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RESEARCH ARTICLE

Psychosocial and behavioural determinants of the implementation of Pharmaceutical Care in Spain

Emma Zardaín · María Olivo del Valle · María Isabel Loza · Eduardo García · Alberto Lana · Wolfgang A. Markham · María Luisa López

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Abstract *Objective* We aimed to gain greater understanding of the implementation of the Pharmaceutical Care (PhC) initiative in Spain. Our investigation was underpinned by Prochaska and Di Clemente's stages of change model. We also used the A.S.E. (Attitude, Social influence and self-Efficacy) Model to identify the psychosocial determinants of this professional behaviour. *Setting* Spanish community pharmacists. *Method* A validated questionnaire was sent to all community pharmacists registered on a national database and 1,977 (10.3%) responded. The questionnaire assessed stage of change regarding the implementation of PhC and the psychosocial determinants of this professional behaviour. Data were analyzed using descriptive statistics. Kruskal–Wallis and Mann–Whitney *U* tests were used to compare psychosocial determinants according to stage of change. The profile of community pharmacists who had implemented PhC was identified through logistic regression analysis. Main outcome measures: attitude, social influence, self-efficacy, motivations, needs and stages of change to perform PhC. *Results* Some respondents ($n = 228$; 11.8%) had adopted PhC, and were, thus, in the action or maintenance stage. The mean A.S.E. determinants scores increased significantly by stage i.e. from "precontemplation" to "action": attitude (0.28 vs. 0.99), social influence of people (2.61 vs. 3.07), and self-efficacy (2.74 vs. 3.61). Conversely, most needs were highlighted by precontemplators (3.66 vs. 347.). Variables significantly associated with the probability of implementing PhC were: having undertaken appropriate training (OR: 13.92; CI 95%: 5.37–36.08); self-efficacy (OR: 3.19; CI 95%: 2.38–4.28), having assistant pharmacists (OR: 1.70; CI 95%: 1.02–2.80) and positive attitude (OR: 1.03; CI 95%: 1.01–1.04). The A.S.E. determinants were the best predictors of PhC implementation according to the regression model. *Conclusion* The implementation of PhC among Spanish community pharmacists appears to be relatively low. Strategies to move pharmacists should be adapted to stage: focussed on emphasizing advantages at initial stages and facilitating training courses, guidelines and communication to professionals at intermediate and advanced stages.

Keywords Pharmacy · Models · Pharmacists · Professional role · Questionnaire · Spain · Community pharmacists · Pharmaceutical care · Psychosocial determinants · Training · Pharmacies

E. Zardaín · M. O. del Valle · M. I. Loza · E. García · A. Lana · W. A. Markham · M. L. López (✉)
University of Oviedo, Oviedo, Spain
e-mail: lopez@uniovi.es

Impact of findings on practice

- Health Institutions and Pharmaceutical Societies could use our findings to develop tailor-made programmes that would aim to facilitate the implementation of PhC and would be adapted to the pharmacist's needs.
- Knowing the profile of the pharmacists who are ready to implement PhC could help to make a suitable selection of participants for developing programmes efficiently.
- Clarifying the distribution of professionals according to the stage of change could facilitate the design of interventions adapted to each stage, which will also contribute to a greater efficiency of the developed strategies.

Introduction

The recent introduction of the Pharmaceutical Care (PhC) concept [1–3], encourages community pharmacists the world over to change their professional practice from a focus on drugs to a focus on patient care. This initiative aims to promote safe and effective medicine use and facilitate greater informed patient management of medicines. PhC is supported by international and national institutions in almost all countries but few of them have observed a widespread change in pharmaceutical services [4–6].

In Spain, PhC was introduced in 1995 but relatively little is known about the extent to which community pharmacists have embraced the focus on patient care. However, the adoption of the new role by pharmacists is believed to be limited and geographically unequal [7]. In 2001, the Spanish Ministry of Health published a Consensus on PhC [8], which focussed on patient—oriented professional activities of the pharmacist. The consensus document included an analogous concept, the *Pharmacotherapy follow-up* which was defined as:

> The professional practice in which the pharmacist is responsible for the patient's medication needs through the detection, prevention and solving of drug related problems carried out in a continuous, systematic and documented way, collaborating with the patient and other health service staff, to achieve specific results that improve the patient's quality of life.

Investigations in many countries [9, 10], including Spain [11–14] have examined the causes of the slow and uneven geographical implementation of PhC services, and how to change this situation. These studies aimed to identify psychosocial and behavioural factors that explain the slow uptake of the core PhC concepts in order to develop corrective strategies that could potentially facilitate change. However, the findings are not conclusive.

The transtheoretical model

Prochaska and DiClemente's Transtheoretical Model (TTM) has been widely used to promote health behaviours [15, 16]. Some investigations focussed on drug therapy [17] while others focussed on professional behaviours related to health including organizational change [18] and the performance of PhC [19]. According to the TTM, people are able to make progressive and reversible changes to their behaviour by passing through a series of qualitatively different stages: precontemplation, contemplation, preparation for action, action and maintenance. The application of such a theory to PhC permits us to state that community pharmacists in pre-contemplation do not even consider the possibility of adopting PhC. Community pharmacists in contemplation, consider the possibility of adopting PhC within the next 6 months. Community pharmacists in preparation, are willing to implement PhC in the immediate future, usually, no later than 1 month. Community pharmacists in the action phase have been implementing PhC for up to 6 months. Community pharmacists in maintenance have been implementing PhC for more than 6 months and can be considered to have consolidated PhC in their professional practice. Educational and administrative interventions need to be adapted to the stage of change in order to effectively facilitate forward movement through the TTM cycle towards a higher stage. This is because strategies that facilitate movement from precontemplation to contemplation, for example, are dissimilar to strategies that facilitate movement from contemplation to ready for action [15]. The TTM then helps to explain the failure of indiscriminate strategies that do not take into account a person's position in the process of change. This model also supports the need to investigate the position of pharmacists in the change process towards a new professional role.

The A.S.E. model

The A.S.E. Model [20, 21] (currently I-Change Model) posits that the distal psychosocial determinants of any human behaviour are attitude, social influences and self-efficacy. Barriers and skills exert their influences between the intention to perform and the execution of the behaviour. This model has been widely used to explain and try to change patients' behaviour related to food, sun, tobacco, cancer prevention, etc. [22]. and some professional behaviours [23, 24]. But, as far as we know, the model has yet to be used to explain and encourage change in pharmacists' behaviour. Figure 1 shows the components of the A.S.E. Model schematically, as they pertain to the adoption of PhC by community pharmacists. Thus, a community pharmacist is likely to adopt the new professional role and undertake PhC if she/he: (1) Has positive attitude, i.e. perceives more advantages than disadvantages of adopting the new professional role. (2) Observes colleagues adopting the new professional role and perceives that she/he is supported by her/his professional and administrative environment to adopt the new role. (3) Believes she/he is capable of performing PhC successfully, because she/he has the necessary skills and does not anticipate important barriers. Potential barriers include inadequate knowledge of PhC, underdeveloped communication skills and insufficient physical space and time in the pharmacy [25, 26]. Finally, understanding pharmacists' motivations to change

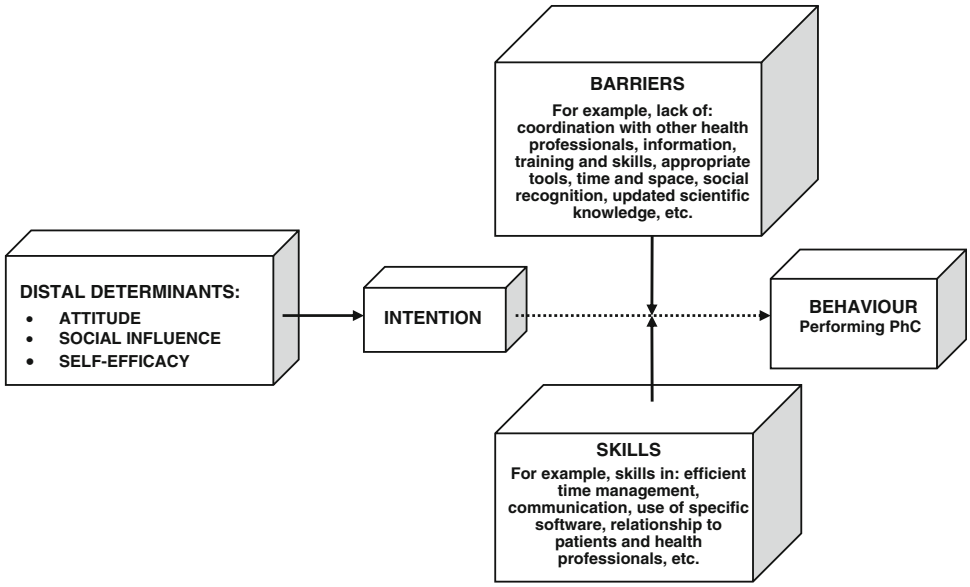

Fig. 1 Psychosocial determinants of the A.S.E. model

their professional behaviour completes the theoretical framework of the models.

Identifying the position of the pharmacists in the change process and understanding potential barriers could inform the development of tailor-made interventions that would aim to facilitate the uptake of PhC by community pharmacists.

Aim of the study

The general aim of the study was to achieve a greater understanding of the implementation of PhC in Spain. The specific objectives were: first, to describe the position of the Spanish community pharmacists in the TTM process of change cycle; second, to measure the A.S.E. determinants of the professional behaviour to implement PhC; third, to sketch the profile of the pharmacists who have already adopted the new role; fourth, to identify strategies that could potentially facilitate the adoption of the new PhC role.

Method

The '*SeFar España*' *survey* ('*Study of the psychosocial factors associated with the PhC in Spanish community pharmacies*') was undertaken in 2005. An anonymous questionnaire [27] was sent twice, separated by 1 month, together with a stamped, addressed envelope to 19,250 pharmacy owners whose details were registered on a national professional database. The questionnaire aimed to assess the A.S.E. determinants, the stage of change, the needs and motivations to perform PhC and the pharmacist/pharmacy characteristics (Table 1). The reliability and validity of the scales used in the questionnaire were tested in previous research [27]: exploratory factorial analysis was used to investigate construct validity; the scales had a

Table 1 Variables included in the questionnaire and measurement scales

Variable	Category and values
Gender	Man/woman
Age	Years, from 23 to 79
Professional experience	Years, from 1 to 53
Professional category	Pharmacy owner/assistant pharmacist
Training in PhC	Yes/no
Inhabitants in the pharmacy's district	<25,000; 25,001–100,000; >100,000
Pharmacy computerized	Yes/no
Are there assistants pharmacists in the pharmacy?	Yes/no
Attitude (35 items: 18 advantages, 17 disadvantages)	Total score and mean of the attitude items (scale from −5 to +5)
Social influence from persons and organizations (25 items)	Total score and mean of the social influence items, from 0 to 5
Self-efficacy	Total score, from 0 to 5
Motivations (15 items)	Total score and mean of the items, from 0 to 5
Needs (30 items)	Total score and mean of the items, from 0 to 5
Intention to implement PhC	Yes/no
Changing stage towards the new professional role	Precontemplation (1); Contemplation (2) and Preparation for action (3) = Non-PhC performance. Action (4) and Maintenance (5) = PhC performance

Table 2 Mean scores and CI 95% of the ASE determinants, the motivations and the needs, according to change stages

	Mean score (CI 95%)					P_1[b]	P_2[c]
	Precontemplation $n = 1,255$ (65.2%)	Contemplation $n = 322$ (16.7%)	Preparation $n = 120$ (6.3%)	Action $n = 33$ (1.7%)	Maintenance[a] $n = 195$ (10.1%)		
Attitude	0.28 (0.25–0.32)	0.66 (0.60–0.72)	0.74 (0.64–0.84)	0.93 (0.73–1.14)	0.99 (0.90–1.08)	<0.001	<0.001
Social influence (persons)	2.61 (2.55–2.67)	2.92 (2.82–3.01)	2.96 (2.80–3.12)	3.07 (2.70–3.44)	2.88 (2.74–3.03)	<0.001	<0.001
Social influence (organizations)	2.30 (2.24–2.36)	2.77 (2.66–2.88)	2.67 (2.47–2.87)	3.06 (2.64–3.49)	2.87 (2.71–3.03)	<0.001	<0.001
Self-efficacy	2.74 (2.68–2.79	3.27 (3.18–3.36)	3.56 (3.42–3.71)	3.61 (3.33–3.89)	4.04 (3.92–4.15)	<0.001	<0.001
Motivations	3.28 (3.23–3.34)	3.70 (3.61–3.78)	3.68 (3.54–3.82)	4.00 (3.80–4.19)	3.76 (3.65–3.87)	<0.001	<0.001
Needs	3.66 (3.61–3.70)	3.61 (3.53–3.70)	3.45 (3.30–3.59)	3.47 (3.11–3.83)	3.45 (3.32–3.58)	<0.005	0.007

[a] 52 respondents "Doesn't answer/know" this question

[b] Significance of the differences among the five stages

[c] Significance of the differences between Stage 1 and 5

high reliability (Cronbach's α between 0.87 and 0.96); pharmacists in extreme stages of change showed significant differences, supporting discriminant validity; no significant differences between test and re-test were detected, supporting repeatability.

Data were entered in a computer database and loaded into SPSS 15.0 (SPSS Inc. Chicago, Illinois, USA) for descriptive statistic analysis. The mean scores for each A.S.E determinant and the motivations and needs in each of the five stages of the change process were identified. The non-parametric Kruskal–Wallis test was used to detect significant differences between the means that were generated ($P < 0.05$). The Mann–Whitney U test was used to compare the mean scores in the two extreme stages: precontemplation and maintenance.

The profile of the professional who was already performing the new role was determined through the use of logistic regression analysis. The dependent variable was 0 = Non-PhC performance (Stages 1, 2 and 3); 1 = PhC performance (Stages 4 and 5). Covariates were added to the model in five steps using the backward method: (Step 1) the pharmacist and pharmacy characteristics; (Step 2) the A.S.E. distal determinants; (Step 3) the intention to undertake PhC; (Step 4) the perceived needs to undertake PhC; (Step 5) the perceived motivations to undertake PhC.

Results

Pharmacist and pharmacy characteristics

There were 1,977 community pharmacists (56.4% women) who returned the questionnaire, 10.3% (response rate) of the total number of pharmacists on the national professional database ($N = 19,250$). The respondents had a mean age of 43.82 years (95% CI 43.37–44.23); were almost all pharmacy owners (90.2%; $n = 1,783$) who had been working for a mean of 17.61 years (95% CI 17.12–17.97) and 62.2% ($n = 1,230$) stated they had received specific PhC training. A total of 985 respondents (49.8%) worked in pharmacies located in towns with fewer than 25,000 inhabitants, 306 (15.5%) worked in towns with between 25,000 and 100,000 inhabitants and 686 (34.7%) worked in towns with more than 100,000 inhabitants. More than half the respondents ($n = 1,123$; 56.8%) had assistant pharmacists and 1,941 (98.2%) had a computerized pharmacy.

Position of the pharmacists in the stage of change process

Table 2 shows the relative frequencies by stage. Most respondents ($n = 1,255$; 65.2%) were in the precontemplation stage, i.e. they did not plan to undertake the new role. Only 11.8% ($n = 228$) stated that they performed PhC, placing them in the action or maintenance stage.

A.S.E. determinant scores according to the stage of change

The mean scores of the A.S.E. determinants varied significantly according to the five stages that the respondents were in (Table 2, P_1). *Attitude* and *self efficacy* scores increased from precontemplation (mean attitude score = 0.28 and mean self efficacy score = 2.74), to maintenance (0.99 and 4.04, respectively). The mean *motivation* score also varied significantly across the stages of change cycle. The most motivated pharmacists were in Stage 4 (action) with a mean score of 4.00. Respondents in the action stage also reported that they were the most sensitive to social influence from other people and other organizations and had mean scores of 3.07 and 3.06, respectively. Significant differences in *perceived needs* were also observed. The highest mean score

was recorded by respondents in precontemplation (3.66) and the lowest mean score was recorded by respondents who were prepared to undertake the new role and those who were in maintenance (both 3.45). In general, the attitude, social influences of people and self-efficacy scores tended to be higher as respondents moved through the stages from 1 to 4.

The mean scores of all determinants in the extreme positions, precontemplation versus maintenance of the action (Table 2, P_2), were also significantly different ($P < 0.001$, except for needs: $P = 0.007$). The A.S.E. determinants scores increase significantly between the two extreme stages of change, especially attitudes, which were more than three times greater in maintenance stage than in the precontemplation stage.

The perceived needs with the highest score were also different in the two extreme stage groups: the highest scored needs of pharmacists in precontemplation was to have suitable tools available, such as training courses, practice guidelines and specific software but the highest in maintenance was for 'the Health Institutions and the Spanish Pharmaceutical Society to provide coordination among health professionals'.

Profile of pharmacists who have undertaken the new professional role

The profile of professionals who were already undertaking the new role is shown in Table 3. The final logistic regression model explains 50% of the change of behaviour, from 'not performing' to 'performing' (Nagelkerke $R^2 = 0.50$) (Table 4). The covariates that were significantly associated with the probability of undertaking PhC were, in order of influence, having PhC training, which increases the probability by almost 14-fold (OR = 13.92), having high self-efficacy, which increases the probability of undertaking the new role more than 3-fold (OR = 3.19) and having assistant pharmacists (OR = 1.70). Additionally, the probability of implementing the new professional role increased by almost 3% (OR = 1.03) for each point increase in attitude score. The A.S.E. determinants, which were added in the second step of the regression analysis, had the greatest influence on the model fit as they increased the Nagelkerke R^2 from 0.187 to 0.463, the highest increase in the five steps (Table 4).

Table 3 Logistic regression: significant covariates in the final model which explains the implementation of PhC

Covariate	O.R.	95% CI	*P*
Training in PhC (0 = NO)	13.92	5.37–36.08	<0.001
Assistant pharmacists (0 = NO)	1.70	1.02–2.80	<0.05
Self-efficacy (TS)	3.19	2.38–4.28	<0.001
Attitude (TS)	1.03	1.01–1.04	<0.001

Dependent variable: performs PhC (0 = NO/1 = YES)

TS = Total score of the variable

Discussion

The main findings of this study show that: first, a scarce 12% of respondents develops PhC (Stages 4 and 5) and just over 6% is prepared to implement PhC; second, the scores of the ASE determinants need to be improved, mainly in the initial stages; third, the more training and the higher self-efficacy score, the more PhC implementation.

Our study is the only national survey of community pharmacists' PhC implementation in Spain. The questionnaire was only sent to pharmacy owners as it is they who decide whether to implement PhC or not and also because of the fact that all of them are pharmacists. The response rate was just above 10%, but this is higher than response rates in other nationwide postal surveys [28, 29] and in Spain is only bettered in some local or regional surveys [30, 31]. Reasons underpinning our low response rate are likely to be disinterest in PhC, pharmacists' workload and our exhaustive and relatively lengthy questionnaire.

Comparisons of our results with those of other studies on PhC and other patient-oriented services, such as cognitive services [9, 10, 12], should be made with caution for two reasons. First, the definition of PhC has changed over time and varies according to country [32]. Second, the psychosocial models used in earlier research are not identical even though they have common features. We chose the A.S.E. and TTM models because their validity had been tested in several previous investigations on both healthcare professionals [23, 24] and patients' behaviour

Table 4 Logistic regression: power of each step to explain the implementation of PhC

Steps	−2 log of the likelihood	R^2 of Nagelkerke
Step 1: Pharmacist and pharmacy characteristics	733.758	0.187
Step 2: The variables of Step 1 + A.S.E. variables (attitude, social influence, self-efficacy)	534.647	0.463
Step 3: Those of Step 2 + intention of performing PhC	508.561	0.495
Step 4: Those of Step 3 + needs	505.217	0.500
Step 5: Those of Step 4 + motivations	505.217	0.500

[22], they are relatively straightforward and we had experience using them [33, 34]. Other similar studies were based on theories in addition to the TTM, for example Fishbein—Ajzen's Planned Behaviour [35], reasoned action, goal-oriented behaviour and the theory of trying [36], Rogers' diffusion of innovation [14, 37], Leavitt's organization and Borum's strategies of change [12, 38, 39].

We have shown that less than 12% of the community pharmacists we surveyed have adopted PhC. Our results could be overestimated because when the response rate is low the sample usually includes the most motivated individuals.

In a previous investigation we carried out in a single Spanish region to validate our questionnaire [30], 7.5% of community pharmacists had adopted PhC. Another regional survey, conducted in Spain by Aguas et al. [14], found approximately 10% of community pharmacists had implemented PhC and less than 5% had used Dader's method [40], the PhC method most widely used in Spain. This procedure method proposes developing PhC in four steps: (1) To get information about the status of the patient's health and his/her medication; (2) To record the relevant information; (3) To evaluate the status; (4) To intervene with suitable advice and information according to such evaluation. Results from local surveys indicate that adoption of PhC varies greatly from 14 to 40% [11, 41]. Moreover, geographical differences and the time elapsed between the surveys may help to explain these results. Lack of stability in the answers or a certain complacency bias may have influenced the findings in some foreign and Spanish surveys [11, 14, 42, 43]. However, this potential bias has a smaller influence on national surveys such as ours because there is greater anonymity.

The mean distal A.S.E. determinant scores varied according to stage in the process of change and the majority of scores increased from Stage 1 to 4 and some even increased further in Stage 5, the final stage. These results are plausible and support the construct validity of the questionnaire. Attitude and self efficacy increased from contemplation to maintenance. Thus, respondents with the most positive attitude, who felt most capable of undertaking PhC were already adopting PhC, either in the action stage or maintenance stage. The positive correlation of both attitude and self efficacy with the new role was corroborated in the multivariate analysis. In general, social influence scores also increased, but only as far as Stage 4. It would seem likely that a pharmacist in the maintenance stage would not perceive as much pressure to undertake PhC because she/he would have already been doing it for more than 6 months.

The mean *need* score to eliminate barriers and acquire skills was highest in Stages 1 and 2, and then decreased, but the scores are not very different in each of the stages. It would appear that irrespective of whether community pharmacists have undertaken PhC or not, they do not perceive that they have been supported by national and regional institutions to change their professional role. Although needs do not differ much quantitatively between stages, they do vary qualitatively. Thus, community pharmacists in precontemplation or contemplation commonly identified needs related to specific tools such as more training courses, practice guidelines and specific software, the difficulty of performing the required tasks and training. In spite of the fact that 62.2% had received some courses on PhC, they demand more, perhaps because previous courses were based mainly on theory and the professionals need training courses based on the acquisition of skills and updating the knowledge of new drugs. Community pharmacists in the maintenance stage frequently identified the need for communication between pharmacists and doctors, health institutions and the Spanish Pharmaceutical Society in order to support the sustainability of the PhC initiative. Similar results have been reported previously. Berger et al. [19] and Plaza [11], respectively surveyed American and Spanish pharmacists and found that the barriers and needs underpinning the implementation of PhC were greatest in Stages 1 and 2. Additionally, Plaza [11] stressed the lack of corporative and institutional support. Rossing et al. [43] reported that pharmacists who were actively engaged in PhC provision were those who emphasized the importance of close collaboration with patients, healthcare professionals and organizations.

The multivariate analysis showed that the best predictor of implementing PhC was training. The odds ratio of undertaking PhC was 14 times higher in the group who had received training. Adequate training has been highlighted in several countries as a precondition for the implementation of PhC/cognitive services [44–47]. In Spain the lack of training has also been identified as a barrier [11, 44] and its opposite, the provision of training, as a facilitator [11, 12]. The study design does not allow us to distinguish if performing PhC led to training or the training led to performing PhC. Among the A.S.E. determinants, the best predictors of adopting PhC were self-efficacy followed by attitude and this finding is consistent with those of other studies of PhC and other health behaviours [48–51]. Each point scored in the self-efficacy scale increased the probability of performing PhC by 3.2 times. The A.S.E. determinants explained almost 28% of the probability of implementing PhC and thus, had much greater predictive power than personal and sociodemographic characteristics which together only explained 19% of this probability. This finding supports the use of behavioural psychosocial models to investigate of PhC implementation. Finally, having assistant pharmacists also slightly increased the probability of undertaking PhC. This may be because

assistant pharmacists contribute to a more efficient workload distribution. Plaza [11] also found that the larger the pharmacy the more likely the pharmacy was to implement PhC. Roberts et al. [52, 53] showed that pharmacies having a larger turnover and larger number of pharmacists were the most likely to adopt innovative practices relatively quickly. Our regression model explains approximately 50% of the behaviour change, so new factors involved in changing the professional role which were absent from our model, should be identified.

According to the ASE and TTM theory, the strategies for our pharmacists in the two-first stages (nearly 82%) should be focussed on improving attitude and increasing social influence, in order to influence the decisional balance. Mass media advertising, information at the workplace and support from the *Spanish Pharmaceutical Society and health authorities* could be very useful to emphasize the advantages of PhC (benefits for patients, more scientific professional activities, social recognition, satisfaction of pharmacists in action and maintenance, future of the pharmacy as a public service, etc.). It can also be useful to inform that alternatives to the perceived disadvantages exist, for example, guides and software to simplify the new service. For pharmacists in the preparation stage (a little more than 6% in our sample) strategies should be aimed at increasing their self-efficacy, by removing barriers and providing them with appropriate skills. In the light of our results, it would be necessary to provide skill training courses, to design specific software and simple guidelines and to implement administrative rules to support the pharmacies, especially those with the fewest economic and human resources. Finally, for pharmacists who are already implementing PhC (nearly 12%) it would be essential to facilitate communication with nurses, doctors and others staff members in order to promote coordinated actions capable of facilitating the uptake of PhC. It is also necessary to reduce the bureaucratic load of the professionals.

Our findings are limited by the low response rate, which prevents their generalisation to all Spanish pharmacists. However, we believe they can be useful for others working in the field of PhC implementation. It is possible that pharmacists who did not participate in our survey may not be interested in the new role and, if this was the case, then interventions that focussed on them may not be successful.

Conclusion

Most of the pharmacists were in precontemplation and only about 12% were in the action or maintenance stages. Pharmacists who undertake PhC are more likely to have received relevant training, perceive more advantages than disadvantages in the new role and, thus, have positive attitude, and report high self-efficacy, probably because they have acquired the necessary skills and have overcome the barriers. Potential barriers include those linked to the pharmacy itself e.g. space and time and administrative and institutional barriers. The needs to implement PhC vary according to the stage, so the strategies to improve such implementation should be carefully selected taking into account the position of the pharmacist in the stage of change process, in order to influence the decisional balance at the first stages and to facilitate the implementation of PhC at more advanced stages.

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Conflict of interest None.

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