clinique qui vous suit sur une base régulière (ex. médecin spécialiste, infirmière pivot, autre ressource)? / <i>To schedule an appointment with a member of the clinical team that follows you on a regular basis (ex. specialist physician, nurse liaison, etc.)</i> 1= Oui/yes <input type="checkbox"/> → go to 5b

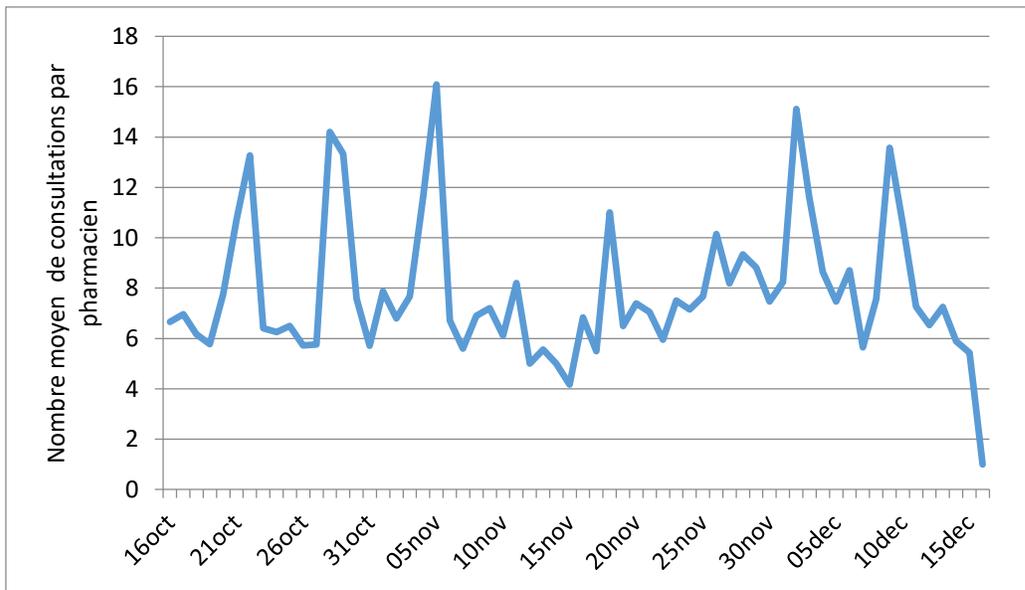
	0= Non/no <input type="checkbox"/> → go directly to 6a 2=ne s'applique pas car pas d'équipe médicale/not applicable <input type="checkbox"/> → go to 6a
5b.	Avez-vous pris ce rendez-vous? / Did you schedule the appointment? 1= Oui/yes <input type="checkbox"/> → go to 5c 0= Non/no <input type="checkbox"/> → go directly to 6a
5c.	Avez-vous vu cette personne? / Did you see this person? 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
6a.	Prendre un rendez-vous avec un autre type de professionnel de la santé (ex. nutritionniste, physiothérapeute, etc.) / Schedule an appointment with another health professional (e.g., nutritionist, physio, etc.) 1= Oui/yes <input type="checkbox"/> → go to 6b 0= Non/no <input type="checkbox"/> → go directly to 7a
6b.	Avez-vous pris rendez-vous? / Did you schedule an appointment? 1= Oui/yes <input type="checkbox"/> → go to 6c 0= Non/no <input type="checkbox"/> → go to 6c
6c.	Précisez le type de professionnel de la santé / Specify the type of health professional:
7a.	Appeler la ligne 811 Info-santé? / Call the Info-santé 811 line? 1= Oui/yes <input type="checkbox"/> → go to 7b 0= Non/no <input type="checkbox"/> → go directly to 8a
7b.	Avez-vous appelé? / Did you call? 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/>
La consultation auprès du pharmacien vous a-t-elle permis... (répondez par oui, non ou ne s'applique pas) / Did the consultation with the pharmacist allow you ... (answer by yes, no or not applicable)	
8a.	De vous rétablir plus rapidement? / To feel better faster? 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/> 2= Ne s'applique pas/not applicable <input type="checkbox"/>
8b.	D'éviter une détérioration plus sévère de votre condition de santé? / To avoid a deterioration or decline of your health condition? 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/> 2= Ne s'applique pas/not applicable <input type="checkbox"/>
8c.	D'améliorer votre qualité de vie? / To improve your quality of life? 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/> 2= Ne s'applique pas/not applicable <input type="checkbox"/>
8d.	De diminuer votre niveau d'anxiété ou de simplement vous rassurer? / To decrease your level of anxiety or to simply reassure you? 1= Oui/yes <input type="checkbox"/> 0= Non/no <input type="checkbox"/> 2= Ne s'applique pas/not applicable <input type="checkbox"/>
9.	De manière générale, quel est votre niveau de satisfaction à l'égard de la consultation que vous avez eue la semaine dernière avec le pharmacien? / Generally speaking, what is your level of satisfaction with the consultation you had last week with the pharmacist? <input type="checkbox"/> 5 = Très élevé / very high <input type="checkbox"/> 4 = Élevé / high <input type="checkbox"/> 3 = Moyen / moderate <input type="checkbox"/> 2 = Faible / low <input type="checkbox"/> 1 = Très faible / very low
10.	Avant de conclure, auriez-vous un dernier commentaire à faire en lien avec la consultation auprès du pharmacien? / Do you have a final comment you'd like to make regarding the consultation you had with the pharmacist? → 500 caractères max.

Remercier le participant / Thank the participant

Annexe VI : Évolution dans le temps du nombre moyen de consultations saisies par pharmacie et par pharmacien



Graphique A1: Évolution du nombre de consultations saisies en moyenne par pharmacie



Graphique A2: Évolution du nombre de consultations saisies en moyenne par pharmacien

Annexe VII : Guide d'entretien utilisé dans le cadre du volet 3 de l'étude

1. Pouvez-vous nous décrire votre rôle dans le projet, et comment ça s'est passé d'être le porteur de projet ?

Votre expérience personnelle

2. Comment qualifieriez-vous votre expérience personnelle en lien avec l'utilisation de l'application mobile AQPP? (appréciation générale, satisfaction)

3. Avez-vous été en mesure d'utiliser cette application mobile sur une base régulière, c'est-à-dire lors de chacun de vos quarts de travail et pour une majorité de consultations? Pourquoi?

Votre pharmacie

4. Est-ce que vos collègues ont eu une expérience similaire à la vôtre? En quoi a-t-elle été différente ? (plateforme utilisée pour entrer les données?)

5. A votre avis, quels étaient les freins à l'utilisation routinière dans votre milieu (votre pharmacie) ?

(facteurs liés à techno - design arbre - logique, interface, plateforme (mobile vs web), ergonomie, utilisabilité, utilité; facteurs liés aux pharmaciens, facteurs liés à organisation, facteurs liés au contexte)

Votre profession

6. Quelle est l'utilité d'une telle application pour la profession, l'ensemble des pharmaciens communautaires au Québec ? Si oui, lesquels? Expliquer.

7. Croyez-vous qu'une masse critique de pharmaciens adopterait cette application si elle est rendue disponible? Si oui, pourquoi? Si non, quels sont les principaux freins à sa diffusion à plus grande échelle?

8. Est-ce réaliste de penser qu'un pharmacien pourrait utiliser cette application de manière routinière, à l'extérieur d'un contexte de recherche ?

Est-ce que vous pensez que ce serait pertinent que l'on parle à l'un de vos collègues ?

Annexe VIII : Facteurs associés à l'utilisation de l'application au sein de chaque pharmacie

Pharmacie	En lien avec l'application		En lien avec les utilisateurs		En lien avec l'organisation du travail
	Convivialité	Design de l'arbre	Motivation	Habitude/oubli	Période d'achalandage
A	+	-	+	-	-
B	+	-	+		
C	+		+	-	-
D	+				
E	+	-	+/-		-
F	+	-	-	-	-
G	+	-	+/-		
H	+	+	+		
I	+	-	+/-	-	
J	+	-		-	-
K	+		+		
L	+	-	+/-		
M		-	+		
N	+			-	-
O	+		-	-	
P	+		+		-
Q	+	-	+/-	-	
R	+	-	+	-	-
S	+	-	+	-	-

Légende : + : facteur facilitant; +/- : s'atténue avec le temps; - : facteur limitant

Annexe IX

Concordance entre les consultations rapportées par les pharmaciens et par les patients

Ressources conseillées selon le patient et le pharmacien	Concordance forte [†]	Concordance faible [‡]	Pas de concordance type 1 [§]	Pas de concordance type 2 ^{††}	
Urgence	3	2	13	0	
Sans rendez-vous	16	3	45	2	
Médecin de famille	21	11	116	7	
Équipe clinique	1	0	6	10	
Autre professionnel	10	5	44	12	
Info-santé	0	0	8	12	
Aucune	334	NA	NA	NA	TOTAL
Nombre de consultations^{§§}	384	18	186	12	600
Proportion	64%	3%	31%	2%	100%

[†] Pharmacien et patient rapportent la même ressource conseillée

[‡] Pharmacien et patient rapportent une ressource conseillée, mais pas nécessairement la même

[§] Le patient rapporte une ressource conseillée, mais pas le pharmacien

^{††} Le pharmacien rapporte une ressource conseillée, mais pas le patient

^{§§} Le total par colonne ne correspond pas à la somme des lignes respectives, puisque qu'une même consultation (patient/pharmacien) peut être associées à plusieurs ressources (plusieurs choix possibles)

Type de concordance entre les ressources évitées selon le pharmacien et le patient

	Concordance forte [†]	Concordance faible [‡]	Pas de concordance type 1 [§]	Pas de concordance type 2 ^{††}
Urgence	6	22	29	4
Sans rendez-vous	89	28	70	27
Médecin de famille	64	45	75	30
Équipe clinique	1	11	10	4
Autre professionnel	18	30	61	7
Info-santé	24	73	85	14
Aucune	54	NA	NA	NA
Nombre de consultations^{§§}	254	121	140	85
Proportion	42%	20%	23%	14%

^{††}Pharmacien et patient rapportent la même ressource évitée

[‡] Pharmacien et patient rapportent une ressource évitée, mais pas nécessairement la même

[§] Le patient rapporte une ressource évitée, mais pas le pharmacien

^{††} Le pharmacien rapporte une ressource évitée, mais pas le patient

^{§§}Le total par colonne ne correspond pas à la somme des lignes respectives, puisque qu'une même consultation (patient/pharmacien) peut être associées à plusieurs ressources (plusieurs choix possibles)