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Research Paper

Seasonal influenza vaccination in pharmacy in France: description and determinants of the vaccinated at-risk population using this service, 1 year after implementation

Roxane Liard[1,2,*], Cécile Souty[1], Caroline Guerrisi[1], Vittoria Colizza[1], Thomas Hanslik[1,3,4], Charly Kengne Kuetche[1], Clément Turbelin[1], Thierry Blanchon[1] and Marion Debin[1]

[1]INSERM, Institut Pierre Louis d'Epidémiologie et de Santé Publique (IPLESP), Sorbonne Université, Paris, France
[2]Département de Médecine Générale, Sorbonne Université, Paris, France
[3]UFR des sciences de la santé Simone-Veil, Université Versailles-Saint-Quentin-en-Yvelines (UVSQ), Versailles, France
[4]Service de Médecine Interne, Assistance Publique-Hôpitaux de Paris (AP-HP), Hôpital Ambroise Paré, Boulogne Billancourt, France

*Correspondence: Roxane Liard, Departement de médecine générale, 27 rue de Chaligny, 75012 Paris, France. Email: roxane.liard@sorbonne-universite.fr

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Abstract

Objectives Vaccination of the at-risk population against influenza by pharmacists was widely implemented in France in 2019. Only little data are available about the population using this service. We have explored the characteristics and determinants of the at-risk population vaccinated in pharmacy through a web-based cohort during the 2019–20 winter season.

Methods This study is based on the data of the profile survey of at-risk over-18 vaccinated participants of the cohort GrippeNet.fr, for the 2019–20 winter season. Population characteristics were described using the inclusion questionnaire data. Factors associated with pharmacy influenza vaccination were analysed through a logistic regression model.

Key findings In total, 3144 people were included in the study. 50.2% (*N* = 1577) of them were women and 65.5% (*N* = 2060) were over 65 years old. 29.5% (*N* = 928) of participants were vaccinated in pharmacy. 73.1% (*N* = 678) of participants vaccinated in pharmacy were over 65 years old and 46.6% (*N* = 432) had a treatment for one or more chronic disease. Factors positively associated with being vaccinated by a pharmacist were: being a man (OR = 1.25, 95% confidence interval [1.06–1.47]), being over 65 years old (OR = 1.97 [1.49–2.63]), living in a test region (OR = 1.62 [1.29–2.02] and 1.72 [1.43–2.07] depending on the year of the implementation of the experimentation) and being vaccinated against influenza in 2018/2019 (OR = 1.71 [1.32–2.21]). Factors negatively associated were: taking a chronic treatment (OR = 0.83 [0.70–0.97]), and living alone (OR = 1.40 [1.17–1.67] and being in contact with sick people (OR = 0.68 [0.50–0.93]).

Conclusions This study confirmed some factors associated with pharmacy influenza vaccination and feeds the debate on other uncertain factors. These findings can support public health authorities' willingness to enhance pharmacists' involvement in the future country-wide vaccination

campaign. Our study also highlights the necessity to further investigate the impact of this measure in a few years.

Keywords: influenza; influenza vaccine; vaccination; pharmacists; crowdsourced data

Introduction

Seasonal influenza is an acute viral infection responsible for about 290 000–650 000 deaths worldwide every year. Influenza epidemics create a major economic and social burden.[1–5] Two to six million individuals contract influenza every year in France, with an estimated 8100 associated deaths during the 2018–19 winter season.[6] Together with hygiene measures, annual vaccination is the main approach to prevent severe influenza infection.[7] In France, individuals who are at higher risk of severe or complicated influenza (individuals from 65 years of age, pregnant women, chronic disease patients, individuals with a body mass index [BMI] over 40 kg/m^2, individuals living in long-stay residential care home), relatives of infants under 6 months at higher risk of severe influenza, as well as healthcare professionals, navigation crew and tour guides are targeted by health authorities for influenza vaccination.[8] The target for vaccine coverage among high-risk individuals is 75%, as recommended by the World Health Organisation (WHO) in 2003.[9] In 2016–17, influenza vaccination coverage among French individuals over 65 years old was 50.0%.[6] Given the low estimates compared with the target, French public health authorities implemented different strategies to increase influenza vaccination rates among the at-risk population.[10]

In France, at-risk individuals receive a voucher at the beginning of the flu season to collect a free vaccine at the pharmacy. Since May 2017, pharmacists are allowed to vaccinate at-risk individuals over 18 years old against influenza (with the exception of pregnant women and first-time vaccinations for the first year of experimentation) to facilitate access to vaccination. Nurses, general practitioners (GPs), midwives, occupational practitioners also can administer the influenza vaccine.[11] This pharmacist protocol was tested in two pilot regions in 2017–18 (Auvergne-Rhône-Alpes and Nouvelle-Aquitaine; named Z-17 regions thereafter), with the addition of two more regions the following season (Hauts-de-France and Occitanie; named Z-18 regions thereafter).[12, 13] From April 2019, the protocol was rolled out to all pharmacists throughout France.[14]

Pharmacists can administer influenza vaccines or other vaccines in several countries. The UK was the first country to start in 2002, then Portugal (2007), followed by Canada and Ireland (2009) and Switzerland in 2015.[15] A meta-analysis in the USA showed that pharmacist immunization programmes have a positive impact on immunization rates but that the magnitude of this impact varies widely.[16] On the other hand, a study conducted in the UK by the National Health Service showed no improvement in the coverage rate in London.[17] In France, among at-risk individuals over 18 years old, no significant difference in coverage rate was reported in 2017–18 in Z-17 regions in comparison with the previous season (46.1% in 2017–18 versus 46.0% in 2016–17) and with other regions during the same season (46.1% versus an average 45.9% estimated in the other regions in 2017–18).[18]

The population vaccinated in pharmacy is not fully characterized. A literature review reported that in the UK, individuals over 65 years old represented the majority of this population (ranging from 56.5% to 69.5% in the period 2000–2015).[19] In the first French pilot regions (Z-17 regions), 92.2% of individuals vaccinated in pharmacy were over 65 years of age, but no other profile information was available.[18]

To have a better understanding of the characteristics of at-risk adults who are choosing pharmacy-based influenza vaccination in France (determinants of vaccination, vaccination background), we used a participatory surveillance system for influenza-like illness named GrippeNet.fr (GN) which has been collecting detailed profile information and self-reported symptoms among an average of 4000 volunteers every winter since 2012.[20, 21] The study focused on the 2019–20 winter season.

Methods

GrippeNet.fr data collection

The investigators were all part of the GN research team. GN is an online surveillance system (www.grippenet.fr) established in 2012 for influenza surveillance[20–22] and integrated into the European project Influenzanet.[21] GN participants are volunteers recruited from the general population in mainland France. At the beginning of every influenza season in November, each participant is asked to complete a profile survey which covers socio-demographic (age, gender, household composition, occupation, place of residency, etc.), lifestyle (being in contact with patients, elderly or children, etc.) and health-related (height, weight, treatment for chronic diseases such as asthma, diabetes, immunosuppression, heart, kidney or pulmonary diseases, influenza vaccination status for the current and past seasons and, when appropriate, the professional who injected the vaccine) characteristics. This profile survey can be updated at any time, for example, in case of influenza vaccination during the winter. Once the profile survey is completed, each participant is asked to complete symptoms questionnaires on a weekly basis. The profile and weekly symptoms surveys were previously published.[20, 23]

All influenza vaccinated GN participants over 18 years old belonging to the at-risk population and who completed a profile survey between 20 November 2019 and 28 April 2020 were included. The French influenza immunization campaign began on 15 October 2019 and ended on 20 February 2020.[24] According to French recommendations, we selected the at-risk population on the following criteria: being 65 years old or older, or being pregnant, or taking a treatment for at least one chronic disease, or having a BMI over 40 kg/m^2.[25] After conducting the main analyses, we studied the subpopulation of 2019–20 at-risk individuals vaccinated in pharmacy who were already at risk during the 2018–19 season to explore vaccination background.

Statistical analysis

Socio-demographic characteristics were described from the last profile survey completed by the participants during the 2019–20 GN season. The 'living in a pilot region' variable was built from the postcode of participants' main place of residency and split into three categories: living in a 2017–18 test region (Z-17 regions including Auvergne-Rhône-Alpes and Nouvelle-Aquitaine, where influenza vaccination in pharmacy has been authorized since May 2017), living in a 2018–19 test region (Z-18 regions including Occitanie

and Hauts-de-France where influenza vaccination in pharmacy is authorized since September 2018), and living in a region where pharmacists were first authorized to vaccinate in 2019–20 (Z-19 regions including all regions excepts the four pilot regions).

The proportion of vaccination made by pharmacists in Z-17, Z-18 and Z-19 regions was analysed, and χ^2 tests were performed to compare them.

Factors associated with being vaccinated in pharmacy compared with being vaccinated in other healthcare settings were estimated through logistic regression models. Explanatory variables were tested in univariate analysis. All covariates with a *P*-value below 0.2 were included in the multivariate analysis. Covariates were selected through a backward stepwise selection. The final model included all covariates associated with being vaccinated in pharmacy with a *P*-value below or equal to 0.05. To study the influenza vaccination background of at-risk individuals vaccinated by a pharmacist, we included in a secondary analysis the sub-population of 2019–20 at-risk individuals vaccinated in pharmacy who were already at risk during the 2018–19 season. Vaccination status during the 2018–19 season and – if required – details of health professionals who performed the vaccination were described with raw percentages and confidence intervals in the three region categories. If the confidence intervals overlapped between the regions then the difference was not considered significant.

All statistical analyses were performed using R software (version 3.6.2).

Ethical approval

GN was reviewed and approved by the French Advisory Committee for research on information treatment in the field of health (i.e.

Table 1 Socio-demographic, lifestyle and health characteristics of the vaccinated at-risk participants

Participants (*N* = 3144)			
		No.	(%)
Gender (m.d. = 0)	Male	1567	49.8
	Female	1577	50.2
Age (m.d. = 0)	18–44	344	10.9
	45–64	740	23.5
	≥65	2060	65.5
Household composition (m.d. = 0)	Living alone	700	22.3
	Living with other adult(s) or child(ren)	2444	77.7
Level of education (m.d. = 16)	A-level or below	1066	34.1
	>A level	2062	65.9
Occupation (m.d. = 0)	Working	786	25.0
	Retired	2164	68.8
	Stay at home/sick leave	111	3.5
	Student	27	0.9
	Other	56	1.8
Place of residency (m.d. = 0)	Urban	2629	83.6
	Rural	515	16.4
Region of residence according to the year of implementation of vaccination in pharmacy (m.d. = 0)	Z-17	750	23.8
	Z-18	449	14.3
	Z-19	1945	61.9
Lifestyle (m. d. = 0)	Daily contact with patients	320	10.2
	Daily contact with the elderly	395	12.6
	Daily contact with children	138	12.6
Health characteristics	Treatment for ≥1 chronic disease (m.d. = 0)	1600	50.9
	Received a voucher for influenza vaccination (m.d. = 10)	2807	89.3
	Pregnant women (m.d. = 3)	39	1.3
Body mass index (m.d. = 28)	<18	60	1.9
	18–24	1498	47.6
	25–39	1508	48.0
	≥40	50	1.6
2019/2020 Influenza vaccinator (m.d. = 17)	Nurse	1010	32.3
	Pharmacist	928	29.7
	General practitioner	763	24.4
	Occupational physician	141	4.5
	Another specialty	270	8.6
	Midwife	15	0.5
Participants vaccinated in pharmacy (*N* = 928)			
Health characteristics	Over 65 years old (m.d. = 0)	678	73.1
	Chronic disease (m.d. = 0)	432	46.6
	Obese (BMI ≥40 kg/m^2) (m.d. = 5)	18	1.9
	Pregnant (m.d. = 0)	11	1.2

m.d. = missing data.

CCTIRS, authorization 11.565), and by the French National Commission on Informatics and Liberty (i.e. CNIL, authorization DR-2012-024). Participant consent is informed and provided through registration.

Results

Description of included participants

In our study, 4781 at-risk participants over 18 years old answered a profile survey. Among them, 53.9% (N = 2578) were women and 60.5% (N = 2892) were over 65 years old. About half of at-risk participants (N = 2434, 50.9%) had a chronic condition and 0.6% (N = 30) were pregnant women. The population characteristics are described in Table 1.

Of the 4781 at-risk participant, 65.7% (N = 3144) were vaccinated against influenza in 2019–20. Socio-demographic, lifestyle and health-related characteristics of these included participants are described in Table 1. Overall, participants were mainly aged 65 years or over (n = 2060, 65.5%). Half of the participants were women (n = 1577, 50.2%). About health characteristics, 89.3% (N = 2807) of participants received a vaccination voucher, 50.9% (N = 1600) of participants had a treatment for at least one chronic condition. Influenza vaccination was administered mainly by a nurse (N = 1010, 32.3%), while 29.7% (N = 928) of participants were vaccinated by a pharmacist, 24.4% (N = 763) by a GP, 8.6% (N = 270) by a physician from another speciality, 4.5% (N = 141) by an occupational physician and 0.5% (N = 15) by a midwife.

Proportion of vaccinations made in pharmacy, by region

The lowest proportions of vaccination made in pharmacy (below 30% of total influenza vaccinations) were observed in Z-19 regions, whereas the highest ones were observed in Z-17 and Z-18 regions, where the vaccination in pharmacy was first implemented (Figure 1). Pharmacists vaccinated 36.7% (N = 274) of the total at-risk vaccinated participants in Z-17 regions, 35.7% (N = 159) in Z-18 regions and 25.6% (N = 495) in Z-19 regions ($P < 10^{-8}$).

Determinants of vaccination in pharmacy

Factors positively associated with being vaccinated by a pharmacist in the final multivariate model were (Table 2): being a man (OR = 1.25, 95% confidence interval [1.07–1.47]), being aged 65 years or over (OR = 1.80 [1.33–2.45]), living alone (OR = 1.43 [1.19–1.73]) and living in a pilot region (OR = 1.62 [1.29–2.02] in Z-18 regions and 1.72 [1.43–2.07] in Z-17 regions). Participants with a treatment for a chronic condition were less likely to be vaccinated in pharmacy (OR = 0.83 [0.70–0.98]), as participants in contact with patients (OR = 0.68 [0.50–0.93]) and participants who were already vaccinated against influenza in 2018–19 (OR = 0.58 [0.46–0.76]).

Vaccination background of at-risk individuals vaccinated in pharmacy

Among the vaccinated participants included in the study, 1658 were also considered at risk during the 2018–19 season.

In 2018–19, 15.7% (N = 74 [12.4–19.0%]) of them were not vaccinated (Figure 2). Most of the vaccinated ones were vaccinated in 2018–19 by a nurse (31.5%, N = 148 [27.3–35.7%]), 27.8% (N = 129 [23.7–31.9%]) by a pharmacist and 20.8% (N = 98 [17.1–24.5%]) by a GP.

There was a significant difference in the proportion of vaccinations made by pharmacists, nurses or GPs in 2018–19 when we compared Z-19 regions with Z-17 ($P < 10^{-3}$) or Z-18 regions ($P < 10^{-3}$). There was no significant difference between the Z-17 and Z-18 regions.

Discussion

This study shows the situation of influenza vaccination in pharmacy 1 year after its wide implementation in France. Among at-risk individuals, males, people over 65 years old, living in a pilot region or living alone were more likely to be vaccinated by a pharmacist than by another health professional. Participants in contact with patients or vaccinated in the previous season were less likely to be vaccinated in pharmacy. The regions where this measure was first implemented had the highest rates of vaccination in pharmacy.

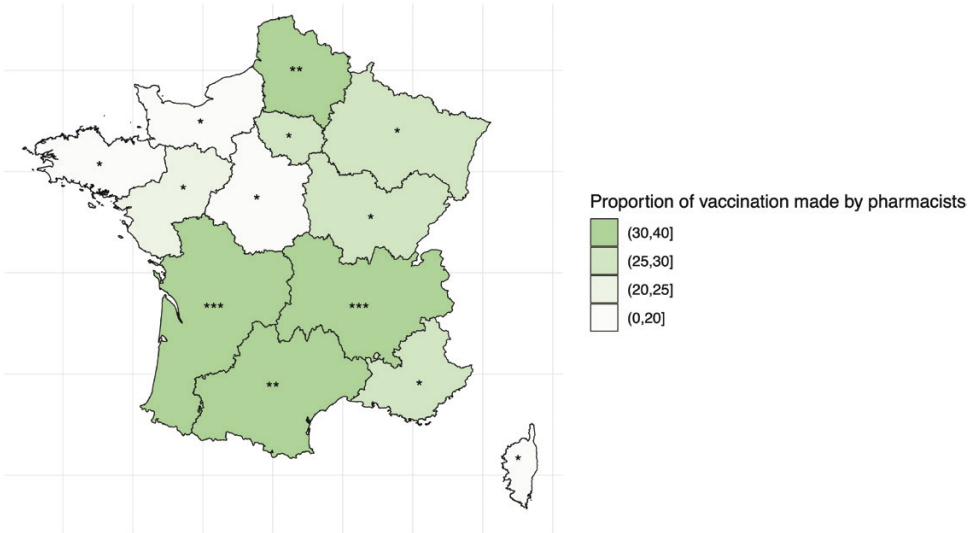

Figure 1 Vaccination made in pharmacy among vaccinated at-risk participants in 2019–20. *Z-19 regions, **Z-18 regions, ***Z-17 regions.

Our study presents some limitations. The GN population is not representative of the French general population in terms of age and gender.[20, 26] The GN population is older, with higher educational levels and larger vaccination rates in comparison with the general population, thus potentially limiting the extrapolation of our descriptive analysis to the general population. However, these characteristics allowed a large participation to the study and the cohort is not statistically different from the general population for other factors such as asthma and diabetes. Our study focused only on at-risk participants, as the profile questionnaire does not allow us to identify precisely the other categories targeted by influenza vaccination such as healthcare professionals. Some participants may have been vaccinated after completing their profile survey, failing to update their vaccination status. This could have impacted the total number of at-risk vaccinated participants included in this study. However, as GN season started 5 weeks after the beginning of the vaccination campaign, we can expect that a few at-risk participants who intended to get vaccinated were not already vaccinated when they completed their profile survey.

For the first year of authorization in 2019–20, French pharmacists were allowed to vaccinate only against influenza. Several countries have involved pharmacists as vaccinators for several years and already published useful analyses of this practice. In countries were pharmacists are allowed to vaccinate for some years, they can administer different vaccines such as polio or tetanus, except for Canada where they can only administer influenza vaccine.[15]

Some of the factors found in our study and associated with vaccination in pharmacy were already described in the literature. In previous studies, individuals over 65 years old were more likely to choose to be vaccinated in pharmacy rather than in a doctor's office than younger adults and were representing the majority of those vaccinated in pharmacy.[27–29] Participants living in a pilot area were more likely to be vaccinated in pharmacy in accordance to similar findings in the USA where a better use of pharmacy-based vaccination in the states offering this service before 1999 was reported.

Table 2 Factors associated with being vaccinated in pharmacy in 2019–20 season, among study participants

		N	Vaccination in pharmacy, *N* (%)	Unadjusted OR [95% CI]Univariate analyses	*P*-value	Adjusted OR [95% CI] Multivariate analyses	*P*-value
Socio-demographic characteristics							
Gender	Female	1539	423 (27.5)	Ref	**0.004**	Ref	**0.01**
	Male	1535	494 (32.2)	1.25 [1.07–1.46]		1.25 [1.06–1.47]	
Age	18–44	333	68 (20.4)	Ref	**<10⁻³**	Ref	**<10⁻³**
	45–64	723	180 (24.9)	1.31 [0.95–1.78]		1.30 [0.94–1.81]	
	≥65	2018	669 (33.2)	1.93 [1.47–2.58]		1.80 [1.33–2.45]	
Education	≤A level	1045	331 (31.7)	Ref	**0.12**	–	
	>A level	2029	586(28.9)	0.88 [0.75–1.03]		–	
Household composition	Living with ≥1 person	2389	674 (28.2)	Ref	**<10⁻³**	Ref	**<10⁻³**
	Living alone	685	243 (35.5)	1.40 [1.17–1.67]		1.43 [1.19–1.73]	
Occupation	Working	769	164 (21.3)	Ref	**<10⁻³**	–	
	Retired	2119	707 (33.4)	1.85 [1.52–2.25]		–	
	Student	26	4 (15.4)	0.67 [0.19–1.78]		–	
	Stay at home/ sick leave	107	31 (29.0)	1.50 [0.95–2.34]		–	
	Other	53	11 (20.8)	0.97 [0.46–1.85]		–	
Place of residency	Rural	499	147 (29.5)	Ref	0.84	–	
	Urban	2575	770 (29.9)	1.02 [0.83–1.26]			
Living in a test region	Z-19	1906	489 (25.7)	Ref	**<10⁻³**	Ref	**<10⁻³**
	Z-18	436	157 (36.0)	1.63 [1.31–2.03]		1.62 [1.29–2.02]	
	Z-17	732	271 (37.0)	1.70 [1.42–2.04]		1.72 [1.43–2.07]	
Lifestyle							
Contact with patients	No	2764	858 (31.0)	Ref	**<10⁻³**	Ref	**0.01**
	Yes	310	59 (19.0)	0.52 [0.39–0.70]		0.68 [0.50–0.93]	
Contact with children	No	2940	880 (29.9)	Ref	0.56	–	
	Yes	134	37 (27.6)	0.89 [0.60–1.30]		–	
Contact with elderlies	No	2685	799 (29.8)	Ref	0.82	–	
	Yes	389	118 (30.3)	1.03 [0.81–1.29]		–	
Health characteristics							
Chronic treatment for at least one comorbidity	No	1505	489 (32.5)	Ref	**0.002**	Ref	**0.02**
	Yes	1569	428 (27.3)	0.78 [0.67–0.91]		0.83 [0.70–0.98]	
Influenza vaccination in 2018–19	No	314	119 (37.9)	Ref	**0.001**	Ref	**<10⁻³**
	Yes	2760	798 (28.9)	0.67 [0.52–0.85]		0.58 [0.46–0.76]	
Being pregnant	No	191	39 (20.4)	Ref	**0.009**	–	
	Yes	38	11 (28.9)	1.59 [0.70–3.41]		–	
	Not concerned	2845	867 (30.5)	1.71[1.20–2.48]		–	
BMI (kg/m²)	18–24	1479	444 (30.0)	Ref	0.26	–	
	<18	57	11 (19.3)	0.56 [0.27–1.05]		–	
	25–39	1490	445 (29.9)	0.99 [0.85–1.16]		–	
	≥40	48	17 (35.4)	1.28 [0.69–2.31]		–	

Bold values are those with $P < 0.05$.

[28] In our study male participants and participants living alone were more likely to be vaccinated in pharmacy. To our knowledge, this is the first time these associations are described and we found no literature supporting these findings.

In our analysis, GN participants in contact with patients and participants having treatment for a chronic condition were less likely to get vaccinated in pharmacy compared with the other participants. These results vary in the literature. In Ontario, having hypertension or diabetes was negatively associated with being vaccinated in pharmacy which is consistent with our findings.[30] On the contrary in a UK study, carers, healthcare workers and individuals with chronic disease were more represented among people vaccinated in pharmacy than among people vaccinated by a GP.[19] An explanation of our results could be that patients with chronic disease(s) are expected to see more often their GP for their medical monitoring and may take the opportunity to be vaccinated there instead of spending extra time at the pharmacy. Furthermore, people in contact with patients (such as individuals working in the healthcare system) may have opportunities to be vaccinated at their workplace.

Individuals who were vaccinated against influenza the previous year were less likely to be vaccinated in pharmacy. It is the first time this association is described. This could be linked with a tendency to be vaccinated by the same professional every year for people regularly vaccinated. The majority of the participants lived in Z-19 regions where pharmacists were not allowed to vaccinate in 2018–19.

Participants vaccinated in 2018–19 could have preferred being vaccinated by the same health professional who carried out the vaccination the previous year. Our results also suggest that once individuals had been vaccinated in pharmacy, they will be more likely to use this service again. Among participants vaccinated in pharmacy in 2019–20 and at-risk the previous year, most of the participants were already vaccinated in pharmacy in the Z-17 regions unlike in Z-19 regions where GPs and nurses did the majority of the previous vaccinations. In Canada, in 2015, the location of the previous year's vaccination (whether GPs office or pharmacy) was a strong predictor of the vaccine provider for the following influenza season.[29] In Portugal and after the implementation of the national pharmacy vaccination programme in 2007, the proportion of pharmacy-based vaccination rose from 36.4% in 2008–09 to 49% in 2011–12.[15] The WHO Regional Office for Europe has adapted the COM-B model (Capability, Opportunity, Motivation-Behaviour) to analyse vaccination intention and behaviour.[31] This model states that vaccination behaviour is driven by individuals' capability, motivation and some social opportunities. If we apply this model to the French settings, pharmacy vaccination is a new social opportunity for people to get vaccinated. This new opportunity could have a positive impact on their future motivation for having influenza vaccination. Among participants vaccinated in pharmacy in 2019–20, 15.7% ($N = 74$) were not vaccinated the year before despite the fact that they were already at-risk. These are the first French data about the individuals vaccinated in pharmacy who were not vaccinated the previous year, as pharmacists were allowed to perform the first flu vaccination only since 2017–18. Vaccination coverage rose from 50.0% in 2017–18 to 52.0% in 2019–20 among French individuals over 65 years old.[6] Considering this model and the fact that, in our study, pharmacists performed a higher proportion of the total vaccinations in the pilot regions where they were allowed to vaccinate for 1 or 2 years, the impact of this measure on vaccination coverage should be evaluated again in a few years.

In the present context of the SARS-CoV-2 pandemic and the generalized implementation of vaccination against COVID-19, this study shows that community pharmacists are an essential link in reaching some vulnerable populations. The extended network of community pharmacies has already shown its relevance and efficacy during the COVID-19 pandemic with the wide implementation of point-of-care testing and their role as gatekeeper in the reasoned distribution of personal protective equipment to the population.[32, 33] Some countries where pharmacists could vaccinate against influenza, such as the USA, UK, Canada or Australia, have already included pharmacists in their national plan for COVID-19 vaccination.[34–36] In France, including pharmacists as vaccinators would ease vaccination of the entire population, in particular among people over 65 years old who are in a higher-risk group for COVID-19, and among people living alone who can be isolated and struggle to get vaccinated in a vaccination centre.

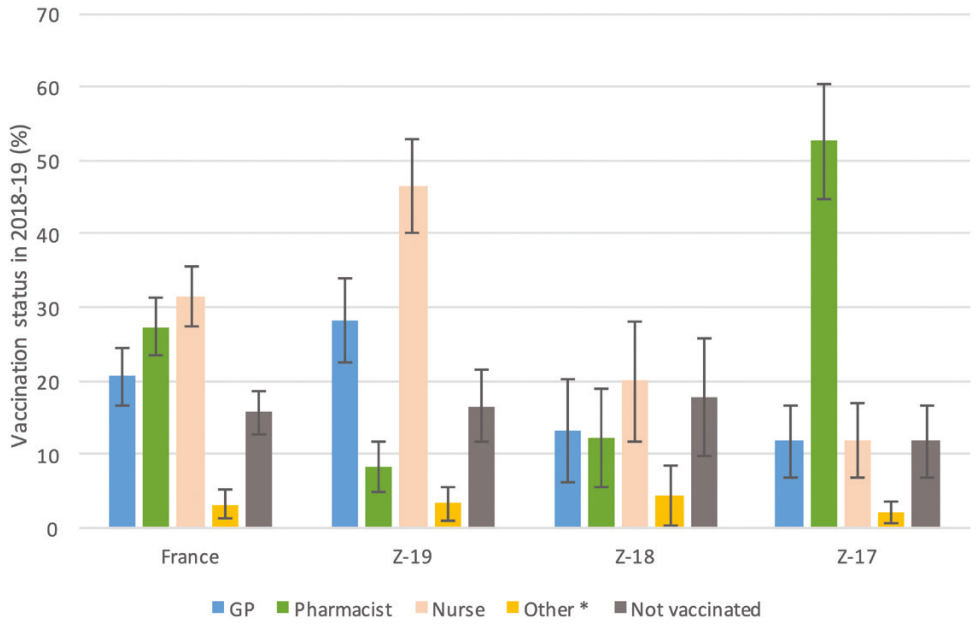

Figure 2 2018–19 vaccination status of the at-risk individuals vaccinated in pharmacy in 2019–20 by regions and overall.

Conclusion

The GN web-based cohort study allowed us to describe the at-risk population vaccinated in pharmacy and to highlight the associated factors after the implementation of this new vaccination policy in France. This novel policy has enabled at-risk individuals who were not vaccinated the previous year to be vaccinated in 2019–20. However, the wide acceptance of this measure comes up against the inherent inertia in behaviour changes. These findings can support public health authorities' willingness to enhance pharmacists' involvement in the future country-wide vaccination campaign. Our study also highlights the necessity to further investigate the impact of this measure in a few years.

Author Contributions

C.G., V.C., T.H., C.K.K., C.T., T.B. and M.D. designed and performed the study. R.L., C.S. and M.D. analysed the data. R.L. wrote the manuscript. R.L., C.S., C.G., V.C., T.H., C.K.K., C.T., T.B. and M.D. reviewed the manuscript.

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Conflict of Interest

None declared.

Data Availability

Requests for custom access to aggregated and post-processed data can be made to GrippeNet.fr/COVIDnet.fr Scientific Committee through the submission of a scientific proposal describing the aims, methods, data format requested, and team proposing the project. Decisions by the GrippeNet.fr/COVIDnet.fr Scientific Committee will be based on pertinence of the scientific proposal with the objectives of GrippeNet.fr/COVIDnet.fr and on the constraints on privacy and data treatment imposed by national regulatory authorities.

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