




# Influenza vaccination coverage in the community pharmacy: reasons given and related absenteeism. Willingness to vaccinate the population

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## KEYWORDS

Flu vaccine, pharmacists, community pharmacy, vaccination coverage, absenteeism, health personnel, human influenza

## ABBREVIATIONS

CP: Community Pharmacists  
FV: Flu Vaccination  
PC: Primary Care  
SNHS: Spanish National Health System  
WHO: World Health Organization

## ABSTRACT

**Introduction:** while the influenza vaccine is indicated for healthcare personnel, its coverage among Spanish community pharmacists is currently unknown. This study aims to quantify this coverage as well as evaluate the causes leading pharmacists to be inoculated or not, their flu-related absenteeism, whether they recommend the vaccine to risk groups, and their willingness to administer it in the pharmacy.

**Methods:** descriptive cross-sectional study using an online questionnaire aimed at community pharmacists throughout Spain. A descriptive analysis of the variables studied and of the association between vaccination and qualitative (Chi-square and Fisher test) and quantitative (ANOVA) variables was performed.

**Results:** a response rate of 9.4% (n=1,436). Pharmacists reported vaccinating around 30 % in the three seasons under study (2016-2019), being 31-35.8% (IC95%) in the 2018-2019 season. Being a pharmacy owner/co-owner, professional experience, age, being vaccinated to avoid influenza and/or for responsibility, and being vaccinated in previous seasons are factors associated with being vaccinated (p<0.05). Being a member of SEFAC is also a factor. Flu-related absenteeism in the 2018-2019 season was 9.5%. Pharmacists who reported being vaccinated themselves were more likely to recommend the vaccine and more likely to administer it (p<0.05).

**Conclusions:** flu vaccination coverage among community pharmacists is low despite the absenteeism this causes. Making vaccination easier for pharmacists could increase coverage. Pharmacists recommend flu vaccination for at-risk patients and would be willing to vaccinate in licensed pharmacies.

## Introduction

Influenza is currently the most common immunopreventable disease in developed countries. Its great social impact makes it a real public health problem. The control measure considered most effective

and recommended by all national and supranational organizations and institutions is the annual vaccination of the population groups with the highest risk of suffering complications associated with this disease (1).

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2. Dispatching of the e-mail from the authors to the community pharmacists in their "Campus SEFAC" database.
3. The responses obtained.

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In Spain, the community pharmacy is a private healthcare establishment of public interest that mainly provides pharmaceutical services for the Spanish National Health System (SHNS). It is estimated that the 22,102 Spanish pharmacies serve more than 2.3 million people daily, often being, due to their accessibility and coverage, the gateway to Primary Care (PC) of the health system. People who go to pharmacies requesting any medicine and, in particular, the indication of a symptomatic treatment for influenza, could be carriers of the virus and transmit it to both pharmacy staff and other people with whom they coincide there, who may in turn be at high risk of suffering complications from it. For their part, if pharmacy staff, made up of community pharmacists (CP) (2) or other health care workers, are carriers, they can transmit the virus to healthy or sick people visiting the premises. For this reason, pharmacy personnel are included among the influenza vaccine target population groups in the influenza vaccination recommendations (VCG) published each season by the Interterritorial Council of the Spanish National Health System (3).

Community Pharmacists (CPs), as evidenced in the recent COVID-19 pandemic, provide essential services to the community, so the health consequences of a disruption in their activity in the event of an influenza epidemic should not be overlooked. Despite this, in Spain, both the effect of influenza on the absenteeism of CPs and the influenza vaccination rate among them and other pharmacy personnel are unknown, since the data published by the Ministry of Health on vaccination coverage among healthcare personnel do not include CPs or their staff. The reasons for both vaccination and non-vaccination are also unknown, although they could be useful for the design of strategies to increase vaccination coverage in this group. Furthermore, influenza vaccination coverage continues to be unacceptable in our country, even among at-risk groups (4,5), as the Ministry of Health's objective of achieving

vaccination coverage close to the targets set by the World Health Organization (WHO) and the European Commission has still not been reached (3). Therefore, some strategies aimed at increasing this coverage include more active participation by healthcare professionals and availability of the influenza vaccination in licensed pharmacies (5,6). The willingness of CPs to play a more active role in accordance with these strategies is unknown.

## Objectives

The objectives of the study were to discover the CP vaccination rate in the influenza seasons between 2016 and 2018, to describe the reasons leading CPs to receive the vaccine or not, to quantify absenteeism from work caused by influenza among CPs, to inquire whether CPs recommend the Flu Vaccination (FC) to risk groups, and to find out the willingness of CPs to administer the FC in the pharmacy.

## Methodology

Cross-sectional descriptive observational study carried out by means of an online questionnaire sent to CPs in all of Spain.

The study population consisted of the 53,305 CPs (2) practicing pharmacists in Spanish pharmacies. Among these, 15,301 (28.7%) were registered in the "Campus SEFAC" database of the Spanish Society of Clinical, Family and Community Pharmacy (SEFAC). Being registered in this database did not imply being a member of SEFAC, but having participated in some training activity promoted by the latter. The sample size needed to estimate the percentage having received a FV in this group, assumed to be 50%, with 3% accuracy and 95% confidence level, was 1,045 CPs.

The study was carried out in the field of community pharmacy, following a pilot and completion of the FV campaign, over one month, from 18 February to 18 March 2019. The participation of CPs in the study was anonymous, voluntary and unpaid.

All variables were collected in a questionnaire designed for this study (Figure 1).

The socio-demographic data of the participating CPs were the independent variables, while the dependent variables were CP vaccination in each of the three seasons (2016, 2017, 2018), flu-related days of absence in the 2018-19 season, reasons given by the pharmacist for being vaccinated or not, whether he or she recommended the FV to risk groups, and whether he or she was willing to administer the FV in the pharmacy.

An e-mail was sent to 15,301 CPs, inviting them to participate in the study. CPs were able to choose between participating, not participating, or receiving a reminder and deciding before the participation deadline on 18 March 2019. Those who chose to participate could access and complete the questionnaire directly. The questionnaire was developed in Drupal's Webform software and hosted on the SEFAC research portal.

Data received were analyzed using the statistical software R. First, a 95% confidence interval (95% CI) was obtained for the estimation of FV prevalence in the last campaign. To carry out the inference, CPs were classified according to conformity to FV in three profiles: "Always" (vaccinated in all three campaigns), "Sometimes" (in one or two of the three) and "Never" (in none of them). Absenteeism was also categorized in three groups depending on the days: "0 days", "1-10 days", "over 10 days". FV conformity was also examined based on the other variables: sex, autonomous region, pharmacy ownership, categorized absenteeism, reasons for vaccination or non-vaccination, FV recommendation, and authorized administration of FV (Chi-squared and Fisher's Exact tests) and with age and exercise time (ANOVA).

To participate in the study, CPs gave their informed consent. The study received a favorable review from the Ethics Committee for Biomedical Research of the Cardenal Herrera University.

Dear colleague:

Sociedad Española de Farmacia Familiar y Comunitaria (SEFAC) is carrying out the study: FLU VACCINATION OF SPANISH COMMUNITY PHARMACISTS IN INFLUENZA CAMPAIGNS BETWEEN 2016 AND 2019. The Ethics Committee for Biomedical Research of the CEU-Cardenal Herrera University has reviewed the project and accepts its execution. This study consists in examining, through the completion of an anonymous survey of seven questions, how many community pharmacists decide to be vaccinated against the flu in our country, and the causes of their decision to be vaccinated or not, since this information is currently unavailable. In addition, we would like to examine absenteeism caused by the flu in this group as well as whether the community pharmacist recommends vaccination to patients included in risk groups and would be willing to administer the flu vaccine at the pharmacy. The data obtained will help reveal and analyze the reality of influenza vaccination among Spanish community pharmacists.

We request your voluntary, impartial, and sincere collaboration.

We have designed a short survey that will not take you more than a couple of minutes to complete. This survey is completely anonymous, and does not require any personal data to identify you.

I AGREE TO TAKE  
PART IN THE STUDY

I DO NOT AGREE TO TAKE PART  
IN THE STUDY

I CAN'T RIGHT NOW. REMIND ME AGAIN BY  
NEXT 18 MARCH

Thank you in advance for your cooperation

xxxxxx

**STUDY QUESTIONNAIRE**  
**INFLUENZA VACCINATION OF SPANISH COMMUNITY PHARMACISTS**  
**IN INFLUENZA CAMPAIGNS BETWEEN 2016 AND 2019.**

Please mark an option with an X

**1. Profile of the participating community pharmacist:**

Sex:  MALE  FEMALE

Age: \_\_\_\_\_ (integer)

Province where you operate: \_\_\_\_\_ (selection list)

Are you an owner/co-owning pharmacist?  YES  NO

Are you a member of SEFAC?  YES  NO

Years of operation in the community pharmacy: \_\_\_\_\_ (integer)

**2. Please indicate in which vaccination campaign(s) you have been vaccinated**

2016-2017  2017-2018  2018-2019

**3. How many days of absenteeism has the flu caused you during the 2018-2019 flu season? \_\_\_\_\_ (integer)**

**4. Why do you get vaccinated? (mark the reason(s) with an X):**

- Because I belong to a risk group
- For prevention, so as not to suffer from the flu
- To be responsible, thus increasing vaccine coverage
- Because it has been recommended by a doctor or other health professional
- Others (please provide detail):

**5. Why don't you get vaccinated? (mark the reason(s) with an X):**

- It has never been recommended to me
- No need to get vaccinated, I do not belong to a risk group
- Lack of vaccine safety confidence: may cause an unwanted reaction or it is contraindicated for me
- Lack of vaccine effectiveness confidence: I don't trust the vaccine, it doesn't have the desired effect
- Vaccination inconvenience: it is not easy to get vaccinated (having a prescription, buying at the pharmacy, making an appointment, going to the health center to get vaccinated, lack of time, etc.)
- Forgetfulness: I missed it
- Others (please provide detail):

**6. Do you recommend vaccination to patients included in risk groups who come to the pharmacy?  YES  NO**

**7. Would you be willing to administer the flu vaccine in the pharmacy if the health administration authorized it?  YES  NO**

Figure 1 Informed consent and study questionnaire

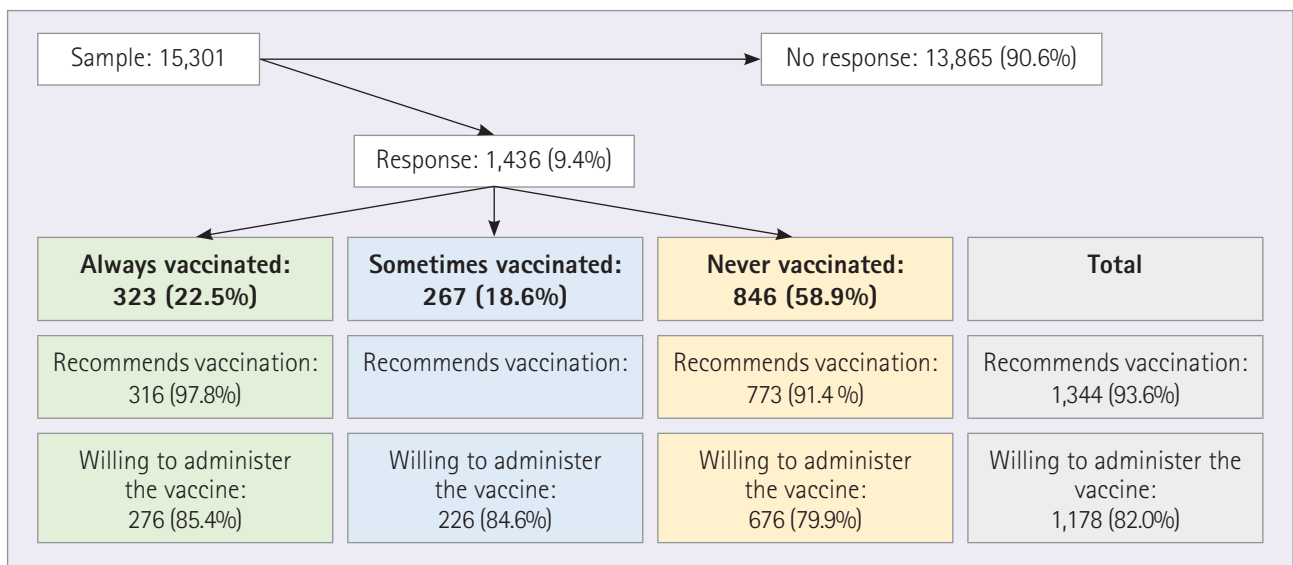


Figure 2 Overview of the study

## Results

Of the 15,301 accessible CPs, 9.4% (n=1,436) agreed to participate in the study, exceeding the required sample size. A total of 0.03% (5) did not participate, and the rest did not respond. A summary of the most important results can be seen in Figure 2.

The vaccination figures reported in the three campaigns were: 441 (30.7%) in 2016-2017, 423 (29.5%) in 2017-2018 and 479 (33.4%) in 2018-2019. There is a significant relationship between having been vaccinated in the latter campaign and having been vaccinated in any of the previous two (p<0.05). It is estimated that 30.9% to 35.8% (95% confidence interval) of CPs were vaccinated in the last campaign.

To analyze the differences, CPs were grouped into three FV conformity profiles: “Always” (22.5%), “Sometimes” (18.6%), and “Never” (58.9%) (Figure 3). As shown in Table 1, 76.5% of the participants were women, a distribution that remains approximately constant in the three profiles (p>0.05). SEFAC members displayed higher FV conformity than non-members (p<0.05). 25.3% of SEFAC members were always vaccinated, compared to 17.5% of non-members, and 54.9% of members were never vaccinated, compared to 66.0% of non-members.

52.2% of the participating CPs were pharmacy owners/co-owners, this being a variable significantly associated with FV conformity (p<0.05).

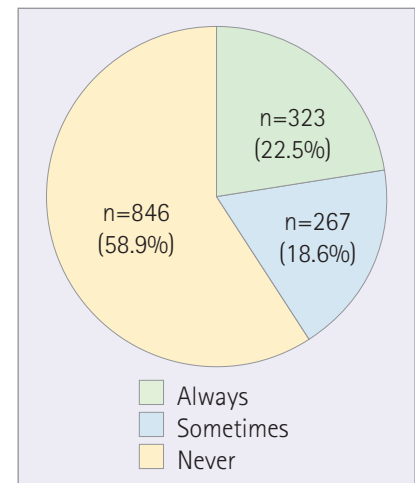


Figure 3 Community pharmacists reporting being vaccinated against influenza in the three seasons analyzed: 2016-2017, 2017-2018 and 2018-2019

Table 1 Link between influenza vaccination frequency and socio-demographic characteristics

	Total n (%)	Vaccinated pharmacists			p-value Test $\chi^2$
		Always n (%)	Sometimes n (%)	Never n (%)	
Sex					
Men	337 (23.5%)	85 (26.3%)	72 (27%)	180 (21.3%)	0.06267
Women	1099 (76.5%)	238 (73.7%)	195 (73%)	666 (78.7%)	
SEFAC Member					
NO	515 (35.9%)	90 (27.9%)	85 (31.8%)	340 (40.2%)	1.397e <sup>-4</sup>
YES	921 (64.1%)	233 (72.1%)	182 (68.2%)	506 (59.8%)	
Owner/Co-owner					
NO	687 (47.8%)	110 (34.1%)	121 (45.3%)	456 (53.9%)	6.418e <sup>-9</sup>
YES	749 (52.2%)	213 (65.9%)	146 (54.7%)	390 (46.1%)	
<b>Total</b>	<b>1,436 (100%)</b>	<b>323 (100%)</b>	<b>267 (100%)</b>	<b>846 (100%)</b>	

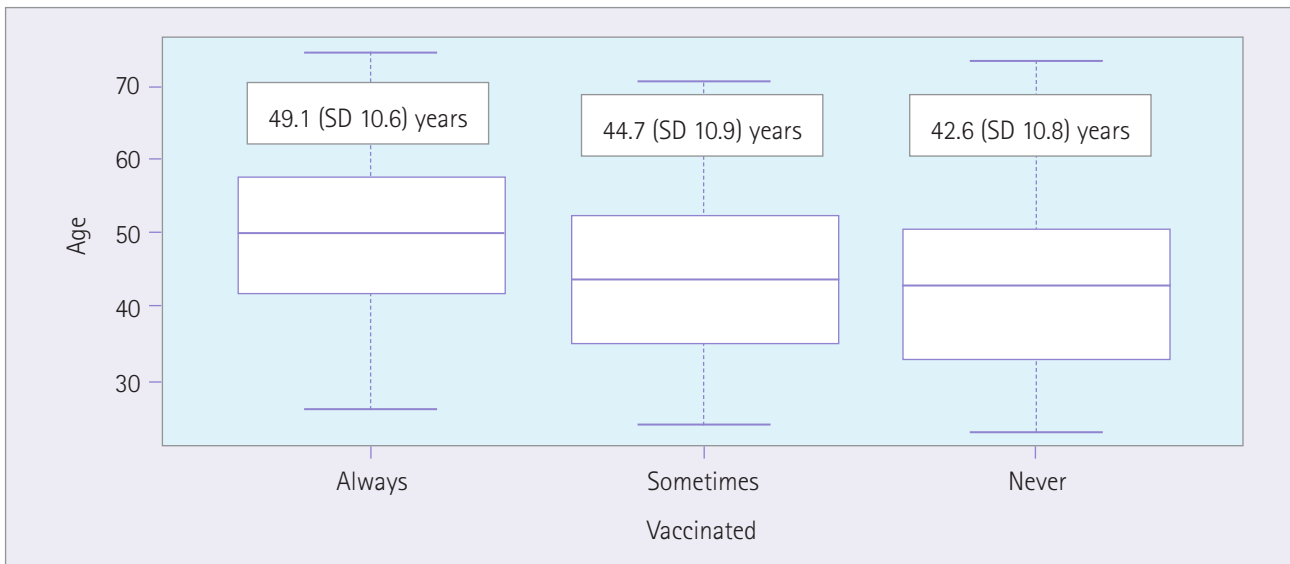


Figure 4 Frequency of influenza vaccination according to age of community pharmacists participating in the study

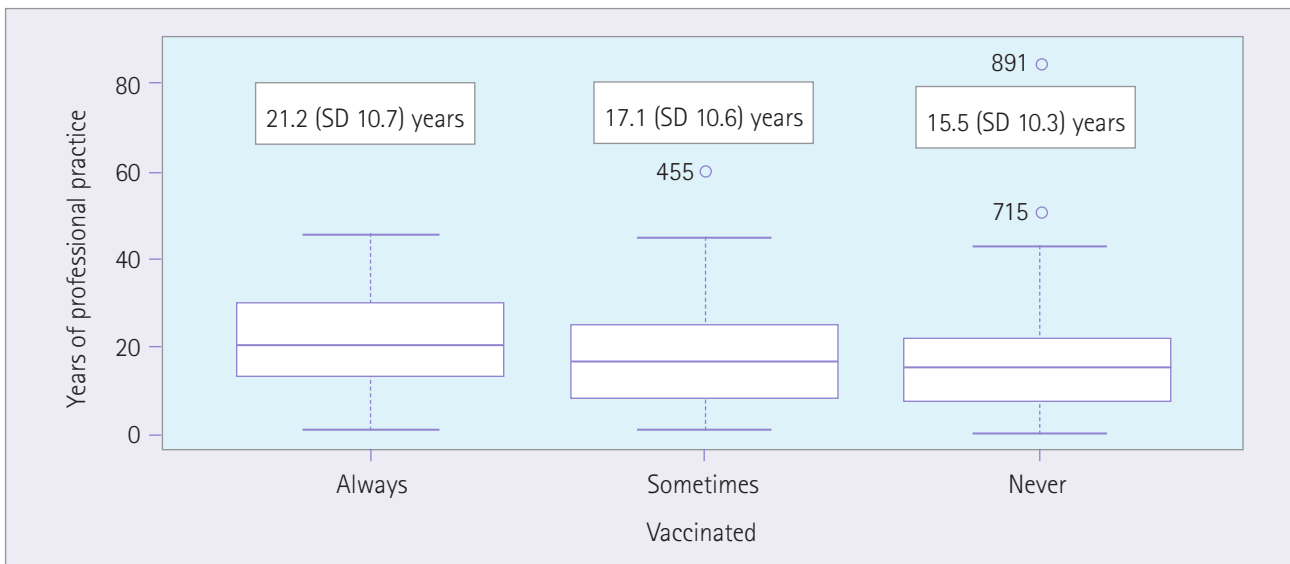


Figure 5 Frequency of influenza vaccination according to years of professional practice of community pharmacists participating in the study

Figure 4 shows that the age of CPs significantly influenced ( $p < 0.05$ ) FV awareness in a positive sense. Likewise (Figure 5), average time exercising the profession was significantly higher in FCs that were vaccinated in all three campaigns compared to the rest. The autonomous region of residence did not significantly influence the FV rate of the CPs (Table 3).

90.6% of CPs were not absent due to the flu during the 2018–2019 campaign, 8.9% were absent between 1–10 days and 0.5% more than 10 days. According to the results shown on Table 2, there is no link between work absenteeism due to influenza and

having been vaccinated or not. Mean time away from work is also unrelated to any of the other variables, except for the age of CPs, where a positive linear association was found (Pearson Correlation test  $p = 0.01925$ ).

Table 4 lists the causes cited by CPs for receiving the vaccine themselves, ordered from most to least frequent. The percentage of CPs who were vaccinated to avoid influenza themselves and/or for reasons of responsibility was significantly higher among CPs who were in the “Always” category than among those in the “Sometimes” category. For the other motives there were no significant differences between CPs

in the “Always” and “Sometimes” categories. Table 5 displays separately and jointly the reasons why CPs in the “Sometimes” and “Never” categories were not vaccinated.

According to the results shown in Table 6, 93.6% of CPs recommend FV to risk groups and 82% would be willing to administer it in the pharmacy if authorized to do so by health authorities. Statistical significance ( $p < 0.05$ ) was found in that CPs who were most vaccinated recommend FV more than those who were not vaccinated, and had a greater predisposition to administer the FV themselves.

**Table 2** Association between absenteeism and having or not received the flu vaccine, in the 2018–2019 campaign

Vaccinated in 2018–2019	Total	Absenteeism			p-value Fisher's exact test
		0 days n (%)	1 – 10 days n (%)	> 10 days n (%)	
NO	957 (66.6%)	865 (66.5%)	86 (67.2%)	6 (75%)	0.936
YES	479 (33.4%)	435 (33.5%)	42 (32.8%)	2 (25%)	
<b>Total</b>	<b>1,436 (100%)</b>	<b>1,300 (100%)</b>	<b>128 (100%)</b>	<b>8 (100%)</b>	

**Table 3** Distribution of participants by autonomous regions, according to whether or not they have been vaccinated against the flu in the 2018–2019 campaign and their predisposition to administer the flu vaccine if authorized to do so

Autonomous Region	Total n (%)	Vaccinated in 2018–2019		Would be willing to administer the vaccine	
		NO n (%)	YES n (%)	NO n (%)	YES n (%)
Andalusia	194 (13.5%)	132 (13.8%)	62 (12.9%)	28 (10.9%)	166 (14.1%)
Aragón	66 (4.6%)	42 (4.4%)	24 (5%)	20 (7.8%)	46 (3.9%)
Madrid	194 (13.5%)	142 (14.8%)	52 (10.9%)	21 (8.1%)	173 (14.7%)
Cantabria	16 (1.1%)	11 (1.1%)	5 (1%)	3 (1.2%)	13 (1.1%)
Castilla-La Mancha	79 (5.5%)	51 (5.3%)	28 (5.8%)	14 (5.4%)	65 (5.5%)
Castilla y León	59 (4.1%)	36 (3.8%)	23 (4.8%)	13 (5%)	46 (3.9%)
Catalonia	117 (8.2%)	73 (7.6%)	44 (9.2%)	15 (5.8%)	102 (8.7%)
Community of Valencia	202 (14.1%)	128 (13.4%)	74 (15.4%)	26 (10.1%)	176 (14.9%)
Extremadura	34 (2.4%)	24 (2.5%)	10 (2.1%)	10 (3.9%)	24 (2%)
Galicia	151 (10.5%)	102 (10.7%)	49 (10.2%)	34 (13.2%)	117 (9.9%)
Balearic Islands	50 (3.5%)	34 (3.6%)	16 (3.3%)	15 (5.8%)	35 (3%)
Canary Islands	61 (4.3%)	39 (4.1%)	22 (4.6%)	17 (6.6%)	44 (3.7%)
La Rioja	8 (0.6%)	5 (0.5%)	3 (0.6%)	2 (0.8%)	6 (0.5%)
Melilla	1 (0.1%)	1 (0.1%)	0 (0%)	0 (0%)	1 (0.1%)
Navarra	18 (1.3%)	12 (1.3%)	6 (1.3%)	3 (1.2%)	15 (1.3%)
Principality of Asturias	45 (3.1%)	32 (3.3%)	13 (2.7%)	9 (3.5%)	36 (3.1%)
Basque Country	81 (5.6%)	54 (5.6%)	27 (5.6%)	17 (6.6%)	64 (5.4%)
Murcia	60 (4.2%)	39 (4.1%)	21 (4.4%)	11 (4.3%)	49 (4.2%)
<b>Total</b>	<b>1,436 (100%)</b>	<b>957 (100%)</b>	<b>479 (100%)</b>	<b>258 (100%)</b>	<b>1,178 (100%)</b>



**Table 4** Association between flu vaccination frequency and reasons for vaccination

Reasons for vaccination	Total n (%)	Vaccinated pharmacists		p-value Test $\chi^2$
		Always n (%)	Sometimes n (%)	
Belonging to a risk group NO YES	217 (36.8%) 373 (63.2%)	118 (36.5%) 205 (63.7%)	99 (37.1%) 168 (62.9%)	0.8911
To avoid the flu NO YES	292 (49.5%) 298 (50.5%)	140 (43.3%) 183 (56.7%)	152 (56.9%) 115 (43.1%)	<b>0.001</b>
To be responsible NO YES	333 (56.4%) 257 (43.6%)	164 (50.8%) 159 (49.2%)	169 (63.3%) 98 (36.7%)	<b>0.0023</b>
Following medical recommendation NO YES	542 (91.9%) 48 (8.1%)	302 (93.5%) 21 (6.5%)	240 (89.9%) 27 (10.1%)	0.1103
Other NO YES	527 (89.3%) 63 (10.7%)	292 (90.4%) 31 (9.6%)	235 (88%) 32 (12%)	0.35
<b>Total</b>	<b>590 (100%)</b>	<b>323 (100%)</b>	<b>267 (100%)</b>	

**Table 5** Association between frequency of influenza vaccination and reasons for non-vaccination against influenza

Reasons for non-vaccination	Total n (%)	Vaccinated pharmacists		p-value Fisher's exact test
		Sometimes n (%)	Never n (%)	
It has not been recommended to me NO YES	904 (81.2%) 209 (18.8%)	246 (92.1%) 21 (7.9%)	658 (77.8%) 188 (22.2%)	<b>2.881e<sup>-8</sup></b>
Because I do not belong to a risk group NO YES	917 (82.4%) 196 (17.6%)	251 (94%) 16 (6%)	666 (78.7%) 180 (21.3%)	<b>6.574e<sup>-10</sup></b>
Because they are not safe NO YES	1,070 (96.1%) 43 (3.9%)	260 (97.4%) 7 (2.6%)	810 (95.7%) 36 (4.3%)	0.2765
Because they are not effective NO YES	1,041 (93.5%) 72 (6.5%)	261 (97.8%) 6 (2.2%)	780 (92.2%) 66 (7.8%)	<b>8.556e<sup>-4</sup></b>
Inconvenience NO YES	835 (75%) 278 (25%)	205 (76.8%) 62 (23.2%)	630 (74.5%) 216 (25.5%)	0.4666
I forgot NO YES	815 (73.2%) 298 (26.8%)	130 (48.7%) 137 (51.3%)	685 (81%) 161 (19%)	<b>0</b>
Other NO YES	938 (84.3%) 175 (15.7%)	231 (86.5%) 36 (13.5%)	707 (83.6%) 139 (16.4%)	0.2488
<b>Total</b>	<b>1,113 (100%)</b>	<b>267 (100%)</b>	<b>846 (100%)</b>	

**Table 6** Association between frequency of flu vaccination, recommendation of flu vaccine to risk groups and predisposition to administer the vaccine if authorized

	Total n (%)	Vaccinated pharmacists			p-value Fisher's exact test
		Always n (%)	Sometimes n (%)	Never n (%)	
Recommend the vaccine to risk groups					
NO	92 (6.4%)	7 (2.2%)	12 (4.5%)	73 (8.6%)	4.555e <sup>-5</sup>
YES	1,344 (93.6%)	316 (97.8%)	255 (95.5%)	773 (91.4%)	
Administer the vaccine					
NO	258 (18%)	47 (14.6%)	41 (15.4%)	170 (20.1%)	0.042
YES	1,178 (82%)	276 (85.4%)	226 (84.6%)	676 (79.9%)	
<b>Total</b>	<b>1,436 (100%)</b>	<b>323 (100%)</b>	<b>267 (100%)</b>	<b>846 (100%)</b>	

## Discussion

Participation in online questionnaires is usually very low. The response rate obtained in this study (9.4%) was low, but as expected or even higher than expected considering the survey was conducted at the beginning of the COVID-19 pandemic and lockdown, although the response was slightly higher than that obtained in the only other study with similar characteristics, carried out with Catalan CPs, in which the response rate was 7.3% (7). Another study conducted with all pharmacy workers in Lleida achieved a participation of 43.1%, although this resulted from the telephone and face-to-face interviews that had to be conducted in light of the low participation of some pharmacies (8).

In Spain, little is known about FV coverage among healthcare workers (9), but all published studies on the subject agree that the rate is low and still far from the 75% recommended by the WHO and found in other Western countries. The FV rates obtained in the studied seasons: 30.7% (2016-2017), 29.5% (2017-2018), and 33.4% (2018-2019) are very similar to those published by the Ministry of Health for health professionals for the same seasons (31.5%, 31.3%, and 33.9% respectively) (4,10,11). These studies were carried out almost exclusively in hospital, social and health, and primary care facilities, with only two (7,8) focusing

on community pharmacies, both of which were in Catalonia. The 2018-2019 FV rate among CPs (33.4%) in this study was slightly lower than that obtained (39.8%) in a study conducted through 800 interviews with doctors and nurses in primary care centers in fifteen autonomous regions (11). This difference could be due to the fact that workers in health centers find it easier to get vaccinated. Results from the study of Catalan CPs in the 2013-2014 and 2010-2011 seasons are significantly lower: 25.1% (7) and 19.8% (8) respectively and taking into account that the latter also included other staff in the participating pharmacies. Still, this rate is much lower than that reported in 2008 by CPs in the United States, which was 75% (12).

Membership of a scientific society, ownership/co-ownership of the pharmacy, professional experience, and age are factors that showed a statistically significant association with vaccination. This could be explained by the greater professional responsibility that all of these variables entail. The difference between owner and non-owner CPs could be due to the fact that the latter have to ask the former time off to go and receive the inoculation. As far as professional experience is concerned, the more experienced are older, and older age increases the predisposition to preventive healthcare as well as the risk of suffering a chronic illnesses or other

condition linked to influenza, explaining why this group was found to be more frequently vaccinated. The results of other studies on CPs (7), pharmacy workers (8) and Spanish health centers, also show significant differences between professional categories of doctors (pediatricians and other specialties), nursing staff (nurses and nursing assistants) and administrative staff (13-16), as well as with increasing age (7,8,14-17). In this study, gender did not predict FV conformity ( $p>0.05$ ) and disparate results were found in other studies of other healthcare professionals (15,17), so significant differences between men and women are not apparent (13). As in other studies on CPs (7,8), a statistically significant relationship ( $p<0.05$ ) was also found between being vaccinated in the last season studied and having been vaccinated in any of the previous seasons under consideration.

### Causality

Several previous studies have attempted to discover the reasons why health workers are vaccinated against influenza or not. The three most frequent reasons for choosing to be vaccinated against influenza are consistent in this and other studies (7,8), applicable to CPs and primary care centers professionals (14,17,19,20) as well as hospital centers (16). These three reasons make the flu vaccination an





unquestionable recommendation for healthcare personnel: necessity (it is a measure of self-protection since the healthcare professional is more exposed to the influenza virus than the general population), ethics (not to expose patients and colleagues to avoidable diseases), and exemplarity (vaccinated professionals have greater awareness of the advantages of vaccination and are more likely to recommend it to risk groups) (6,18,19).

However, most of the reasons why CPs report not being vaccinated are related to practical questions such as having forgotten, inconvenience, and not having received the recommendation. All three factors could be remedied by implementing measures for recommending FV to this group, sending reminders, and organizing their vaccination, as happens with SNHS workers. Only one study of health workers in one primary care area identified “laziness or neglect” as the most common reason for not getting vaccinated 19% (21).

Only a minority of CPs who report not being vaccinated allege the same reasons as the majority of most other unvaccinated health professionals and workers (7,8,19,20-22), which are reasons linked to attitudes and a lack of confidence or training in influenza or FV, including “not belonging to a risk group”, “never having had the flu”, or “not trusting the effectiveness and/or safety of vaccines” that could be remedied by specific information and awareness-raising campaigns among this group.

Absenteeism caused by seasonal influenza can compromise service in healthcare centers due to lack of personnel when it is most needed, as the flu is estimated to be responsible for 10-17% of medical leave in Spain, with an average duration of five to seven days, amounting to an annual loss of 60 million hours of work (23). The flu-related absenteeism rate of 9.5% reported by CPs in the 2018-2019 influenza season is slightly lower than the 11.3% (8) obtained in the only study in Spain, carried out in the 2010-2011 season on all of the pharmacy workers in Lleida. As found in this study, absenteeism was also lower among those who were vaccinated than among those who were not, although this relationship was not

statistically significant. According to several systematic reviews, vaccinated health workers see flu infections reduced by 68-90% (24) and days absent from work reduced by 28-40% (25).

Among the strategies aimed at increasing FV in risk groups, several documents propose the collaboration of health professionals in the design of vaccination campaigns and that they take advantage of any contact of the population with the health system to recommend vaccination (3,5,6). Along these lines, practically all CPs (93.6%) reported recommending FV to the population, as has been evidenced in other studies (7,26,27,28). In these, it was found that this recommendation to patients over 65 years of age led 43.3% (27) and 29.4% (26) of them to change their mind in favor of vaccination.

The decrease in flu vaccine coverage in Spain over the last ten years in people aged 65 and over from 65.7% (2009-2010) to 54.2% (2018-2019)(4), has led to consider among the strategies to increase it the possibility of receiving the vaccine against influenza in authorized community pharmacies. This measure has proven successful in increasing this coverage in several countries inside and outside Europe (29,30,31,32). This and other studies indicate that most CPs would be willing to administer the FV in the pharmacy – if the Health Administration authorized it and following specific training – which would facilitate the implementation of this measure in our country, taking into account the essential coordination with the health administrations (33).

In conclusion, the unprecedented information provided in this study shows that flu vaccine coverage among Spanish CPs is lower than desirable, consistent with the situation with the rest of the SNHS professionals. Knowledge of the reasons given by professionals for being vaccinated or not also provides useful data to design specific awareness actions that directly increase vaccine coverage in this group and indirectly in the population they serve. One of these actions would be to provide onsite FV to CPs, as per the current practice in healthcare centers and some companies. Influenza causes significant absenteeism among CPs. There is a

predisposition of CPs to participate in influenza prevention strategies by boosting their advisory role in recommending vaccination to patients at risk, and as partners in the administration of FV in authorized community pharmacies.

## Limitations

This study, like all those based on surveys carried out by post or e-mail, has a significant limitation: low and voluntary participation that can generate a selection bias toward the more motivated professionals, especially in this case, as the study coincided with the onset of the COVID-19 pandemic. However, the study is strengthened by participation by both owner and non-owner pharmacists from all of Spain's autonomous regions as well as from the autonomous city of Melilla.

Another limitation, also common in this type of survey-based study, is that the data are provided by the participants and no records are consulted. This facilitates memory bias. In addition, the pharmacists' reported FV recommendation to the population is general, and we do not know whether it is made 100% of the time.

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