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RESEARCH ARTICLE

# Barriers to the implementation of advanced clinical pharmacy services at Portuguese hospitals

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**Abstract** *Background* In some countries, such as Portugal, clinical pharmacy services in the hospital setting may be implemented to a lower extent than desirable. Several studies have analysed the perceived barriers to pharmacy service implementation in community pharmacy. *Objective* To identify the barriers towards the implementation of advanced clinical pharmacy services at a hospital level in Portugal, using medication follow-up as an example. *Setting* Hospital pharmacies in Portugal. *Methods* A qualitative study based on 20 face-to-face semi-structured interviews of strategists and hospital pharmacists. The interview guide was based on two theoretical frameworks, the Borum's theory of organisational change and the Social Network Theory, and then adapted for the Portuguese reality and hospital environments. A constant comparison process with previously analysed interviews, using an inductive approach, was carried out to allow themes to emerge. Themes were organised following the Leavitt's Organizational Model: functions and objectives; hospital pharmacist; structure of pharmacy services; environment; technology; and medication follow-up based on the study topic. *Main outcome measure* Barriers towards practice change. *Results* Medication follow-up appeared not to be a well-known service in Portuguese hospital pharmacies. The major barriers at the pharmacist level were their mind-set, resistance to change, and lack of readiness. Lack of time, excessive bureaucratic and administrative workload, reduced workforce, and lack of support from the head of the service and other colleagues were identified as structural barriers. Lack of access to patients' clinical records and cumbersome procedures to implement medication follow-up were recognised as technological barriers. Poor communication with other healthcare professionals, and lack of support from professional associations were the major environmental barriers. *Conclusion* Few of the barriers identified by Portuguese hospital pharmacists were consistent with previous reports from community pharmacy. The mind-set of pharmacists and predetermined attitudes are recognised as barriers that can give rise to new perceived barriers.

**Keywords** Clinical pharmacy · Organizational innovation · Pharmacists · Pharmacy Service, Hospital · Portugal · Qualitative research

## Impact of findings on practice

- Barriers identified for advanced clinical pharmacy services in hospitals may be closely related with the mind-set of pharmacists and their attitude towards change, which may create new perceived artificial barriers.
- Regardless of the efforts devoted to promote medication follow-up as a new pharmacy service, pharmacy educators and continuing training providers should not consider that professionals are aware of the new service or are prepared to provide it into daily practice.
- Pioneers may not be sufficient to move a profession forward; therefore, other stimuli such as professional associations and scientific societies are crucial.

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## Introduction

In 1993, the World Health Organization identified the pharmacist as a healthcare professional who is responsible for improving medicine outcomes in patients and in the general population [1]. Developed in 2008 through The Global Conference on the Future of Hospital Pharmacy and hosted by the International Pharmaceutical Federation Hospital Pharmacy Section, The Basel Statements showed a consensus among hospital pharmacists regarding focusing their activities "to optimize patient outcomes" [2]. Inclusion of clinical activities into hospital pharmacists' daily routines has been shown to reduce adverse drug events and the length of stay [3] and was associated with a reduction in mortality [4].

Different terms have been employed for the activities comprising the clinical role of the pharmacist. Clinical pharmacy [5], pharmacy services [6], pharmaceutical care [7], or medication therapy management [8] are some of the terms used. A hierarchy of services has been proposed, ranging from simple services, such as medicines information, to advanced services, such as pharmacist prescriptions [9]. Some of these services are mainly focused on identifying situations where a more appropriate use of medicines can be implemented, thus reducing the risk of adverse drug events (i.e., medication review). Medication follow-up, also referred to as pharmacotherapy follow-up, is a distinct service consisting of a close monitoring of medicines' clinical outcomes, resulting in interventions addressed to the patient or the medical team when negative outcomes appear [10]. This service was designed in Spain and then spread to Latin America and Portugal, with several studies demonstrating its efficacy and cost-effectiveness [10–14].

The degree of implementation of clinical pharmacy services has varied at the international level. Although dose adequacy assessment is a widely implemented activity, the implementation of advanced clinical pharmacy services is inconsistent and limited to highly developed countries [15]. The implementation of advanced clinical pharmacy services is higher in Canada [16], the United States [17], and Australia [18], whereas these services are scarcely implemented in Europe, except in the United Kingdom [19, 20]. Although some European countries have made progress in the implementation of clinical services in hospitals [21–27], advanced pharmacy services cannot be considered to be fully implemented. Portugal has some examples of the initial stages of clinical pharmacy services, both in hospital and community settings [28, 29]. However, a recent failure to implement a community pharmacy service for diabetes [30] may have eroded confidence among stakeholders in the clinical role of the pharmacist in Portugal.

Identifying barriers to the implementation of innovative practices in healthcare has been a frequent topic in the literature [31, 32]. Although several studies were developed at the community pharmacy level [33–44], there are only a few studies exploring factors that may hinder changes in practice in clinical services at the hospital level [45–47]. To date, no such study exists regarding Portuguese pharmacy services.

## Aim of the study

To identify the barriers to the implementation of advanced clinical pharmacy services at the hospital level in Portugal as perceived by hospital pharmacists, using medication follow-up as an example.

## Ethical approval

This study received prior approval from the University of Évora Ethics Board.

## Methods

In the context of an absence of information about factors hampering the implementation of hospital pharmacy clinical services, a qualitative study was performed from May to November 2009, and 20 semi-structured interviews were conducted with Portuguese practising hospital pharmacists. Participants were selected through a purposive snowball sampling method that aimed to take into account the following aspects that could potentially influence interviewees' opinions about the topics under analysis:

- Factors associated with the work environment:
  - Pharmacy Service-related: size of workforce in the service; computation and automatisation of the service.
  - Hospital-related: size; geographic area; management type.
- Factors associated with the pharmacists: experience with medication follow-up (based on the provision or not of a sustained service); age; gender; time of hospital work experience; positions of responsibility (i.e., head of the service or executive positions in hospital pharmacy societies or universities).

An interview guide that was previously used in the community pharmacy setting [38, 48, 49], and which is based on two theoretical frameworks—Borum's theory of organisational change [50] and the Social Network Theory

[51], was translated and slightly modified for the Portuguese pharmacy and hospital settings. The resulting guide comprised the following subjects:

- medication follow-up awareness: constituting the basis of pharmacist's opinions and, consequently, attitudes towards this service;
- roles and objectives of the hospital pharmacist: to investigate whether interviewee's expectations of the pharmacist role were in line with increasing their participation within the healthcare team;
- experience with implementing a medication follow-up service: to allow interviewees to indicate the barriers they encountered when attempting to implement this service;
- change strategies: to collect strategies used by participants in previous service implementation projects;
- social networking and medication follow-up: to gather information about key players in the hospital pharmacy who may block a change towards the implementation of medication follow-up;
- technology and medication follow-up: to explore how existing technological elements can facilitate or hinder the implementation of the service.

Face-to-face interviews were performed and tape-recorded after participants had read an introductory text that included an informed consent. Demographic data were collected after the interview using a structured questionnaire.

Medication follow-up was defined as 'a healthcare technology aiming at solving negative clinical outcomes of medication through a stepwise process of identification, intervention, and follow-up for each individual patient'. This definition was provided to participants after they had responded to the 'medication follow-up awareness' topic in the interview guide.

The interviews were transcribed verbatim and analysed using QRS NVivo v.8. A constant comparison process with previously analysed interviews, using an inductive approach, was carried out to allow themes to emerge. This process led to a constant re-codification of previous interviews and reorganisation of coding categories, as recommended by the Grounded Theory [52]. The resulting topics were organised by thematic analysis (I.B.) [53] according to a previously defined framework (I.B., F.F-L) following Leavitt's Organizational Model [54].

Of the 22 pharmacists invited, 20 participated in the study (Table 1). This was the minimum number established to ascertain that saturation was achieved. Participants were categorised into four groups for analysis: strategists (pharmacists with positions of responsibility) with experience (EP) or without experience (ENP) with medication follow-up and hospital pharmacists with experience (P) or without experience (NP) with medication follow-up.

**Table 1** Characteristics of participants

| Participants $n_{total} = 20$ (Strategists n = 8) | With experience medication follow-up n = 8 | W/o experience medication follow-up n = 12 |
|---|---|---|
| Gender | | |
| Female | 1 | 9 |
| Male | 7 | 3 |
| Age (years) | | |
| <35 | 4 | 5 |
| 35–44 | 3 | 3 |
| ≥45 | 1 | 4 |
| Time in practice as hospital pharmacy (years) | | |
| <5 | 3 | 3 |
| 5–14 | 9 | 3 |
| 15–24 | 6 | 4 |
| ≥25 | 2 | 2 |
| Staff (num. beds/pharmacists) | | |
| ≤20 | 1 | 1 |
| 21–50 | 5 | 6 |
| 51–70 | 2 | 3 |
| >70 | 0 | 2 |
| Computerization and automatization | | |
| Complete | 5 | 7 |
| Partial | 3 | 5 |
| Managerial type | | |
| Public | 7 | 11 |
| Private | 1 | 1 |
| Geographic area | | |
| North | 1 | 1 |
| Center | 1 | 4 |
| Lisboa & vale do tejo | 3 | 5 |
| Alentejo | 2 | 1 |
| Algarve | 1 | 1 |
| Hospital size (beds) | | |
| <200 | 2 | 0 |
| 200–499 | 3 | 8 |
| 500–799 | 1 | 3 |
| >800 | 2 | 1 |

## Results

Data saturation was achieved after interviewing the 20 participating pharmacists, and therefore no further sampling was required. Five themes emerged from the analysis, four of which resulted from the theoretical framework used

[54], while the fifth was identified from the participants' discourse: the 'concept of medication follow-up', 'the hospital pharmacist', 'structure of pharmacy services', 'technology', and 'environment'.

### Concept of medication follow-up

Medication follow-up was understood differently among the participants. Some strategists without experience with medication follow-up considered it as a practice philosophy that focuses on patients and their outcomes. In contrast, for the majority of participants, medication follow-up was a particular group of specific activities. Although drug information and guideline development were cited by some non-practicing interviewees, the identification of 'drug-related problems' and subsequent interventions were seen by all participants as the core of medication follow-up. Some participants also noted a few complementary elements, such as the continuity of care, the utilisation of standardised procedures, the definition and monitoring of the therapeutic plan, pharmacokinetic monitoring, the collection of patient information, and medication reconciliation.

> "…all this [pharmaceutical care, medication follow-up, clinical pharmacy] is, to me, more a way of being, of acting, and of intervening" - E4NP

> "…this follow-up actually involves the patient's pharmacotherapeutic profile analysis (…), and assessing whether it is appropriate or not. Therefore, it consists of ensuring medication appropriateness, checking if there are any health problems, if the doses are adequate, and if everything is adjusted to renal or hepatic function" - NP7

### Barriers: the hospital pharmacist

A major barrier associated with the hospital pharmacist was their mind-set against change, and particularly against introducing medication follow-up in their routine. Their discourse revealed reluctance towards change, holding to former conventions, uncertainty regarding their aptitudes, and a negative attitude towards the practice of medication follow-up. Some participants also reported a lack of motivation related to low remuneration or lack of recognition for these activities from colleagues, physicians, and administrators.

> "I think that people hold onto their professional tasks and cannot get rid of them. It is a matter of mind-set. I mean, it is hard to change mind-sets, and when a comfortable performing pattern is adopted, or someone thinks it is comfortable, nobody wants to abandon it" – E7NP

> "Your working conditions, what you earn… This is also important because people do not work just for the love of Art (although many times they do). People want to be rewarded for their work" – NP3

Unawareness of the concept of medication follow-up was also perceived as a barrier. This was also associated with a lack of appropriate training, lack of practical experience in clinical activities, and lack of sufficient education in areas such as therapeutics, drug information, and communication.

> "First of all, there is a general unawareness of what medication follow-up is, not only outside but also inside our profession" – P4

> "Frequently, we are not specialised in some areas, and we know everything superficially" – NP4

### Barriers: structure of hospital pharmacy services

Interviewees reported organisational barriers related to the structure of the pharmacy service: lack of time due to an insufficient workforce and high workload, mostly bureaucratic. Additionally, the existence of rigid organisational structures that do not promote autonomy and innovation but rather focus the role of pharmacists on logistic activities, are important barriers for the implementation of clinical activities.

> "then, at the hospital, (…) it is due to the lack of workforce and lack of time for so much bureaucracy that we end up being unavailable for patient-related tasks" – P2

> "In the last 10 years, we participated in the evolution from paper-supported prescription to electronically supported prescription (…); however, we have not attended to placing more pharmacists in the medical wards and even more pharmacists in the new areas under development (…). This is just because a lot of interest exists in the management, with stocks, with purchasing (…)" – E8P

A cultural context favouring the maintenance of traditional activities, along with a lack of support from colleagues and the head of the pharmacy, was mentioned as an additional barrier to implementing new clinical services.

> "From the management point of view, there are many things that are being done the same way as they have always been" – P4

> "An important part of the stimulus consists of watching managers and directors seeing this as a priority, and not as nonsense" – NP3

In addition, a lack of adequate working facilities was frequently reported. One of these barriers was the unfavourable conditions for communicating with the rest of the healthcare team, as pharmacists work inside the pharmacy service office.

> "Therefore, a vicious circle is created. Everyone remains at his office, at his functions; we are sending medicines whose utilisation conditions we ignore". – NP2

Barriers: technology

Restricted access to patients' clinical information, which is critical to perform medication follow-up, was another perceived barrier. Some interviewees noted that access to this information is blocked, the exchange of information within the healthcare team is insufficient, and in some cases, the information that exists is incomplete. Other participants reported difficulty in accessing information, due to insufficient drug information sources or lack of means for obtaining the information in useful time. These barriers were not unanimously supported.

> "The lack of information sharing [between hospital and primary care], I think it compromises any medication follow-up" – E4NP

> "I do not have resources, information technology. The only source I have is the Internet" – NP7

Some participants also highlighted their dissatisfaction with medication follow-up operational procedures. Some practitioners considered these procedures complex, bureaucratic, time-consuming, and inadequate for hospital practice, especially the 'patient interviewing' phase.

> "At the hospital level, more pragmatism is needed. For example, the Dader method [a specific procedure to provide medication follow-up] includes a 'Study phase' that is too complicated, too long, and involves a lot of documenting" - E5P

Barriers: environment

Environmental barriers identified by participants were related to the lack of support of some stakeholders, such as the National Health System, especially considering the scarce human and technological resources, pressure on cost containment, and the lack of a motivational professional and functional career. Other interviewees expressed contrasting opinions and cited the lack of support from the Pharmacists Association, due to the lack of accreditation and promotion systems.

> "In the hospital pharmacist career, where people have the same salary as that of their entry year, and the Government increases the salary just by the rate of inflation without any other compensation, what kind of stimulus do I have to invest in my training?" – NP3

> "The Pharmacists Association has not pushed sufficiently, either at the member's level or at the stakeholders' level, to move this forward"– E7NP

Another controversial barrier identified by some participants was related to the assumption that medication follow-up should be considered part of a pharmacist's role. They referred to the omission of this service in the Good Pharmacy Practice Official Statement, as well as in the hospital legislation, but particularly in the hospital pharmacists' professional career regulations.

> "There are no practice procedures defined. A person devoted to those functions [clinical activities] does not exist" – P2

Although not unanimous, some participants commented on the absence of a clinical orientation in the pharmacy degree curriculum as an important barrier. They considered the contents very theoretical and predominantly focused on community pharmacy activities. There was general agreement on the lack of specific continuing training activities.

> "Portugal is a country with good theoretical people. We have excellent university professors. However, these people never worked in practice, and sometimes they do not provide us with the tools we need" – E6P

Poor communication with other healthcare professionals was mentioned as another barrier. Some participants explained the lack of communication with community pharmacists based on mutual distrust but also due to the lack of implementation of medication follow-up by community pharmacists. Additionally, difficulties in communicating with patients and physicians were cited. The latter was attributed to physicians' fear of the involvement of pharmacists or to the idea of an inspection role of the pharmacist.

> "The big question, the big challenge and paradigm is: are we able to work together, hospital and community pharmacists? Are we open to this idea?" – E1NP

> "I think a general negative relationship exists because physicians find it difficult to accept pharmacists suggesting changes to their prescriptions" – P5

## Discussion

In this study, we aimed to explore perceived barriers that are delaying or hindering the implementation of advanced clinical services at hospital pharmacies in Portugal. Medication follow-up served as an example of a clinical service focused on patient outcomes that has been intensively promoted but scarcely implemented. The Portuguese situation may be similar to that of other countries, especially Southern European countries, where hospital pharmacy activities remain focused on distributive rather than clinical services.

From the interviews conducted with hospital pharmacists with distinct responsibilities and professional experiences, we have identified a wide range of barriers. Some of these are in line with barriers reported in similar studies in other settings, such as hospitals [46, 47], outpatient day-clinics [55], and community pharmacies [34, 37, 38].

In our study, the pharmacist's mind-set appears to be an important barrier hampering the changes needed for developing clinical activities, and this is in agreement with previous studies [37, 56]. In contrast to pharmacist-related barriers, there was a lack of agreement regarding external barriers. These contrasting opinions could be due to different personal experiences and the way hospital pharmacists look at this practice change. As reported by other authors, pessimistic individuals and non-implementers may overestimate the importance of external factors to justify their situation [56, 57]. Furthermore, despite the intention of the Basel Statements [2], assessing patient outcomes has been more often a research activity than a daily clinical practice [58]. Introducing patient outcome assessment into practice is necessary to implement medication follow-up [59].

A lack of time and a workforce shortage are the most frequently mentioned barriers to implementing clinical activities. When Portuguese hospital pharmacists refer to lack of time, they are considering their main focus on logistic and administrative tasks, but it may also reflect a poor attitude towards delegation, mainly in reference to pharmacy technicians or even administrative staff. Some studies demonstrated the aptitudes of pharmacy technicians to perform some of the activities usually performed by pharmacists [60, 61]. As far as the workforce shortage is concerned, it has been shown that the number of clinical pharmacy services provided increases as the number of pharmacists per pharmacy increases [45].

Another frequently identified barrier is the lack of specific education and training. However, a recent Spanish study with a similar socio-cultural environment demonstrated that high-quality continuing training has not promoted the implementation of medication follow-up [62]. Motivational issues, such as the lack of adequate remuneration or a motivational career and the rigid organisational structure of the hospital pharmacy, which is associated with the lack of support from colleagues and head pharmacists, are barriers identified in that study.

A poor relationship with physicians was highlighted in our study, as in other similar studies performed in countries or areas with low service implementation rates [34, 46, 47, 49]. It seems that low implementation is associated with a poor relationship, although it is not clear which is the cause and which is the effect. As demonstrated in a recent study, the physician's fear of the pharmacist's meddling [63], but also a cop-like behaviour, the pharmacist's fear of and embarrassment regarding meddling [37], and a lack of knowledge and communication skills [34, 46] may also contribute to the poor relationship. In addition to establishing mutual professional roles, several other positive predictors were related to a proficient collaboration, such as: pharmacists initiating the collaboration, establishment of trustworthy relationships, and professional interaction [60, 61]. The best facilitator of this effective communication is most likely the implementation of clinical services [24].

The technological barriers identified are mainly related to restricted access to clinical information, including patient clinical records. A potential reason for impeding access to medical records may be related to a poor image of pharmacists that is held by physicians. A previous study showed that physician acceptability seems to be related to a previous acquaintance with pharmacists and pharmacy services [63]. Also related to technology, access to reference books and databases was also mentioned as a barrier. This is likely to be more associated with a lack of self-confidence among hospital pharmacists than with an actual difficulty.

### Strengths and weaknesses

Our study raises a reasonable doubt concerning the conclusions of previous studies on barriers to pharmacy service implementation. As recognised by several interviewees in our study, pharmacists' mind-sets may be a strong barrier that influences their attitudes towards other small obstacles that could be easily overcome, previously considered as major barriers. Practice changes should most likely be initiated with an attitudinal change that could modify pharmacists' perceptions of other commonly mentioned barriers [63].

The present study has two potential weaknesses: first, the theoretical nature of the data saturation concept, coincident with all qualitative analyses; and second, the potential effects of a single-coder procedure.

## Conclusion

Several barriers to the implementation of advanced clinical services in hospital pharmacies in Portugal were identified.

These barriers comprised hospital pharmacists' mind-set, environmental factors, access to information and technology, and particularities regarding the structure and organisation of the pharmacy service within the hospital.

Of these barriers, the pharmacists' mind-set appears to be a major barrier that limits the implementation of advanced clinical pharmacy services in Portuguese hospitals and influences the perception of all the other barriers. Further studies should analyse these barriers in depth to identify whether they are actual barriers or perceived barriers caused by the mind-set of the pharmacists.

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