
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Research in Social and Administrative Pharmacy 17 (2021) 2002–2004

Contents lists available at ScienceDirect

Research in Social and Administrative Pharmacy

journal homepage: www.elsevier.com/locate/rsap

# Impact of the COVID-19 epidemic on the provision of pharmaceutical care in community pharmacies

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A B S T R A C T

*Background:* Community pharmacists and their teams are easy accessible healthcare providers with an important role in primary care. As a consequence of the COVID-19 epidemic, (pharmaceutical) care and specifically communication between patients and healthcare providers is compromised.
*Objective:* To describe the impact of the COVID-19 epidemic on the provision of pharmaceutical care in the Netherlands.
*Methods:* A cross-sectional study with an online questionnaire was sent to community pharmacies in the Netherlands. The questionnaire covered the following main topics: changes in pharmacy setting and logistic procedures, communication about medication and baseline characteristics.
*Results:* Pharmacies implemented hygiene measures and minimized direct patient-provider contact, e.g. by delivering medication at home to a wider range of patients (47.0%), temporarily not conducting medication reviews (55.8%) and only performing inhalation instructions via telephone (22.3%). Only a small number of pharmacies used telepharmacy, such as video calling during patient education and counseling. A total of 76.7% of the participants expressed concerns towards the pharmaceutical care for vulnerable patients.
*Conclusions:* Our results show considerable impact of the COVID-19 epidemic on both logistic procedures and services regarding patient education and counseling. Pharmacies should be stimulated to implement telepharmacy or remote service to optimally support patients during the COVID-19 epidemic.

## Background

Clear patient education and counseling is essential to support proper medication use and prevent drug related problems.[1,2] The community pharmacist is a medication expert who plays an important role in the provision of pharmaceutical care to ensure that medicines can be used effectively and safely. Community pharmacists and their teams are usually easily accessible healthcare providers with an important role in primary care. During the COVID-19 epidemic, in most countries the community pharmacist is considered to be an essential profession. Pharmacists and their team are in the frontline maintaining the supply of medication to patients and providing essential counseling and information. However, as a consequence of the COVID-19 epidemic, (pharmaceutical) care and specific communication between patients and healthcare providers has changed. As a result of government guidelines, which enforce social distancing and advice vulnerable people with health issues to stay at home, there is less (direct) contact between patients and healthcare providers.[3,4] This influences some of the most important services pharmacies provide, in order to ensure safe and effective medication use. We aimed to describe the impact of the coronavirus disease 2019 (COVID-19) epidemic on the provision of pharmaceutical care in the Netherlands.

## Methods

### *Setting and participants*

A cross-sectional study with an online questionnaire was used. Community pharmacies affiliated with the Utrecht Pharmacy Practice network for Education and Research (UPPER), consisting of approximately 65% (1300 out of 2000) Dutch community pharmacies distributed across the Netherlands, were invited to fill out an online questionnaire through a monthly digital newsletter. In addition, a week after the newsletter a reminder was sent by e-mail.[5] Data were collected in May 2020.

### *Data collection*

The questionnaire covered the following topics: changes in pharmacy setting and logistic procedures, medication counseling practice, patients' and other healthcare providers' questions and concerns about medication related to the COVID-19 epidemic, and baseline

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https://doi.org/10.1016/j.sapharm.2020.07.001
Received 30 June 2020; Accepted 1 July 2020
Available online 2 July 2020

characteristics (e.g. gender, age). The questionnaire contained mostly closed questions, with room for additional remarks.

### *Data analysis*

All data were directly entered by the participants and stored in an online database (LimeSurvey, Hamburg, Germany). Descriptive statistics were used to describe responses to closed (multiple choice) questions and answers to the coded questions. All data were analyzed using SPSS for Windows, version 25.0 (IBM, Armonk, USA).

## Results

### *Study population characteristics*

A total of 215 participants (208 community pharmacists, 6 pharmacy technicians and 1 pharmacy manager) completed the online questionnaire. Of them, 64.7% were female and mean age was 43.4 ± 11.5 years. The majority of the community pharmacies (61.9%) were situated in a healthcare center together with a general practitioner (GP) and 53.0% were located in urban areas. These baseline characteristics are representative for the overall population of Dutch community pharmacists, however in our study more pharmacists seem to be situated together with a GP.[6]

### *Changes in logistic procedures*

Fig. 1 shows an overview of the changes in the pharmacy work setting and (logistic) procedures. Most participants mentioned to follow a more strict hygiene protocol, such as frequent cleaning (89.9%), hand disinfection (96.7%) and placement of plastic screens at the pharmacy counters (93.5%). Actions in response to the COVID-19 epidemic were mainly aimed at limiting direct patient contact and limiting the number of patients visiting the pharmacy. For example, a preference for electronic prescriptions over paper prescriptions, increased use of medicine self-service dispensing lockers or special medication pick-up counters and increased delivery of medication to the patient's home. In addition, some pharmacies only allowed picking up of (refill) medication after a patient received a message from the pharmacy. Also, working in fixed shifts of pharmacy technicians was mentioned to limit the number of contacts between personnel. Only 27.4% of the participants mentioned that it was possible to keep sufficient distance between pharmacy team members while working in the pharmacy.

Some respondents mentioned that they envisage that part of the measures taken to minimize risk of coronavirus exposure will be continued after the COVID-19 epidemic. Approximately half of the respondents suggested that plastic screens at the pharmacy counter could become standard both for hygiene aspects, but also to enhance feeling of safety amongst pharmacy technicians in light of verbal abuse or violence. In addition, increased use of online patient education tools, medication self-service lockers, medication delivery services and online refill prescriptions were mentioned to be continued after the COVID-19 epidemic.

### *Patient education and counseling during COVID-19 epidemic*

Table 1 presents how patient education and counseling was mainly conducted during the COVID-19 epidemic (March–May 2020). The majority of the pharmacies primarily dispensed first (73.0%) and refill prescriptions (68.4%) in the pharmacy. However, participants mentioned that pharmacy encounters were short and patients were provided with additional written information (e.g. flyers) or referred to online information (website, video animations). Especially for inhalation instructions, work procedures were adapted, e.g. by giving a short demonstration at the counter and subsequently sending patients video animations. A total of 44.2% participants mentioned to have conducted medication reviews, mainly by telephone.

Many participants (76.7%) expressed concerns about the quality of pharmaceutical care especially for vulnerable patients. The majority (93.0%) also believed patients postponed their doctor's visit. Other remarks placed were a decrease in privacy in the pharmacy, due to the placement of plastic screens pharmacy staff needed to speak up during patient education. In addition, not being able to use a separate consultation room (e.g. due to the social distance regulation) influenced patient privacy. Some pharmacists explicitly mentioned pharmaceutical care was more distant and the pharmacy was less approachable. Patients tended to ask fewer questions. For example, 60.6% of the respondents mentioned to barely have received questions from patients about

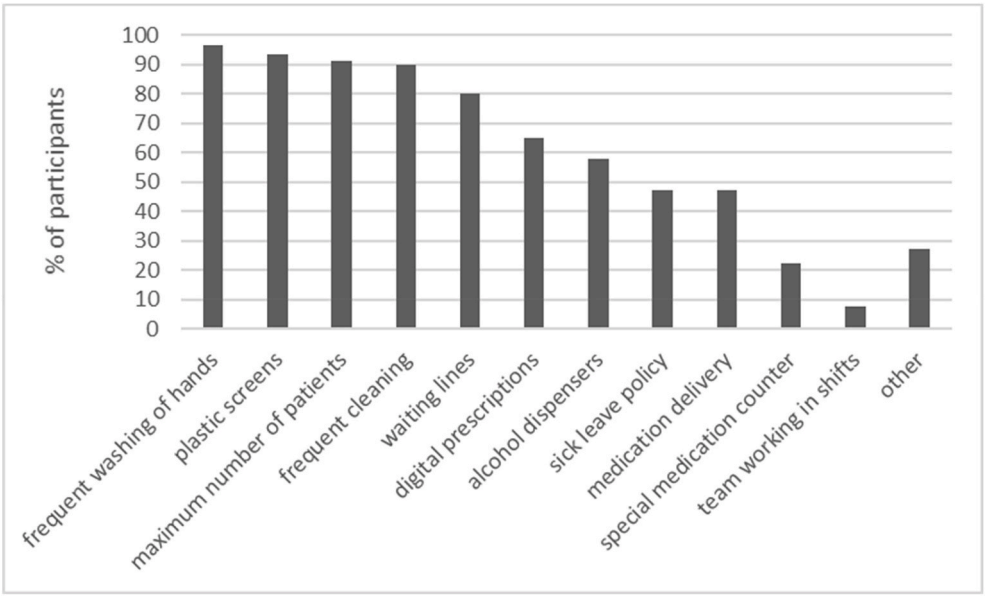


**Fig. 1.** Changes in logistic procedures during COVID-19 epidemic.

**Table 1**
Patient education and counseling in the pharmacy during the COVID-19 epidemic.

| | In the pharmacy | Telephone | Video call | Other | Examples |
|---|---|---|---|---|---|
| First prescription, % (n) | 73.0 (157) | 25.1 (54) | 0 | 1.9 (4) | Referral to online or written information |
| Refill prescription, % (n) | 68.4 (147) | 24.7 (53) | 0 | 7.0 (15) | Self-service medication locker, use of video animations, referral to written or online information |
| Inhalation instruction, % (n) | 42.3 (91) | 22.3 (48) | 0.5 (1) | 34.9 (75) | Short introduction in pharmacy, referral to video animation or website |
| Medication review, % (n)[a] | 7.4 (7/95) | 82.1 (78/95) | 3.2 (3/78) | 7.4 (7/95) | Use of (postal) patient questionnaire, only medication analysis (no patient contact) |

[a] 95 participants (44.2%) mentioned to conduct medication reviews during the COVID-19 epidemic.

medication use and the COVID-19 epidemic.

*Communication with prescribers during COVID-19 epidemic*

Most contact with prescribers was per telephone (95.8%), but 40.9% also mentioned face-to-face contact. During the epidemic, only 11.2% participated in pharmacotherapy consultation groups (regular meetings between groups of GPs and pharmacists aimed at improving the prescribing quality at a population level). Only 21.9% of the pharmacist regularly received questions from other health care providers, mainly related to drug shortages and personal protection materials such as gloves and masks.

## Discussion

Our results show considerable impact of the COVID-19 epidemic on both logistic procedures in the pharmacy and services regarding patient education and counseling. Most pharmacies implemented additional hygiene measures and logistic changes aimed at minimizing (the duration of) patient encounters. To compensate for counseling in the pharmacy pharmacists provided patients with online information materials, such as animation videos. Although these materials may support communication, they are usually not suitable as standalone communication. Especially for vulnerable patients, e.g. elderly with limited digital skills or patient with limited health literacy, this may increase the risk of drug related problems.[7,8] Use of teach back, clear instructions and showing how to use medication are important for these patients. A considerable proportion of pharmacists emphasized to continuate the implemented measures, such as the plastic screens at the pharmacy counter. This causes a structural increase in distance between patients and pharmacy staff, which will most likely negatively influence patient-provider interaction.

Liu et al.[9] promoted the use of remote healthcare or telepharmacy during the COVID-19 epidemic in order to facilitate instructions and teach back. However, we found very limited use of video communication during pharmacy - patient education. As guidelines regarding social distance and minimization of direct patient contact may be implemented for a long period of time, it is important to support pharmacists in use of telepharmacy care and address issues such as concerns about privacy.[10] Use of telepharmacy amongst both patients and pharmacists should be promoted as they may be unware of it or skeptical towards use.[11] Government and professional bodies could facilitate this by drawing up guidelines and supporting pharmacies during webinars or educational sessions. However, for vulnerable patient groups, as mentioned above, use of telepharmacy may be difficult, whilst they are at increased risk of drug related problems. It is important to gain insight in needs of these patients.

Besides good quality patient-provider communication, it is of utmost importance that pharmacists and prescribers set up clear agreements.[12] As a consequence of the COVID-19 epidemic, collaboration between community pharmacists and GPs is different. For example, most pharmacies did not organize pharmacotherapy consultation groups with the GPs in their primary care network. These pharmacotherapy meetings are usually used to discuss new treatment guidelines and initiate multidisciplinary projects to improve care. By postponing these meetings and having less (direct) contact between healthcare providers, quality of pharmacotherapy decreases.

To our knowledge this is the first study assessing the impact of the COVID-19 epidemic on pharmaceutical care in Europe. We used an anonymous online survey enabling participants to express their opinions freely. To gain insight in barriers for use of online communication tools, further research is necessary.

In conclusion, the COVID-19 epidemic has considerable impact on the provision of pharmaceutical care. Both logistic procedures and patient counseling contribute to high quality pharmacotherapy and are affected. Especially, vulnerable patient groups, such as elderly and those with limited health literacy, are at increased risk of drug related problems. As the COVID-19 epidemic may last for a longer time this urges the need for further implementation of telepharmacy.

## Funding

This study did not receive any funding.

## Declaration of competing interest

None.

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