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Pharmaceutical services in nursing homes in Spain

Prestación farmacéutica especializada en centros sociosanitarios en España

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Abstract

Objective: To describe the current situation regarding the specialized pharmaceutical service provision in nursing homes in Spain, from a healthcare perspective reflecting activity, care and services provided.**Method:** Observational, cross-sectional, multicenter study conducted between February-June 2018 through a survey aimed at all Hospital Pharmacy Units in Spain. Once the initial version was assessed by twelve evaluators whose healthcare assistance work were related to nursing homes, an electronic form was designed, consisting on 10 dimensions and 66 questions. A piloting was carried out by six nursing homes pharmacists. The results were analyzed descriptively.**Results:** The overall response rate was 29.7% (113 out of 380). Out of all studied hospital pharmacy units, 46.0% (n=52) served nursing homes (9 as Nursing Homes Pharmacy Department) whose characteristics defined a profile of pharmacy unit at hospital, public ownership, consolidation in this activity, with great variability in the number of centers and patients to be attended by service, and with the pharmacist's partial dedication. In 51.3% of cases, nursing homes professionals were represented at pharmacy and therapeutic committees, while 38.5% were from pharmacy services who participated in the selection of medical devices. Also, 67.4% performed an integral management of the therapy. The study has also shown that 34.6% counted on assisted electronic prescription, while 88.5% performed a pharmaceutical validation of the prescription prior to dispensing, which in 71.2% of cases consisted of individualized

Resumen

Objetivo: Describir la situación actual de la prestación farmacéutica especializada en centros sociosanitarios en España desde una perspectiva asistencial reflejando la actividad, la atención y los servicios prestados.**Método:** Estudio observacional, transversal, multicéntrico realizado entre febrero y junio de 2018 mediante encuesta dirigida a todos los servicios de farmacia hospitalaria de España. Una vez valorada la versión inicial por 12 evaluadores cuya labor asistencial estaba relacionada con centros sociosanitarios, se diseñó un formulario electrónico que constó de 10 dimensiones y 66 preguntas, y se realizó un pilotaje por seis farmacéuticos de centros sociosanitarios. Los resultados se analizaron de forma descriptiva.**Resultados:** La tasa de respuesta global fue del 29,7% (113 de 380). El 46,0% (n=52) atendían centros sociosanitarios (9 como servicios de farmacia de centros sociosanitarios) cuyas características concretaron un perfil de servicio de farmacia de hospital, titularidad pública, consolidado en esta actividad, con gran variabilidad en número de centros y pacientes atendidos por servicio, y con dedicación parcial del farmacéutico. En el 51,3%, las comisiones de farmacia y terapéutica tenían representación de profesionales de los centros sociosanitarios, y el 38,5% de los servicios de farmacia participó en selección de productos sanitarios. El 67,4% realizó una gestión integral del tratamiento. El 34,6% disponía de prescripción electrónica asistida, el 88,5% realizó una validación farmacéutica de la prescripción previa a la dispensación que, en el 71,2% fue en dosis

KEYWORDS

Nursing homes; Institutionalization; Pharmaceutical services;
Pharmaceutical care; Patient-centered care; Frail elderly;
Drug utilization review; Surveys and questionnaires.

PALABRAS CLAVE

Centro sociosanitario; Institucionalización; Prestación farmacéutica;
Atención farmacéutica; Atención centrada en el paciente;
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unit doses. It was found that 42.3% performed a third-level treatment comprehensive review, and 25.0% participated in the interdisciplinary nutritional assessment. It also showed that 34.6% actively participated in either comprehensive geriatric assessment, or clinical cases in interdisciplinary teams, and 46.2% counted on programs for the safe use of medicines.

Conclusions: The specialized pharmaceutical care at nursing homes is a reality, although it presents important differences in essential aspects for the quality of the assistance provided. It is necessary to go in-depth on the care model to be developed, as well as having a greater involvement of pharmacy services to achieve a comprehensive and person-centered care.

Introduction

The clinical profile of the persons who are treated in nursing homes (NH) (frailty prevalence of up to 71.8%) requires a pharmaceutical assistance that includes a comprehensive and person-centered care for processes related to the use of medicines, medical devices (MD) and nutritional products (NP). Chronicity, comorbidity or frailty are conditions that directly affect pharmacotherapy, and therefore should be incorporated into the healthcare model. Thus, improvement of care quality would be possible, as well as counting on a greater efficiency in the use of resources.

Health care services have developed in a very heterogeneous way in the nursing home setting in Spain. This is due to two main issues: regional competence and poor coordination between health and social services administrations, which, for the most part, the NH² depend on. Additionally, the development of specialized pharmaceutical provision (SPP) in NH is not being homogeneous either in the autonomous communities (CCAA by its Spanish acronym), neither from a chronological point of view, nor in its degree of implementation, nor in the application of Spain's Royal-Decree Law legal framework 16/2012³, which facilitates establishing drug deposits (DD) and pharmacy unit in the NH (SF-NH) or linking the DD to the hospital pharmacy unit (SF-Hosp by its Spanish acronym).

In 2013, CRONOS Group of the Spanish Society of Hospital Pharmacy (SSHP; SEFH by its Spanish acronym) prepared the document "Specialized Pharmaceutical Provision in Nursing Homes" Situation analysis and CRONOS-SEFH proposal⁴. The situation at that time was analyzed and a proposal for a specialized pharmaceutical care model (SPC) for NH was made. In 2015, the Ministry of Health, Social Services and Equality carried out an analysis of the existing models in the document "Assistance models for pharmaceutical provision in nursing homes"⁵. From both works, information is extracted from an organizational point of view, but not from the provision of services.

This paper aims to show the current situation of Spain's SPP in NH from an assistance perspective that reflects the activity, attention and services provided.

unitaria individualizada. El 42,3% llevó a cabo una revisión integral del tratamiento de nivel 3 y el 25,0% participó en la valoración nutricional interdisciplinar. El 34,6% participó activamente en la valoración geriátrica integral o de casos clínicos en los equipos interdisciplinarios y el 46,2% disponía de programas para el uso seguro de los medicamentos.

Conclusiones: La atención farmacéutica especializada en los centros sociosanitarios es una realidad, aunque presenta diferencias importantes en aspectos esenciales para la calidad de la asistencia prestada. Es necesario profundizar en el modelo asistencial a desarrollar y en una mayor implicación de los servicios de farmacia para lograr una atención integrada y centrada en la persona.

Methods

Observational, cross-sectional and multicenter study conducted between February and June 2018 through a survey aimed at all Hospital Pharmacy Units (SF) of Spain.

The survey was designed to be self-administered through an electronic form. Its first version, developed by professional experts in NH care, consisted of 9 dimensions and 52 questions on relevant and representative aspects for the purpose of the study. To verify that the interpretation of the terms and issues was impartial, each item was assessed according to relevance, sufficiency, clarity and coherence⁶ by 12 evaluators who had not participated in the design, and whose care work was related to NH. Each item had a rated criterion from 1 to 4 (1-does not meet the criteria; 2-low; 3-moderate; 4-high level) and a field of observations was associated. Those questions with a <3 score (kappa >0.90) were modified accordingly, one of the dimensions was broken down and new questions were added according to the observations made by the evaluators. Finally, it was structured in 10 dimensions and 66 items (Table 1).

The electronic form was built and conformity to its operation was obtained after the piloting conducted by a group of six pharmacists serving at NH. The centers participating in the design, validation and piloting of the survey also participated in its completion for the study.

As the study was descriptive, it was not necessary to determine a sample size. The contact details of the SF were obtained from the SEFH database and updated by consulting members of the CRONOS Group and the SEFH of the different CCAA. No exclusion criteria were applied.

In February 2018, an explanatory email with the objectives of the study, the invitation and access to the survey was sent to those responsible for the identified 380 SF. Four email reminders were established (between March and May) and two telephone contacts were made (June) re-sending the questionnaire whenever it was necessary.

Response rates were collected, as well as general characteristics of the SFs with NH and the professionals who served them. No analysis by subgroups or confounding variables were anticipated.

Table 1. Survey dimensions sent to the Pharmacy Unit

No.	Dimension
1	Pharmacotherapy management system and rational use of drugs, MD and NP
2	Prescription, dispensing and administration procedures for drugs, MD and NP
3	Development of pharmaceutical care
4	Health education programs aimed at the population served and health professionals in the NH healthcare area
5	Development of nutritional assessment programs
6	Integration into the center's assistance team
7	Inter-level Integrated Care
8	Management indicators
9	Medication safety management
10	Research activity

MD: Medical Devices; NH: Nursing Home; NP: Nutritional Products.

The results were analyzed descriptively using absolute and relative frequency (discrete variables) and measures of central tendency and dispersion (continuous variables), using the Excel®2007 program.

Results

Of the 380 SF consulted, 113 responses were received, from 15 different CCAA, resulting in an overall response rate of 29.7%. Out of all of

them, 52 (46.0%) SF provided services in NH. The response rate was not homogeneous among CCAA. No response was obtained in 2 Autonomous Communities. There was a greater contribution of SF serving at NH in Castilla-León, Andalucía and Galicia (Table 2).

The characteristics of the SF serving at NH are shown in table 3 and different SF professionals involved in this activity are shown in table 4. Some SF included primary care pharmacists and other professionals, such as die-

Table 2. Distribution by autonomous community of the responses received

Autonomous Community	Rate response by autonomous community (N/N _c %)	Global response rate (N/380)	SF serving NH: contribution by autonomous communities N _c (N _c /52%)
Andalucía	17/49 (48.0%)	4.5%	9 (17.3%)
C. of Madrid	12/47 (25.5%)	3.2%	0 (0.0%)
Castilla-León	11/17 (64.7%)	2.9%	9 (17.3%)
Cataluña	11/76 (14.5%)	2.9%	2 (3.8%)
País Vasco	10/18 (55.5%)	2.6%	1 (1.9%)
C. Valenciana	10/49 (4.2%)	2.6%	4 (7.7%)
Castilla-la Mancha	7/17 (43.8%)	1.8%	5 (9.6%)
Aragon	7/20 (35.0%)	1.8%	4 (7.7%)
Galicia	6/15 (40.0%)	1.6%	6 (11.5%)
C. of Islas Baleares	5/6 (83.3%)	1.3%	4 (7.7%)
Murcia	5/10 (50.0%)	1.3%	4 (7.7%)
Asturias	5/11 (45.5%)	1.3%	0 (0.0%)
Navarra	4/15 (26.7%)	1.1%	2 (3.8%)
C. Islas Canarias	2/13 (15.4%)	0.5%	1 (1.9%)
La Rioja	1/2 (50.0%)	0.3%	1 (1.9%)
Cantabria	0/6 (0.0%)	0.0%	0 (0.0%)
Extremadura	0/9 (0.0%)	0.0%	0 (0.0%)
TOTAL	(113/380) 29.7%		

C: Community; N: number of pharmacy units that respond to the survey; N_c: total number of pharmacy units to which the survey is sent; N_c: number of pharmacy units that both respond to the survey and attend nursing homes (NH); SF: pharmacy unit.

Table 3. General characteristics of the pharmacy units serving at nursing homes

Type of hospital pharmacy unit	N	%
• At nursing home (SF-NH)	9*	17.3
• At hospital (SF-Hosp)	43	82.7
Ownership of the SF	N	%
• Private	4	7.7
• Public	48	92.3
NH seen by SFs	Median (IQR: C1-C3)	
No. of NH centers per SF	2 (4.3: 1.00-5.3)	
No. of NH patients by SF	300 (502.5: 120.0-622.5)	
Regardless of the stage of development, attention from the SF to the NH is an activity:	N	%
• In pilot phase	5	9.6
• Recent onset (< 1 year)	8	15.4
• Consolidated (> 1 year)	39	75.0

• Excluded response options.

*They are concentrated in the Comunidad Valenciana (n = 4) and Navarra (n = 2).

C1: first quartile; C3: third quartile; IQR: interquartile range; NH: nursing home; SF: pharmacy units; SF-NH: nursing home pharmacy department; SF-Hosp: hospital pharmacy department.

Table 4. Professionals of the 52 pharmacy units serving at nursing homes

Professional category	Type SF	Time spent	N.° SF (%)	No. Professionals/SF Median (IQR: C1-C3)
Pharmacists	SF-Hosp	FT	16 (30.8)	1 (1: 1-2)
		PT	29 (55.8)	1 (0: 1-1)
		FT + PT ¹	2 (3.8)	
Pharmacy Technicians / Nursing assistants	SF-NH	FT	9 (17.3)	2 (1: 1-2)
		FT	14 (26.9)	2 (1.8: 1-2.8)
		PT	19 (36.5)	1 (0: 1-1)
	SF-Hosp	FT + PT ¹	2 (3.8)	
		FT	7 (13.4%)	2 (3.5: 1.5-5.0)
		PT	3 (5.8)	1 (0: 1-1)
Nursing	SF-NH	FT + PT ¹	2 (3.8)	
		FT	0	-
		PT	4 (7.7)	1 (0.3: 1- 1.3)
Administrative workers	SF-Hosp	FT	3 (5.8)	1 (0: 1-1)
		PT	1 (1.9:)	1 (0: 1-1)
		FT	14 (2.7)	1 (0: 1-1)
Ward staff	SF-NH	FT	4 (7.7)	1 (0: 1-1)
		FT	0	-
		PT	13 (25.0)	1 (0: 1-1)
	SF-Hosp	FT	2 (3.8)	1 (0: 1-1)

¹The number of SF with FT and TP staff is indicated in the same category (they are also included in the counting of the FT and PT sections).

C1: first quartile; C3: third quartile; FT: full time; IQR: interquartile range; PT: part time; SF: pharmacy units; SF-Hosp: hospital pharmacy department; SF-NH: nursing home pharmacy department.

titions. The presence of nursing was low (13.4%, n=7). The dedication of the specialist pharmacist to NH care was partial in more than 50% out of the SF.

The detail of the survey in terms of structure in dimensions, questions and the answers obtained from the SFs serving at NH is available at: <http://gruposdetrabajo.sefh.es/cronos/index.php/actividad/proyectos-de-investigacion>

Discussion

This paper shows the current situation of Spain's SPP in NH from an assistance perspective and provided services. It is the first study to be carried out with these characteristics in Spain and no similar international publications have been found that could be compared.

The response rate obtained (29.7%) is similar to that observed in recent questionnaires to Spanish SF⁷ and other countries⁸. The distribution of the response rate by Autonomous Communities may be conditioned by the level of development of this activity, by the number of SFs involved in it and by the type of SF (SF-NH or SF-Hosp).

The characteristics of the SF serving institutionalized patients in NH could be summarized in a profile of SF as hospital department, public ownership, with a wide variability in the number of NH and patients treated by SF and with a partial dedication of the specialist pharmacist, as this practice is shared with the hospital's own activity.

Dimension 1: Pharmacotherapy management system and rational use of drugs, MD and NP

Disparity of results can be noticed according to the pharmaceutical product: in 75% of the surveyed SF, the drugs and NP to be used in NH are evaluated and selected from a Pharmacy and Therapeutics Committee (P&T) and, in slightly more than half of cases (51.3%), this committee has the participation of health professionals of the NH. These facts are important aspects, as they confirm that it is possible to incorporate this inherent hospital pharmacy work tool in this specific healthcare area. On the contrary, the

participation of the SFs in the management of MD is lower (38.5%) which, without a doubt, it constitutes a line of work aimed at improving.

The quality of the provided assistance improves when the SF conducts a comprehensive treatment management. The opposite implies in the dispensation to one or more alternative pharmaceutical services (pharmacy office or other SF), which contributes to polypharmacy⁹ and has an impact on patient safety in relation to the use of medications¹⁰ by increasing the complexity of the processes and the workload in the NH. In this regard, it should be noted that 67% of SFs perform comprehensive management, and 15% with exceptions, essentially the non-dispensing of unfunded drugs (23%).

The MDs constitute a resource with considerable economic cost and have a relevant impact on the quality of care provided to the patient. Although the SF is legally responsible for its management, only 38.5% participated in its selection, 28.8% in the dispensation and 19.2% had programs for rational use. The lack of tradition of the SF-Hosp in this type of management would explain this situation, but the healthcare features of the NH need to be covered in an efficient way. Thus, the interdisciplinary programs between SF and the NH nursing staff, who share responsibility in the evaluation, selection and management of MD, represent an opportunity for improvement in the care provided to institutionalized patients¹¹.

Dimension 2: Prescription, dispensing and administration procedures for drugs, MD and NP

The most used prescription system was paper format with computer transcription. The assisted electronic prescription (AEP), identified as a safe practice in the use of drugs, had a level of implantation (34.6%) that resulted lower than that estimated in the hospital setting (45.5%)¹². Others, such as the pharmaceutical validation of the prescription (prior to dispensing), were carried out in 88.5% of SF, close to the 100% recommended¹³. The dispensing of individualized unitary dose was the most used system (71.2%), although less than estimated in the hospital setting (83.3%)¹²; and less than 60% specified any intervention related to the drug administration process. Therefore, in general terms, hospital standards are not being reached even though they are considered a benchmark and applicable in NH. This cir-

cumstance is logical when taking into account that hospital pharmacy is still in the process of joining this healthcare area. Thus, while the processes of pharmaceutical validation and dispensing in unitary doses appear to be consolidated –or in the process of doing so–, a greater effort seems to be necessary in order to increase the involvement of SFs in the drug administration, a procedure related to a greater risk of drug related problems¹⁰.

Dimension 3: Development of pharmaceutical care

For its correct development, the SPC requires a complete and agile access to the patient's clinical and pharmacotherapeutic record, especially when treating chronic patients. In fact, the unique electronic medical record is one of the great challenges of the Spanish healthcare system when aiming to ensure proper care¹⁴. It should be noted that the access of the SF to the clinical history of the NH was inferior to the access to the clinical history of primary and hospital care. This fact can be explained due to the majority of the cases being SF-Hosp, as well as because the clinical history of the NH was in paper format. This reflects a fragmentation still existing between these areas, the lack of integration of health care provided in the NH within the health system's health structure, and the dependence on not sufficiently coordinated administrations.

Out of SFs, 75% consider that they provide the same level of pharmaceutical care to all treated patients. In cases where this situation was not reached (25%), the main reason was the limited availability of time, a situation that –according to the survey data– is more closely related to the SF-Hosp, as a considerable amount of pharmacists have other unrelated to NH tasks assigned.

The comprehensive and periodic treatment review is a strategic line, as well as a need to optimize the use of health resources and to improve health outcomes in this population¹⁵. The majority of SF performed a periodic review of the treatment, but only 22 SF (42.3%) took into account the use of medications regarding the patient's clinical and personal context, recommended revision level in older patients, with multimorbidity, polypharmacy, frailty or institutionalized¹⁶.

Half of the SF developed population intervention programs aimed at groups of patients with similar characteristics that may be subsidiaries of the same intervention, mainly focused on conciliation and deprescription. In contrast, nutritional assessment and intervention on high-risk medications in chronic patients¹⁷ were addressed by few SF (25.0%). The majority of these programs were initiatives suggested by the SFs, by consensus of the interdisciplinary team of the NH in 53.8% of cases. Although this data can be considered good, the need to carry out a comprehensive approach requires a greater effort to strengthen the consensus and involvement of the interdisciplinary team to ensure a greater degree of success.

Dimension 4: Health education programs aimed at the population served and health professionals in the NH healthcare area

The knowledge that NH personnel have about the use of medicines contributes to medication errors (ME), being the administration one of the processes where more errors occur¹⁰. Virtually, all of the SF (94.2%) provide information to health personnel in 89.9% of cases from the consultations received. On the contrary, pharmacists do not participate in a majority way (36.5%) in continuing education programs. Two possible causes would explain this low participation: the small number of training courses in this field of care, and the aforementioned fact that the Hospital Pharmacy is in the process of integration. Thus, against this background, SFs should promote and increase their participation in these programs to improve knowledge about the correct and safe use of medicines.

Dimension 5: Development of nutritional assessment programs

Malnutrition is a very prevalent geriatric syndrome in institutionalized elderly (1.5-66.5%). It has an important impact on morbidity and mortality, requires an interdisciplinary approach¹⁸ and, therefore, it is one of the main aspects that are valued in the Comprehensive Geriatric Assessment (CGA)¹⁹. To achieve rational use, the SF should participate in the entire

process (nutritional assessment, indication and monitoring) as part of the interdisciplinary team (dietitian, doctor, nursing staff). This was only observed in 25.0% of the SFs, although slightly more than half (53.8%) participated in clinical decision-making related to its use (advice on administration of medications by tube) and about 80% had a consensual selection and had them individually dispensed.

Dimension 6: Integration into the center's assistance team

The integration of the pharmacist in the NH care team is a reality for many SF, defined as the meeting with the doctor and/or nurse (82.7%). Although it is a fact that can be very positively considered, the active participation of the pharmacist in the CGA is still low (16.3%). This line of work is the main tool for multidimensional assessment, the elaboration of a comprehensive treatment and monitoring plan for the chronic patient²⁰. Thus, the best results are achieved by working in an integrated way within the healthcare team²¹⁻²⁴. Accordingly, active participation in the CGA could be considered the key process on which to develop the SPC assistance activity for this population²⁵. The possible causes that can motivate this low participation could be the need to move to the NH, to make the pharmacist's schedules compatible with the NH organization–, to require an agile and complete access to the information, and the possibility that in some NH this service is still not established.

Dimension 7: Inter-level Integrated Care

Care transitions are a source of adverse events in these patients, due to lack of continuity of care and communication/integration problems between the structures serving them²⁶. The reconciliation of medication to hospital discharge has been shown to reduce readmissions, emergency visits and rehospitalization for adverse drug-related events (ADE)²⁷. Therefore, it should be a priority intervention for this population. Only 22 SF (46.2%) indicated reconciliation. Due to the existing fragmentation, the fact that the pharmacist serving NH patients belongs to the SF-Hosp can facilitate the development of this task. In accordance with this situation, the initiative of the professionals involved to alleviate this lack of integration/coordination and reach the micro level with assistance programs with certain medical specialties or the joint assessment of patients between levels^{28,29} is appreciated.

Dimension 8: Management indicators

Activity indicators of pharmaceutical provision to NH were the most commonly used, focused on the drug. This is probably because they were used in the hospital environment, and because they were easily obtained with the available information systems. It is necessary to enhance their use, standardize them and incorporate new indicators related to the patient and the use of health resources. This will allow evaluating the effectiveness and efficiency of pharmaceutical interventions, making comparisons and synthesizing the evidence³⁰. In addition, having adequate information systems is essential to record the interventions and their results.

Dimension 9: Medication safety management

The institutionalized population in NH is particularly vulnerable to ADE due to factors related to the organization, processes/procedures, characteristics of the environment, professionals and patients. Administration, monitoring and documentation processes are critical in the generation of ME and ADE in this area, unlike prescription and dispensing, with much lower rates¹⁰. Less than half of the SF (46.2%) have a program to minimize ME, which is in line with other authors³² and seems to confirm that the culture of safety in the use of drugs is less developed in NH than in hospitals. Thus, it is considered necessary to strengthen the safety of the use of medicines from the SF by identifying, intervening and training in the processes and elements that make the greatest impact.

Dimension 10: Research Activity

The number of SFs that develop lines of research in this healthcare area is very small, with nutritional monitoring and deprescription being the most

studied care aspects. The involvement of the SF in taking the initiative, developing and participating in it has a wide margin for improvement.

CRONOS group participation ensured that the survey was sent to all the SFs serving at NH, but there was no response from Cantabria (there is no SPP from SF), Extremadura (limited development) and Madrid, where there are specialized pharmacists who carry out PC activities in NH but not from SFs. By getting answers from all the Autonomous Communities with SF serving at NH, we understand that the findings could be extrapolated to all.

Overall, the data collected in this paper allows us to confirm that the SPP in NH from SF is a fact in almost all of Spain, although with a heterogeneous degree of implementation and development. From an assistance perspective, important differences are appreciated in essential aspects, such as the degree of integration of the pharmacist in the healthcare team, coordination with other care levels, the development of a specific drug formulary system for this population, or MD management, while the involvement in the development of training and research activities is still very low. This situation shows the need to go deeper into the SPC care model to be implemented in NH, but it also shows the finding that the development of an integrated and person-centered SPC in NH is possible.

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Conflict of interest

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Contribution to scientific literature

To typify the specialized pharmaceutical service provision in nursing homes centers of Spain according to determining aspects for the improvement of care quality.

To contribute to the design of a specialized pharmaceutical person-centered care service provision model integrated into the healthcare area.

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