



The real impact of COVID-19 on community pharmacy professionals as part of the primary health care frontier workforce in Spain

[El impacto real del COVID-19 en los profesionales de la farmacia comunitaria como parte de la primera línea de atención primaria en España]

Marjan Manouchehri^{1,2}, Sukvinder K. Bhamra³, María S. Fernández-Alfonso^{1,2,4}, Marta Gil-Ortega^{5*}

¹Instituto Pluridisciplinar, Unidad de Cartografía Cerebral, Universidad Complutense de Madrid, 28040 Madrid, Spain.

²Departamento de Farmacología, Facultad de Farmacia, Universidad Complutense de Madrid, 28040 Madrid, Spain.

³Medway School of Pharmacy University of Kent, Anson Building, Central Avenue, Chatham, Kent, ME4 4TB, United Kingdom.

⁴Instituto de Investigación Sanitaria San Carlos (IdiSSC), 28040, Madrid, Spain.

⁵Departamento de Ciencias Farmacéuticas y de la Salud, Facultad de Farmacia, Universidad San Pablo-CEU, CEU Universities, 28925, Madrid, Spain.

*E-mail: mgortega@ceu.es

Abstract

Context: Spain was at the epicenter of the pandemic. Health centers across Spanish territory were not able to respond to non-emergency enquiries, leaving community pharmacies as the first point of patient's contact.

Aims: To investigate the impact of COVID-19 on the mental and physical health of community pharmacy teams across Spain.

Methods: A cross-sectional observational study was performed with community pharmacy professionals throughout Spain. A questionnaire designed by our collaborator from the United Kingdom was adapted to the Spanish population and launched between October 2020 and February 2021.

Results: A total of 98 participants responded to the questionnaire. The survey showed an 80% increase in workload. The pandemic had negatively impacted the well-being of community pharmacy professionals. The survey indicated a national shortage of medicines and personal protective equipment across Spain, particularly during the first peak. To adapt to this Pandora's box of COVID-19, 96% of the pharmacies changed their settings to improve patients and staff's safety. Most of these changes were self-financed by the pharmacy owner. The pharmacists kept up to date with information released from the pharmacists' college, General Pharmaceutical Council and the Spanish Society of Community Pharmacists. The Public domain purchased more (79%) immune booster supplements.

Conclusions: Community pharmacy professionals have faced tremendous mental, physical and professional pressure in providing adequate personal protective equipment and medication supply to their communities. They have provided more pharmaceutical services during the crisis, although they have not been recognized as essential workers by the healthcare system.

Keywords: community pharmacy team; mental health; wellbeing.

Resumen

Contexto: España fue el epicentro de la pandemia. Los centros de salud de todo el territorio español no podían responder adecuadamente a consultas que no fueran de emergencia, dejando a las farmacias comunitarias como primer punto de contacto con los pacientes.

Objetivos: Investigar el impacto del COVID-19 en la salud física y mental de los equipos de farmacia comunitaria en España.

Métodos: Se realizó un estudio observacional transversal con profesionales de farmacia comunitaria de toda España. Un cuestionario diseñado por nuestro colaborador del Reino Unido fue adaptado a la población española y lanzado entre octubre de 2020 y febrero de 2021.

Resultados: Un total de 98 participantes respondieron al cuestionario. La encuesta mostró un aumento del 80% en la carga de trabajo. La pandemia había tenido un impacto negativo en el bienestar de los profesionales de la farmacia comunitaria. La encuesta indicó una escasez nacional de medicamentos y equipos de protección personal en España, especialmente durante el primer pico. Para adaptarse a esta caja de Pandora de COVID-19, el 96% de las farmacias cambiaron su configuración para mejorar la seguridad de los pacientes y del personal. La mayoría de estos cambios fueron autofinanciados por el propietario de la farmacia. Los farmacéuticos se mantuvieron al día con la información difundida por el colegio de farmacéuticos, el Consejo General de Colegios Oficiales de Farmacéuticos y la Sociedad Española de Farmacéuticos Comunitarios. La población general compró más (79%) suplementos de refuerzo inmunológico.

Conclusiones: Los profesionales de la farmacia comunitaria han enfrentado una tremenda presión mental, física y profesional para proporcionar equipos de protección personal adecuados y suministro de medicamentos a sus comunidades. Han proporcionado un mayor número de servicios farmacéuticos durante la crisis, a pesar de no haber sido reconocidos como trabajadores esenciales por el sistema sanitario.

Palabras Clave: bienestar; equipo de farmacia comunitaria; salud mental.

ARTICLE INFO

Received: April 14, 2021.

Received in revised form: June 13, 2021.

Accepted: June 23, 2021.

Available Online: July 1, 2021.

AUTHOR INFO

ORCID: 0000-0002-6366-8214 (MGO)



Abbreviations and acronyms: Asturian Pharmaceutical Cooperative (COFAS); College of Pharmacists in Madrid (COFM); Community pharmacy (CP); Community pharmacy team (CPT); *Fundación Cofares* (COFARES); General Council of Official Colleges of Pharmacists (CGCOF); Official College of Pharmacists of Asturias (COF); Personal protective equipment (PPE); Prescription Only Medicines (POM); Spanish society of community pharmacists (SEFAC); World Health Organization (WHO).

INTRODUCTION

COVID-19 was initially reported in late December 2019 in Wuhan (Guo et al., 2020). The World Health Organization (WHO) named it coronavirus disease 2019 (COVID-19) on the 12th of February 2020 and further declared it a global pandemic on March 11th 2020 after its unbelievably fast spread from its first epicenter (World Health Organization, 2020b). The Spanish national government prohibited public gatherings, imposed restrictions on movement and other preventive and control measures such as mandatory masks in public spaces to decrease the infection rates. Despite all these preventive measures, widespread community transmission led to a high hospitalization rate across Spain like the rest of the world. Insufficient material and human resources led to waves of excess mortalities among the Spanish population during the pandemic. This crisis placed a tremendous amount of pressure on the Spanish healthcare system, nearly driving it to the point of collapse with many healthcare centers closures. 17 diverse and independent regions "*Comunidades autónomas*" in Spain decide about the healthcare policies and actions (Gastelurrutia et al., 2020). The governmental body "*Centro de Coordinación de Alertas y Emergencias Sanitarias*" is in charge of coordination and communicated among these regional entities (Legido-Quigley et al., 2020). The governmental entities then decided on Health Centers' closure and implemented medical consultations by videoconference. This left the pharmacies as the most accessible health establishment to attend patients in person. The latest reports showed there is a ratio of 4.7 pharmacies per 10,000 inhabitants in Spain. Out of 74,043 practicing registered pharmacists, 87% (51,959 pharmacists) worked in the community pharmacy (Portal-farma, 2016). Despite this, many health authorities have not explicitly recognized the community pharmacy's work in the fight against the pandemic, nor have they contributed to providing these

health facilities with the required personal protective equipment (PPE) (Community of Madrid, 2020). It is noteworthy that community pharmacy interventional services are not commissioned in Spain on a national level (Gastelurrutia et al., 2020). Despite the crisis, the population witnessed a high level of resilience among pharmacists during the pandemic who were highly devoted to the health of the people and worked side by side with other healthcare professionals to overcome the barriers imposed by COVID-19. In the process, many pharmacists have lost their lives or been infected, leading to business closure and financial loss (Fernández, 2020). Despite the Spanish community pharmacies professionalism and commitment to meeting patients' needs and maintaining continuity of services during the pandemic, they were not listed by the Coordination of Emergencies as health professionals in the risk groups. This led to a lack of government financial support for this sector during the pandemic (Aliaga Gutiérrez et al., 2020).

No survey was conducted to investigate the immediate effect and obstacles imposed due to the pandemic on Spain's privately-owned pharmacy sector. This article mainly focuses on exploring the real impact of the COVID-19 pandemic on Spanish community pharmacists in privately owned pharmacy healthcare models. It will further help the healthcare system understand the challenges community pharmacy teams have faced during the COVID-19 pandemic in Spain and explore its impact on resources (i.e., personal protective equipment, medicines and staff). It also explored the relationship and means of communication (telemedicine) used between community pharmacies, patients, and other healthcare professionals. It can provide an insight into the types of treatments patients bought over the counter to treat COVID-19. Most importantly, it assesses the impact the pandemic has had on the mental wellbeing of pharmacy teams. This research hopes to provide

some insight and valuable lessons for better preparation for future epidemiological crisis.

MATERIAL AND METHODS

Design of the study

We have performed a cross-sectional observational study with Community Pharmacy professionals, including pharmacists, technicians or students who were asked to complete a web-based questionnaire.

Sample selection

The study's inclusion criteria were, be a community pharmacist, pharmacy technician, or other pharmacy team member working in the community setting during the COVID-19 outbreak, based in Spain and over 18 years old. Responders who did not work in a community pharmacy during the COVID-19 outbreak, pharmacists in other sectors such as hospital, industry and academia were not included in the survey.

A non-random snowball sampling procedure was adopted. The researchers reached their social network for the study and invited the participants via an email or a message on various social networking platforms, including Facebook®, Twitter, WhatsApp and LinkedIn, to respond to the pre-validated questionnaire. The participants were encouraged to share the survey with their professional networks as well. The selection bias was minimized by clearly defining the subpopulation of the study before the data collection. Also, some participants were contacted randomly through the phone directory or Google Map, who could not otherwise know about the survey since they were not part of the professional researcher network.

Workplan

The study was performed using a web-based questionnaire designed by a British collaborator Dr. Sukvinder Kaur Bhamra, piloted in a small group of volunteers, and launched in the UK to community pharmacy's professionals. This survey was translated into Spanish and adapted to the Spanish context. The investigators launched the

web-based questionnaire between October 2020 and February 2021. As a cloud-based survey powered by Google™, Google Forms was employed as a data collection tool. The google account belongs to the University of Complutense to further ensure the security of data storage.

The self-completion survey consisted of 25-items that explored the community pharmacist's view via a mixture of open and close-ended questions. The first section of the questionnaire investigated the impact of the pandemic on pharmacist trainees. The subsequent sections explored the implications of the COVID-19 on: i) professional practice, including the impact on the workload or the difficulties/challenges; ii) material resources and information sources used to support the patient's care and adaptation to COVID-19-derived safety requirements; iii) patients' expectations and behavior during the pandemic; iv) consumer's habits on complementary and adjuvant therapies; v) pharmacy team emotional and physical wellbeing and finally vi) sociodemographic characteristics of the participants.

Ethics approval and consent to participate

The ethical committee of the University San Pablo CEU in Spain approved the study with registration number 457/20/36. Also, the research was conducted in full compliance with the Declaration of Helsinki. At the beginning of the questionnaire, the investigator clearly described the study's nature, and all volunteers agreed to participate. The research group protected the participants' professional confidentiality by making the responses anonymous. Involvement in the study was voluntary.

Statistical analysis

Statistical analysis was performed using the STATA package version 12.0 (StataCorp LP, College Station, TX, USA). Descriptive statistics were employed for the demographic findings. The reflective thematic analysis with the NVivo qualitative data analysis software; QSR International Pty Ltd. Version 12 was used for evaluating the open-ended question.

RESULTS

A total of 98 individuals responded to the questionnaire distributed via Google Forms. The result of the survey showed the majority of responders were aged between 21-30 years (43%), female (77%) and Spanish (98%). This survey found more than half of the participants were based in Madrid (51%). The researcher included detailed sociodemographic characteristics of participants in Table 1.

Impact of COVID-19 pandemic on the well-being of the pharmacy teams

A total of 78 (80%) pharmacists *vs.* 6 (6%) pharmacy assistants, 7 (7%) pharmacy technicians and one delivery staff responded to the questionnaire. As shown in Table 2, the most important finding of this study was that the majority of the participants (84%) experienced a negative impact on their mental health as direct result of the pandemic. Regarding the psychological impact of

COVID-19, it must be highlighted that 82% of participants feared to transmit the virus to their relatives, a 32% reported difficulties to cope with family pressure and some of them admitted feeling anxious (11%) or even depressed (3%). Also, 65% of the participants reported a negative impact on their physical health. They reported having suffered from (in order of importance) tiredness, insomnia, weight lost, headache and worsening migraine, muscle and back pain as well as worsening asthma, chest pain and dermatitis. 19% of individuals reported to have contracted the virus and took sick leave during the five-month study period. The pharmacy teams reported a significant impact as well on the pharmacy practice. Indeed, 67% claimed that the medical centers were inaccessible for patients in their locality, which in turn posed extra pressure on pharmacies. The results suggested that emotional and physical pressure caused by the pandemic made 26% of pharmacists reconsider their carrier choice. The majority of the

Table 1. Sociodemographic characteristics of the pharmacy team participants.

Characteristics	N	Percentage (%)	Characteristics	N	Percentage (%)
Age groups			Location of responders		
21-30	42	42	Andalucía	4	4
31-40	28	28	Aragón	1	1
41-50	14	14	Canarias	5	5
51-60	10	10	Cantabria	1	1
>61	4	4	Castilla y León	3	3
Gender			Cataluña	1	1
Male	23	23	Comunidad de Madrid	50	50
Female	75	76	Comunidad Valenciana	1	1
Years of experience			Extremadura	3	3
1-5	34	34	Galicia	3	3
6-10	19	19	Islas Baleares	2	2
11-20	17	17	País Vasco	4	4
21-30	14	14	Principado de Asturias	18	18
>31	8	8	Región de Murcia	2	2
Ethnicity					
Spanish	96	97			
African	1	1			
Asian	1	1			

Data are direct transfer of the Google form survey in Excel format. Total n = 98.

Table 2. Impact of COVID-19 on the community pharmacy team across Spain.

Impact	Emerging reflective themes from the pharmacist's responses*	N	Percentage (%)
General	Perception of negative impact on mental health	84	84
Psychological	Fearful of transmitting the virus to their relatives	82	82
	Difficulty coping with family pressure	32	32
	Stress	15	15
	Anxious	11	11
	Physical and psychological pressure	12	12
	Fear	7	7
	Nervousness	3	3
	Exhaustion	3	3
	Depressed	3	3
	Uncertainty	2	2
	Patient aggression and abuse	2	2
	Overworked	2	2
	Difficulty in sleep	2	2
	Collapsed	1	1
	Uncontrolled chronic condition in patients	1	1
	Crying patients	1	1
	Confrontation and conflict with patients	1	1
Physical	Physical impact of COVID-19 on pharmacists	65	65
	Tiredness	32	32
	Insomnia	20	20
	Contracted the COVID-19 virus	19	19
	Weight lost	17	17
	Headache	5	5
	Muscle and back pain	5	5%
	Worsening chronic conditions	5	5%
	Asthma, chest pain and dermatitis	1	1
Pharmacy Practice	Extra pressure on pharmacies due to the inaccessibility of medical centers for patients	67	67
	Increased workload	80	80
	Home care	10	10
	Home delivery	5	5
	Increase telephone consultation	4	4
	More involvement in pharmaceutical care and diagnosis and treatment of minor symptoms	4	4
	Decrease in sale	1	1
	Calling the patient who lived alone daily	2	2

Table 3. Sources of emotional and professional support for the pharmacy team during the COVID-19 pandemic in Spain.

Support for pharmacy team	Sources	Percentage (%)
Emotional	Family	93
	Friends	85
	Pharmacy manager	34
Professional	Pharmaceutical society	67
	College of the Pharmacists from their regional autonomies	67
	General Council of Official Colleges (Consejo General de Colegios Oficiales de Farmacéuticos)	65
	Department of Health	57
	Pharmacy managers	48
	Pharmacy colleagues in social and professional networks	31

Pharmacist's emotional support

The pharmacy team described having received a high level of personal support from their family (93%), friends (85%) and pharmacy manager (34%), as shown in Table 3. Further, the majority of the respondents have obtained professional support from the pharmaceutical society (67%), The College of Pharmacists from their regions (67%), General Council of Official Colleges of Pharmacists (*Consejo General de Colegios Oficiales de Farmacéuticos*, CGCOF, 65%), Department of Health (57%), pharmacy managers (48%) and other pharmacy colleagues in social and professional networks (31%) (Table 3).

The national shortage of medication and equipment across Spain and the support received

The researchers have summarized the community pharmacy team's response to the national shortage of medication and equipment experienced during the first wave of the pandemic in Spain in Table 4. The study findings indicate that paracetamol, hydrogen peroxide, vitamin C and D were shortlisted during the pandemic in the medicine category. Also, a shortage of appliances such as masks, gloves and alcohol gel were seen in the pharmacy during the pandemic. Most importantly insufficient dissemination of information about the COVID-19 and health centers closure made patient's care difficult. The survey shows that 8% of

pharmacist believe the cost of medications during the pandemic increased. This could be due to national shortages or the 54% of patients found to be stockpiling the medicines.

Change in pharmaceutical care protocol or pharmacy setting

A high percentage of participants (96%) reported changes in the pharmacy setting to improve the safety of patients and staff. The main adaptations made were included in Table 5. A high number of pharmacies (76%) confirmed buying personal protective equipment (PPE) out of pocket. Other pharmacists claimed to receive PPE and disinfectants from the College of Pharmacists in Madrid "Official College of Pharmacists of Madrid" (COFM), Official College of Pharmacists of Asturias "Official College of Pharmaceutics of Asturias (COF)", private laboratories, neighboring dentists as well as some private industries such as COFARES "Fundación Cofares", Bidafarma and Pharmaceuticals MIA. The majority of the pharmacists (n = 50, 51%) have used the pharmacists' official college in their region as a source of reliable information throughout the pandemic. Other widely used resources were the CGCOF (32%), the Spanish society of community pharmacists known as "Sociedad Española de Farmacia Comunitaria SEFAC" (15%), Ministry of Health live updates and The Asturian Pharmaceutical Cooperative (COFAS).

Table 4. National shortage of medicine or alliances due to COVID-19 pandemic across community pharmacies in Spain.

Shortage and limitations	Emerging reflective themes from the pharmacist's responses*	N	Percentage (%)
Medications	Paracetamol	9	9
	Hydrogen peroxide	7	7
	Vitamin C	5	5
	Vitamin D	5	5
	Hydroxychloroquine or chloroquine	5	5
	Antibiotics	1	1
	Antipyretics	1	1
	Anxiolytics	1	1
	Betamethasone	1	1
	Antiviral	1	1
	Tamiflu	1	1
	Ventolin (salbutamol)	1	1
	Plavix	1	1
Appliances	Mask	44	44
	Gloves	24	24
	Alcohol Gel	15	15
	Personal protective equipment	14	14
	Medicines	5	5
	Thermometers	6	6
	Disinfectant	2	2
	Antibody test kit or rapid test kit for COVID-19	1	1
Others	Lack of information	6	6
	Lack of access to doctors due to closure of medical centers	2	2

Data are direct transfer of the Google form survey in Excel format. Total n = 98.

*The search was performed by NVivo on the exact match or stemmed words throughout the pharmacy team's responses.

The pharmacists claimed to mostly refer patients to the COVID-19 Hotline (70), the nearest health center (40) and Ministry of Health documents (37) for obtaining information (Fig. 2A). Some of the pharmacy team believed they were adequately prepared to combat the pandemic (31%) *vs.* the majority who thought they were partially prepared (42%). Others felt unprepared due to the sudden onset of the pandemic (22%) (Fig. 2B).

Patient's attitude towards the pharmacy

About 47% of the participants claimed that patients developed a more positive attitude towards the pharmacy team due to the pandemic, 59%

claimed that the patient developed a more positive attitude because of the services provided by the pharmacist and 44% of the responders stated that individual expected the pharmacy to give medication to them without a prescription (Table 6). Further, 59% offered emotional support to the clients. 79% of the participants claimed to have more inquiries on supplements during the pandemic's first peak. The summary of these supplements sold over the counter in the pandemic's first peak for prevention, treatment, and recovery of the COVID-19 infection is shown in Table 7. The pharmacists claimed that the products with a significant increase in demand were chloroquine, antiviral and paracetamol requested over the counter for treatment of the virus. Also, 64% in-

crease in the sleeping aids were observed. Vitamins C, D, and B and immune system boosters were also purchased in excess. Echinacea, propolis and phytotherapy purchase was also observed to be increased during the pandemic. The increase

demand in homeopathic solutions and mouthwash was seen. The pharmacists reported a 55% increase in the purchase of respiratory medicines such as inhalers, cough syrups, decongestants and antihistamines during the crisis.

Table 5. Adaptation made across community pharmacies out of pocket during the first peak of the COVID-19 in Spain.

Adaptation made to	Emerging reflective themes from the pharmacist’s responses*	N	Percentage (%)
Pharmacy settings	Protective counter	38	38
	Gel dispenser	15	15
	Air purification	6	6
	Protective screen instalment in the pharmacy counter	6	6
	Partition	7	7
	Separation signs and sticker for patients	5	5
	Barriers at the entrance to avoid patients entering the pharmacy	3	3
	Buying new computers to avoid cross contamination between staff	1	1
	Refurbishing the pharmacy setting	1	1
	Protocols	Social distancing	20
Compulsory use of mask in the pharmacy premises		18	18
Special cleaning protocol		9	9
Compulsory use of gloves for staff		6	6
Compulsory use of alcohol gel for patients and staff		6	6
Signposting protocol for patient unable to access the medical center		3	3
Staffing	Change in shifts of the staff to avoid contamination	12	12

Data are direct transfer of the Google form survey in Excel format. Total n = 98.

*The search was performed by NVivo on the exact match or stemmed words throughout the pharmacy team’s responses.

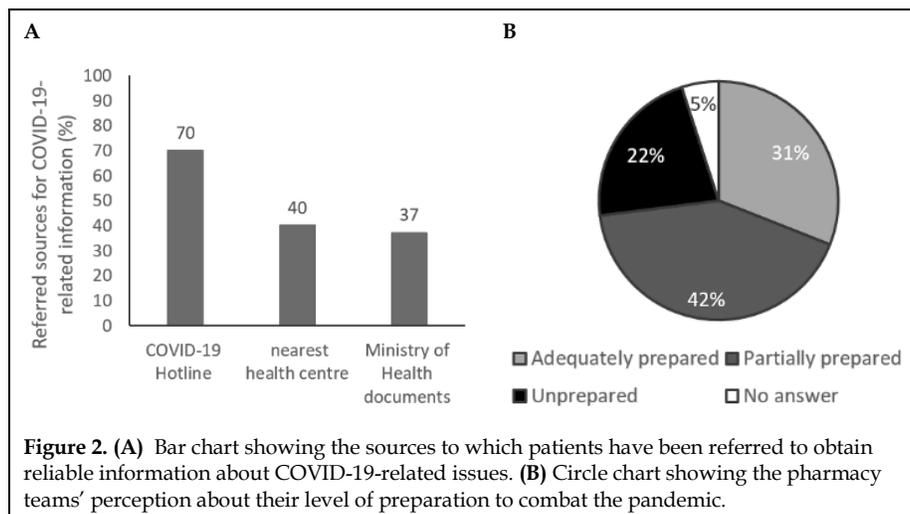


Figure 2. (A) Bar chart showing the sources to which patients have been referred to obtain reliable information about COVID-19-related issues. (B) Circle chart showing the pharmacy teams’ perception about their level of preparation to combat the pandemic.

Table 6. Patient's attitude and behavior towards community pharmacy profession in Spanish territory.

Impact of pandemic on patient's behavior	Emerging reflective themes from the pharmacist's responses*	Frequency	Percentage (%)
Emotion and behavior	Nervous	7	7
	Anxious	4	4
	Fearful	4	4
	Uncertain	4	4
	Impatient	3	3
	Irritable	3	3
	Aggressive	2	2
	Depressed	2	2
	Insomnia	2	2
	Stressed	2	2
	Defensive, disrespectful, emotional, empathetic, forgetful, helpless, hostile, negative, rushed, scared, worsening schizophrenia, selfish, sensitive, supportive, suspicious towards gel and mask sold in the pharmacy, upset	1	1
General image from pharmacy profession	Patient's satisfaction with pharmacy services	59	59
	Positive attitude towards the pharmacy team	47	47
	Confidence in community pharmacist's knowledge to respond to their symptoms and treat accordingly	10	10
	Grateful that pharmacies are open and accessible	12	12
Expectations	Demanded prescription only medicine (POM) without valid prescription	44	44

*The search is a result of reflective thematic analysis performed by NVivo software on the exact match or stemmed words throughout the pharmacy team's responses.

DISCUSSION

This study aimed to investigate the impact of the crisis on pharmacy practice, patients' attitude, pharmaceutical purchases, and the CPT's emotional and physical well-being in Spain. The pharmacy team reported a tremendous physical and emotional pressure, leading to stress, fear, nervousness, mental and physical exhaustion, and uncertainty about the future. Many participants reported their chronic condition, such as migraine, asthma or dermatitis deteriorated. A plausible explanation may be the significant increase in pharmacy team workload, which had left little time for recovery, quality time with family or exercising. It appears that other research groups have also reported a similar burden on healthcare workers across the world (Mehta et al., 2021). The Spanish pharmacy team affirmed receiving little support from the health authorities despite the enormous

effort made. Some felt abandoned and neglected by the government. Some were "attacked" by the population who think of pharmacy as a private sector. These negative experiences, added to the workload, had an unfortunate effect on professional's mental health. However, the community pharmacy team resisted and withstood the pressure like all their counterparts across the world (Felice et al., 2020). The pharmacies have adopted new practices such as home care, home delivery, telephone consultation, pharmaceutical care and responding to symptoms. Some even reported going beyond their professional duty by calling the patient who lived alone, daily. The pharmacy team made changes in daily protocols and settings to meet the demand of the crisis. An increase in the operation hours, purchase of PPE out of pocket and segregating shifts to avoid cross-contamination were examples of these alterations.

Table 7. Supplements and medicines requested by the patients for the prevention or chronic phase of the COVID-19 infection to be sold over the counter.

Requested	Prevention*	N	Percentage %	Treatment*	N	Percentage %	Recovery*	N	Percentage %
Medicines	Antiviral	1	1	Chloroquine	6	6	Sleep aid	64	64
	Anxiolytic	1	1	Antiviral	3	3	Anxiolytic	1	1
	Chloroquine	1	1	Paracetamol	3	3	Chloroquine	1	1
				Antiparasitic	1	1	Creams for muscle pain	1	1
				Corticosteroid	1	1	Infusions	1	1
				Infusions	1	1	Spray for nose decongestant	1	1
Supplements	Vitamins C, D, B	49	49	Vitamins C, D, B	9	9	Vitamins C, D, B	17	17
	Immune system booster	17	17	Immune system booster	3	3	Immune system booster	2	2
	Food supplement	3	3	Omega 3	1	1	Food supplements	2	2
	Multivitamins	5	5	Inspirulin	1	1	Zinc	2	2
	Melatonin	2	2	Zinc	1	1	Calcium	1	1
	Zinc	2	2				Collagen	1	1
	Probiotics	1	1				Supplement to combat the tiredness	1	1
	Selenium	1	1				Magnesium	1	1
Herbal	Echinacea	12	12	Echinacea	5	5	Echinacea	3	3
	Propolis	4	4	Propolis	4	4	Phytotherapy	3	3
	Phytotherapy	3	3	Phytotherapy	2	2	Royal Jelly	1	1
	Garlic	2	2	Peppermint	1	1			
	Ginger	1	1	Turmeric	1	1			
	Royal Jelly	1	1	Ginseng	1	1			
Homeopathy	Homeopathic solutions	4	4	Homeopathic solutions	3	3			
Disinfectants	Mouthwash	3	3	Miracle Mineral Solution (MMS)	2	2			
	Hydrogen peroxide	2	2	Alcohol gel	1	1			
Aromatherapy				Aromatherapy	1	1	Aromatherapy	1	1

Data are direct transfer of the Google form survey in Excel format. *The search was performed by NVivo on the exact match or stemmed words throughout the pharmacy team's responses.

The majority of pharmacies reported difficulties obtaining PPE at the beginning of the crisis; however, a shortage of PPE was observed worldwide (Cohen and Rodgers, 2020; Ranney et al., 2020).

This could be in response to national shortages or 54% of the patients who were found to be stockpiling the medicines and PPEs. Many Spanish pharmacies reported extended use or reprocessing of

the PPE in line with World Health Organization guidelines (World Health Organization, 2020a). Abedrabboh et al. (2021) have theorized better supply management such as early stockpiling in pharmacy and increasing storage capacities can improve future pandemic responses.

Pharmacists claimed to spend many hours on continuous professional development (CPD) to improve their competencies. They employ their therapeutical expertise to educate the general public and combat false news. This essential educative role of the community pharmacy team has been observed worldwide during the pandemic and beyond (Cadogan and Hughes, 2020; Liu et al., 2020).

CPs used the official college of pharmacists in their region, CGCOF and SEFAC guidelines as a reliable source of information, similar to their international counterparts (International Pharmaceutical Federation, 2020; Royal Pharmaceutical Society, 2021). However, CPs requested better communication and joint action to be released earlier by health authorities in future incidences. Evidence showed that effective communication between pharmacists and other healthcare professionals can support continuity of care (Herzik and Bethishou, 2021).

The negative impact of COVID-19 made the patient nervous, anxious and fearful, uncertain, impatient, irritable, aggressive, depressed, suffer insomnia, stressed, defensive, disrespectful, emotional, empathetic, forgetful, helpless, hostile, rushed, scared, sensitive, suspicious towards gel and masks sold in the pharmacy etc. In addition, pharmacists reported spending less time delivering traditional pharmaceutical care to the patients with chronic conditions due to more workload. Similar results were reported by CPTs in the Netherlands who did not conduct medication reviews during the pandemic (Koster et al., 2021). On a positive note, CP stated patients were grateful for significantly expanding access to care provided by the pharmacy. They demonstrated confidence in the pharmacist's therapeutical expertise. The most purchased medicines for prevention, treatment or

recovery of COVID-19 across Spain were vitamins C, D, B and immune booster supplements and herbal medicines such as Echinacea, Propolis and Phytotherapy. Similar results were reported by Polish researchers (Karbownik et al., 2020). Pharmacists reported conflict with patients due to their demand for Prescription Only Medicines (POM) such as antivirals, anxiolytics and chloroquine (CGCOF, 2013). In this scenario, participants requested the CGCOF and SEFAC to defend the pharmacy profession and recognize their continuous contribution as healthcare professionals and identify them as essential services. Although the population sample was from all across Spain varying in age and level of experience, some other pharmacist's experiences or opinions might have been different, thus, the results must be interpreted with caution. Further studies characterizing the ongoing community pharmacists struggles as result of the pandemic may reveal whether these emotional and physical impacts were short lived or whether pharmaceutical care stayed in demand even after the crisis.

CONCLUSIONS

This study outlined the tremendous physical and mental pressure CPTs encountered as a private sector during the first peak of the pandemic and beyond. This is consistent with previous data published on the impact of pandemic on health care professionals. Further studies are required to explore the impact of utilizing pharmacists' expertise on a wider scale during pandemics. Additional research is required to clarify the impact of giving pharmacists the permission to access a patient's medical record, legalization of medication delivery by CP across Spain and improve communication between pharmacy and primary care. In conclusion, an increase in demand for pharmaceutical services across Spain due to the pandemic, opened the eyes of many to the importance of community pharmacies as a health profession.

CONFLICT OF INTEREST

The authors declare no conflicts of interests.

ACKNOWLEDGMENTS

Authors thank all the community pharmacy professionals across Spain who took the time to fill out the survey despite the increased workload during the pandemic, without whom writing this article would not have been possible. Authors also wish to express special thanks to Mrs. Susan Robinson for her support in language editing. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

- Abedrabboh K, Pilz M, Al-Fagih Z, Al-Fagih OS, Nebel JC, Al-Fagih L (2021) Game theory to enhance stock management of Personal Protective Equipment (PPE) during the COVID-19 outbreak. *PLOS ONE* 16(2): e0246110.
- Aliaga Gutiérrez L, Murillo Fernández MD, Sáez Martínez FJ (2020) COVID-19: Problemas y soluciones en atención primaria y farmacia comunitaria. Madrid, Sociedad Española de Farmacia Familiar y Comunitaria (SEFAC), la Sociedad Española de Médicos de Atención Primaria (SEMERGEN) y la Sociedad Española de Médicos Generales y de Familia (SEMG).
- Cadogan C, Hughes C (2020) On the frontline against COVID-19: community pharmacists' contribution during a public. *Res Social Adm Pharm* 17(1): 2032-2035.
- CGCOF - General Pharmaceutical Council of Spain (2013) Good Pharmacy Practice in Spanish Community Pharmacy. Madrid.
- Cohen J, Rodgers YvdM (2020) Contributing factors to personal protective equipment shortages during the COVID-19 pandemic. *Prev Med* 141: 106263-106263.
- Community of Madrid (2020) La Comunidad de Madrid aprueba medidas extraordinarias por el coronavirus. *Medios de Comunicación*. Madrid.
- Felice C, Di Tanna GL, Zanus G, Grossi U (2020) Impact of COVID-19 Outbreak on healthcare workers in Italy: Results from a national e-survey. *J Community Health* 45(4): 675-683.
- Fernández D (2020) Doce farmacéuticos han fallecido en la Comunidad de Madrid y el 11,5% está de baja por el coronavirus. El Colegio Oficial de Farmacéuticos ha recibido 243 notificaciones para comunicar cambios de horario y cierres temporales. *El País Madrid*.
- Gastelurrutia MA, Faus MJ, Martínez-Martínez F (2020) Primary health care policy and vision for community pharmacy and pharmacists in Spain. *Pharm Pract* 18(2): 1999.
- Guo Y-R, Cao Q-D, Hong Z-S, Tan YY, Chen SD, Jin HJ, Tan KS, Wang DY, Yan Y (2020) The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak - an update on the status. *Mil Med Res* 7(1): 11.
- Herzik KA, Bethishou L (2021) The impact of COVID-19 on pharmacy transitions of care services. *Res Social Adm Pharm* 17(1): 1908-1912.
- International Pharmaceutical Federation (2020) Coronavirus SARS-CoV-2/COVID-19 Pandemic: Information and Interim Guidelines for Pharmacists and the Pharmacy Workforce.
- Karbownik MS, Dobielska M, Paul E, Kowalczyk RP, Kowalczyk E (2020) Health-, medication- and dietary supplement-related behaviors and beliefs relatively unchanged during the COVID-19 pandemic lockdown. *Res Social Adm Pharm* 17(8):1501-1506.
- Koster ES, Philbert D, Bouvy ML (2021) Impact of the COVID-19 epidemic on the provision of pharmaceutical care in community pharmacies. *Res Social Adm Pharm* 17(1): 2002-2004.
- Legido-Quigley HJ, Mateos-García T, Campos VR, Gea-Sánchez M, Muntaner C, McKee M (2020) The resilience of the Spanish health system against the COVID-19 pandemic. *Lancet Public Health* 5(5): e251-e252.
- Liu S, Luo P, Tang M, Hu Q, Polidoro JP, Sun S, Gong Z (2020) Providing pharmacy services during the coronavirus pandemic. *Int J Clin Pharm* 42(2): 299-304.
- Mehta S, Machado F, Kwizera A, Papazian L, Moss M, Azoulay E, Herridge M (2021) COVID-19: A heavy toll on health-care workers. *Lancet Respir Med* 9(3): 226-228.
- Portalfarma (2016) Estadísticas Farmacéuticas. Retrieved 12.04.2020 from <https://www.portalfarma.com/profesionales/infoestadistica/Paginas/default.aspx>.
- Ranney ML, Griffeth V, Jha AK (2020) Critical supply shortages – The need for ventilators and personal protective equipment during the Covid-19 pandemic. *New Eng J Med* 382(18): e41.
- Royal Pharmaceutical Society (2021) Practical guidance for pharmacists and their teams. Retrieved 9.03.2021 from <https://www.rpharms.com/resources/pharmacy-guides/coronavirus-covid-19/guidance-for-pharmacy>.
- World Health Organization (2020a) Rational use of personal protective equipment for COVID-19 and considerations during severe shortages. Retrieved from <https://apps.who.int/iris/handle/10665/338033?locale-attribute=es&>
- World Health Organization (2020b) WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020. Retrieved 15.02.2021, from <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>.

AUTHOR CONTRIBUTION:

Contribution	Manouchehri M	Bhamra SK	Fernández-Alfonso MS	Gil-Ortega M
Concepts or ideas	x	x	x	x
Design	x	x	x	x
Definition of intellectual content	x	x	x	x
Literature search	x	x	x	x
Experimental studies	x			
Data acquisition	x			
Data analysis	x		x	x
Statistical analysis	x		x	x
Manuscript preparation	x		x	x
Manuscript editing	x	x	x	x
Manuscript review	x	x	x	x

Citation Format: Manouchehri M, Bhamra SK, Fernández-Alfonso MS, Gil-Ortega M (2021) The real impact of COVID-19 on community pharmacy professionals as part of the primary health care frontier workforce in Spain. *J Pharm Pharmacogn Res* 9(6): 878–891.