Survey on the situation of telepharmacy as applied to the outpatient care in hospital pharmacy departments in Spain during the COVID-19 pandemic

Encuesta de situación de la telefarmacia aplicada a la atención farmacéutica a pacientes externos de los servicios de farmacia hospitalaria en España durante la pandemia por la COVID-19

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Resumen
Objetivo: Analizar la situación de la implantación y desarrollo de la telefarmacia aplicada a la atención farmacéutica a pacientes externos de los servicios de farmacia hospitalaria en España durante la pandemia por la COVID-19.

Método: Se envió una encuesta online de 10 preguntas a todos los socios de la Sociedad Española de Farmacia Hospitalaria a las seis semanas del inicio del periodo de confinamiento por la pandemia. Se solicitó una única respuesta por hospital. La encuesta incluyó preguntas sobre la realización de atención farmacéutica no presencial con dispensación a distancia previa al inicio de la crisis sanitaria, los criterios de selección de pacientes, los procedimientos de envío de medicación y los medios utilizados, el número de pacientes que se han beneficiado de la telefarmacia y el número de envíos realizados. Por último, se identificó la realización o no de teleconsulta previa al envío de medicación y si la actividad quedó registrada.

PALABRAS CLAVE
Telemedicina; Telefarmacia; Atención farmacéutica; Servicio de farmacia hospitalaria; Consulta externa; SARS-CoV-2; Coronavirus; Pandemia.
Results: A total of 39.3% (n = 185) of all the hospitals in the National Health System (covering all of Spain’s autonomous regions) responded to the survey. Before the beginning of the crisis, 83.2% (n = 154) of hospital pharmacy services did not carry out remote pharmaceutical care activities that included telepharmacy with remote delivery of medications. During the study period, 119,972 patients were treated, with 134,142 deliveries of medication being completed. Most hospitals did not use patient selection criteria. A total of 30.2% of hospitals selected patients based on their personal circumstances. Home delivery and informed delivery (87%, 116,129 deliveries) was the option used in most cases. The means used to deliver the medication mainly included the use of external courier services (470%, 87 hospitals) or the hospital’s own transport services (38.4%, 71 hospitals). As many as 87.6% of hospitals carried out teleconsultations prior to sending out medications and 59.6% recorded their telepharmacy activities in the hospital pharmacy appointments record.

Conclusions: The rate of implementation of telepharmacy in outpatient care in Spain during the study period in the pandemic was high. This made it possible to guarantee the continuity of care for a large number of patients.

Introduction

The increasing adoption of information and communication technologies by society in general and by the health sector in particular, together with the need to transform healthcare to make it more efficient and patient-centered, have in the last few years triggered a growing demand for certain services to be provided remotely. Such services include distance care and monitoring, patient education and counseling, and coordination between different clinical teams. All these services can be subsumed under the category of telehealth.

This demand for remote healthcare has long been recognized in the realm of hospital pharmacy practice. In this respect, the term telepharmacy was coined years ago to refer to the delivery of hospital pharmacy services from a distance. Nonetheless, the literature proposes multiple definitions for the term, each with different variants and nuances. In this regard, the Spanish Society of Hospital Pharmacists (SEFH) has recently published its position statement on telepharmacy, according to which telepharmacy is the provision of pharmaceutical care from a distance through information and communication technologies.

At present, implementation of telepharmacy constitutes a significant challenge for pharmacists devoted mainly to their traditional hospital work, especially when it comes to providing pharmaceutical care to outpatients. Although in Spain the so-called Strategic Outpatient Pharmaceutical Care Map (Mapa Estratégico para la Atención al Paciente Externo) provided for the gradual implementation of telepharmacy, the recent SARS-CoV-2 pandemic has accelerated the need to ensure an adequate standard of pharmaceutical care for patients treated by hospital pharmacy departments throughout the country.

A few days after the state of emergency was declared in Spain, the country’s healthcare authorities introduced exceptional norms for dispensing hospital-issued medications as well as a series of procedures aimed at ensuring the provision of all ordinary and extraordinary pharmacy services and protecting individuals, goods and places for as long as the healthcare emergency continued. According to that norm, pharmaceutical authorities of the different autonomous regions were exceptionally authorized to provide pharmaceutical care with remote dispensing to outpatients based on their personal circumstances. Home delivery and informed delivery (87%, 116,129 deliveries) was the option used in most cases. The means used to deliver the medication mainly included the use of external courier services (470%, 87 hospitals) or the hospital’s own transport services (38.4%, 71 hospitals). As many as 87.6% of hospitals carried out teleconsultations prior to sending out medications and 59.6% recorded their telepharmacy activities in the hospital pharmacy appointments record.

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Around 616,000 outpatients. Before the COVID-19 crisis, 83.2% (77.1-88.3%, CI: 95%) (n = 154) of hospital pharmacies did not engage in remote pharmaceutical care activities that included the shipping of medications.

Over the study period, 119,972 patients were reported to have received their medications through remote dispensing telepharmacy services, with a total of 134,142 shipments made. This meant that in 41 hospitals over 80% of outpatients received their medication through a telepharmacy procedure (Figure 1).

A total of 87.6% (81.9-92.0%, CI: 95%) of hospital pharmacies conducted a teleconsultation with the patient prior to shipping their medications (Figure 2) and 59.6% (52.0-66.6%, CI: 95%) recorded telepharmacy activities in their appointments register.

The analysis found that 55.7% (48.2-63.1%, IC 95%) of hospital pharmacies did not use any selection criteria to decide which patients could be shipped their medications but rather shipped them to all the patients scheduled to pick up their medication from the hospital pharmacy in the program to spare them the risk of travelling. A total of 44.3% of hospitals had a procedure in place that included some selection criteria: 30.2% of hospitals selected patients according to their personal circumstances, 9.7% based on their condition, and 4.3% as a function of the nature of their medication or other criteria.

The most frequently used telepharmacy procedure was home dispensing and informed delivery of medications (87.0%) (81.3-91.5%, CI: 95%) (116,129 shipments), followed by coordination with primary care outpatient clinics (8,389 shipments), and coordination with pharmacies (7,512 shipments). Some hospital pharmacy departments used more than one procedure at a time (Figure 2).

The means used to deliver the medications to their addressees included courier companies (47.0%; 87 hospitals), the hospital's own transport services (38.4%; 71 hospitals), recourse to other private and/or volunteer entities (41.6%; 77 hospitals), use of a dedicated drug delivery company (14.0%; 26 hospital), and other solutions (7.0%; 13 hospitals).

### Table 1. Participating hospitals from the different autonomous regions

<table>
<thead>
<tr>
<th>Autonomous region</th>
<th>No. of hospitals</th>
<th>No. of hospital beds</th>
<th>No. of outpatients in 2019</th>
<th>No. of telepharmacy patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andalusia</td>
<td>28</td>
<td>13,123</td>
<td>127,362</td>
<td>27,994</td>
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<td>Aragon</td>
<td>7</td>
<td>3,065</td>
<td>18,792</td>
<td>4,801</td>
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<tr>
<td>Autonomous City of Ceuta</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Autonomous City of Melilla</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Balearic Islands</td>
<td>5</td>
<td>1,769</td>
<td>25,593</td>
<td>1,135</td>
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<tr>
<td>Basque Country</td>
<td>12</td>
<td>3,942</td>
<td>24,727</td>
<td>5,713</td>
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<tr>
<td>Canary Islands</td>
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<td>615</td>
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<tr>
<td>Cantabria</td>
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<td>23,695</td>
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<td>La Rioja</td>
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<td>170</td>
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<tr>
<td>Madrid</td>
<td>26</td>
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<td>83,261</td>
<td>19,919</td>
</tr>
<tr>
<td>Navarre</td>
<td>1</td>
<td>1,142</td>
<td>7,457</td>
<td>1,185</td>
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<tr>
<td>Principality of Asturias</td>
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<td>926</td>
<td>2,672</td>
<td>1,219</td>
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<tr>
<td>Region of Murcia</td>
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<td>19,928</td>
<td>923</td>
</tr>
<tr>
<td>Region of Valencia</td>
<td>17</td>
<td>6,908</td>
<td>68,510</td>
<td>10,165</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>185</strong></td>
<td><strong>78,962</strong></td>
<td><strong>615,768</strong></td>
<td><strong>119,972</strong></td>
</tr>
</tbody>
</table>

**Figure 1.** Percentage of outpatients who were dispensed their medication remotely by each of the hospitals.

**Figure 2.** Implementation of pharmaceutical teleconsultations before delivery of medications.
Discussion

Restrictions on mobility and home confinement as a result of the state of emergency declared during the COVID-19 pandemic have turned telepharmacy into a valuable tool for hospital pharmacies to facilitate access to pharmaceutical care and, specifically, enable distance dispensation of hospital-issued medications. This survey afforded SEFH an understanding of the extent to which telepharmacy was implemented across Spain, including details on home dispensing of medications, the means used, and the procedures implemented.

A significant aspect to be underscored is the huge expansion of telepharmacy, including remote dispensing and delivery of medications, during the state of emergency in Spain. Estimations based on the answers provided by respondents to the survey (39.3% of the 471 public hospitals registered in the 2018 edition of the general hospital registry [Catálogo General de Hospitales] of Spain’s Ministry of Health, Consumer Affairs and Social Welfare) indicate that around 300,000 outpatients received telepharmacy services in the country. Special mention should be made of the alacrity with which hospital pharmacies adapted to outpatients’ clinical needs arising from the crisis. Indeed, a mere six weeks was enough for a high percentage of pharmaceutical care services to come to be provided through telepharmacy. It must be taken into consideration that, from the onset of the COVID-19 pandemic to the publication of Ministerial Order SND/293/2020 on 25 March, many hospital pharmacies extended their dispensation periods and postponed pharmacological consultations in compliance with the Law.

It must be pointed out that most hospital pharmacies scheduled a pharmacological teleconsultation prior to dispensing medication. Different studies have revealed that remote consultations positively impact health outcomes, specifically regarding clinical management and adherence to treatment by chronic patients. It was not however the purpose of the survey to look into the teleconsultation methods used; to evaluate the health outcomes achieved by patients; or the costs associated to telepharmacy, which are undoubtedly interesting areas for further investigation into the application of telepharmacy.

One of the most striking findings of the survey was the large number of patients benefiting from telepharmacy services, as recorded in hospital information systems. SEFH’s position statement of telepharmacy, published once the study period was over, identifies the electronic medical record as the most efficient information system for the delivery of telepharmacy services and states that, whenever possible, such records should be integrated with the healthcare information systems and the telemedicine systems already in place in the different hospitals. This underscores the sheer usefulness of telepharmacy as a professional support service where the pharmacist’s physical presence is replaced by a relationship with the patient which, though virtual, abides by all the face-to-face procedures already in place in the hospital. For this relationship to work smoothly, hospital pharmacists were required to act as fast as possible to provide patients with all the information they needed before telepharmacy could be delivered to them. The pharmacotherapeutic expertise of specialist pharmacists together with the meticulous registration of pharmaceutical care interventions in the patients’ electronic medical record have allowed them to make fast decisions in collaboration with the other members of the multidisciplinary team in charge of the patient before the medication was dispensed and shipped out to the patient.

Although there was no requirement for hospital pharmacies to use any single shipping method, most deliveries during this period were shipped to the patient’s home. On most occasions, hospitals used courier companies for these deliveries, although in some cases other methods were used such as the hospital’s own transport services, volunteers, postal services, or civil protection services. The profuse recourse to courier companies may have been motivated by the availability of the so-called solidarity fund (fondo solidario) instituted by SEFH on 1 April, which made it possible for hospital pharmacies to ship medications free of charge, a benefit that had up to then not been included in their service offering, or at least not to the extent that it eventually became necessary. In the future, hospital pharmacies will have to further develop telepharmacy as a complementary tool within a mixed pharmaceutical care model based on both an onsite and a distance component, which caters for the individual needs of patients in an increasingly humanized healthcare environment.

The main limitation of this study lies in the fact that the survey was not validated prior to its administration and was specifically created to analyze a situation as exceptional as the COVID-19 pandemic. Nor does the study contribute any information on the degree of satisfaction of telepharmacy users; evaluate the procedures implemented; analyze their effect on treatment adherence; or consider any effectiveness or safety variables, as such aspects were not covered by the survey. Earlier telepharmacy experiences with specific populations such as HIV or hemophilic patients showed a very high level of satisfaction (9.7 ± 0.7 out of 10) with teleconsultations and home dispensing, regarding the shipping system used, the privacy and confidentiality it allowed, and the quality of care it provided. Future research work should focus on health outcomes, as well as on the economic effects of delivering pharmaceutical care through telepharmacy, without leaving aside other aspects such as patient satisfaction and the experience of care.

The results of the survey show that hospital pharmacies in Spain have the capacity to embrace the implementation of efficient telepharmacy services in the near future, once the COVID-19 pandemic finally recedes. For that it will be necessary to develop a robust legal framework, adapted to the patients’ needs and to the current challenges in the realm of public health.
Telepharmacy-specific procedures will have to be developed that include a definition of the criteria to be applied to select potential beneficiaries of the service. Taking into consideration the high degree of satisfaction reported since its implementation, telepharmacy could become a service that bolsters the quality and safety of the healthcare system with high rates of user approval. All these factors must be considered when planning and consolidating the delivery of remote pharmaceutical care through telepharmacy in the future.

In short, telepharmacy associated to the remote dispensing of medications has undergone a significant expansion during the COVID-19 pandemic in the outpatient care setting. This new tool has also made it possible to monitor patients from a pharmacotherapeutic point of view, evaluate treatment adherence and even reduce the infection rate by facilitating home confinement during the state of emergency.

Funding

Spanish Society of Hospital Pharmacists (SEFH).

Bibliography


17. Sociedad Española de Farmacia Hospitalaria. Documento de atención farmacéutica de Barbate [Internet monograph]. Barbate (Cádiz) 2020 [accessed 05/30/2020]. Available at: https://www.sefih.es/bibliotecavirtual/barbate/190331DocumentoBarbate_VF.pdf


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Conflict of interest

No conflict of interest.

Contribution to scientific literature

The study reports on the experience gained by hospital pharmacy departments in Spain in the areas of outpatient pharmaceutical care and remote dispensing and informed delivery of medication during the COVID-19 crisis. This is the first nationwide survey of a large sample of hospitals in the Spanish National Health System on the provision of telepharmacy.
APPENDIX 1. Survey on the provision of telepharmacy services during the COVID-19 pandemic

<table>
<thead>
<tr>
<th>Hospital name:</th>
<th>Autonomous region:</th>
</tr>
</thead>
</table>

**Activity**

No. of beds:
No. of outpatients (2019):

**Was your hospital delivering telepharmacy services before the pandemic?** YES/NO

**Type of delivery (multiple choice):**

- Home delivery
- Delivery to a patient association
- Delivery to an ambulatory care clinic
- Delivery to a pharmacy
- Other

**Patient selection criteria:**

- No criteria were used
- By personal circumstances
- By condition
- By medication prescribed
- Other

**Number of shipments made to the different destinations:**

- Home deliveries: No.
- Patient associations: No.
- Ambulatory care center: No.
- Other: No.
- Pharmacy: No.

**Shipment method used:**

- Courier service
- Hospital’s own transport services
- Volunteers, post, civil protection
- Distribution company
- Other

**Was a teleconsultation conducted prior to shipping the medication?** YES/NO

**What proportion of the total number of outpatients were shipped their medication?**

- 0-20%
- 60-80%
- 20-40%
- 80-100%
- 40-60%

**Was the delivery recorded in the appointments register?** YES/NO