



Danish community pharmacies supporting self-care for patients

Rikke Nørgaard Hansen^{a,*}, Lotte Stig Nørgaard^b, Charlotte Verner Rossing^a

^a *Pharmakon, The Danish College of Pharmacy Practice, Milnersvej 42, 3400 Hillerød, Denmark*

^b *University of Copenhagen, Faculty of Health and Medical Sciences, Department of Pharmacy, Universitetsparken 2, 2100 Copenhagen Ø, Denmark*

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ABSTRACT

In Denmark, self-care has been a part of the health care professional and health political discourse since the middle of the 1970s particularly in relation to prevention. However, the concept has become more visible in connection with the Danish government's public health programme "Healthy throughout life" from 2002 to 2010, where patients' self-care was highlighted as an important element in preventing disease progression and complications. Self-care in Denmark is seen as a partnership between the patient and the health care professional. Some self-care activities in Danish community pharmacies are mentioned in national and municipal guidelines for better prevention and self-care regarding obesity, sexual health, smoking cessation, teaching patients/relatives and vaccination. This paper describes self-care activities and services delivered by Danish community pharmacies gathered from survey results at 33 community pharmacies, oral communication with the Association of Danish Pharmacies and published papers on Danish community pharmacy services.

Self-care activities in Danish community pharmacies include counselling (about health, self-care, prescription medication, and OTC medication), health campaigns, collaborations with other health care professionals and patient associations and community pharmacy services, all with the purpose to support correct medication use, medication safety and to contribute to health promotion and prevention. These cover activities on prevention, detection, minor ailments, and chronic disease. Six of ten future community pharmacy contributions to medication safety and prevention in future health care, described by the Association of Danish Pharmacies, are related to community pharmacies' support of patients towards better self-care. In the future, Danish community pharmacies should consider offering self-care activities by expanding existing counselling, community pharmacy services and collaborations. Remuneration also needs to be aligned for the activities to succeed and become an integrated part of prevention packages and national initiatives that support patient self-care.

1. Introduction: objective and Danish history of self-care

This paper describes activities and services delivered by Danish community pharmacies which put the seven pillars of self-care¹ and the World Health Organization's (WHO) self-care definition (Box 1)² into practice.

The seven pillars of self-care, developed by the International Self-Care Foundation include knowledge and health literacy, mental well-being, physical activity, healthy eating, risk avoidance and mitigation, good hygiene and rational and responsible use of self-care products and services.¹ The seven pillars are also presented in "Handbook for pharmacists on empowering self-care" by FIP.³

Furthermore, the paper will present and discuss self-care activities in relation to the model proposed for community pharmacies and self-care by Benrimoj & Dineen-Griffin (on prevention, detection, minor ailments,

and chronic disease).⁴

In Denmark, self-care has been a permanent part of the health care professional and health political discourse since the middle of the 1970s in relation to prevention. However, the concept became more visible in connection with the Danish government's public health programme "Healthy throughout life" from 2002 to 2010, where patients' self-care was highlighted as an important element in preventing disease progression and complications for patients diagnosed with chronic diseases. In Denmark, providing self-care is primarily seen to include prevention activities. If patients become better at self-care, relapse and readmission can be prevented and they will have a better quality of life.⁵ A report on self-care from the Danish Health Authority from 2006 described how self-care is also relevant in citizen-oriented disease prevention, because good self-care can prevent development of diseases.⁶ In the programme "Healthy throughout life" self-care is seen as a partnership where

* Corresponding author.

E-mail address: rn@pharmakon.dk (R.N. Hansen).

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patients (and their relatives) must act as their own primary caregiver and creator of health, responsible for lifestyle changes, emotional stress, and registration of symptoms, while health care professionals must be professional advisors and support and help patients develop skills to provide self-care. The health care sector and social services play an important role by creating conditions for the individual to make healthy choices and live healthily.^{5,6} This perspective on self-care supports WHO's definition "with support of a health worker".

2. Self-care in the Danish health care system today

In January 2023, the Danish population was 5.9 million. During the past 30 years, the population has grown by 14%. In these 30 years the number of children and young people under the age of 20 has decreased from 24% to 22% in 2022. The percentage of 20–39-year-olds has also decreased from 30% to 25%, while the population of people aged 60 or older has increased from 20% to 26%.⁷

Everyone who has a residence permit and lives in Denmark has free access to health care services, including visits to a general practitioner (GP) and hospitals, as well as referrals from GPs to specialists and psychological counselling. In addition, home care, nursing home care and care at residential facilities are paid by the government except for rent and meals.⁸ In 2021, the Danish government spent approximately DKK 231 billion (EUR 31 billion) on public health care, which is approximately DKK 39,000 (EUR 5200) per citizen.⁹ In 2021, the public health expenditure was 10.8% of the Danish GDP compared to 7.9% in 2000. In 2019, prior to COVID-19, the percentage was 9.8.^{10,11} Citizens in Denmark pay taxes accounting for approximately half of their salary, and that provides financing of health care services. The responsibility for health and social care is shared between the central government, the regions, and the municipalities.

Denmark is divided into five regions and 98 municipalities. The regions manage the hospitals and services provided by GPs, physician specialists, physiotherapists, chiropractors, psychologists, dentists, and podiatrists.¹² The municipalities handle health care at a local level, which includes home care, rehabilitation, promotion of health, prevention of abuse, dental care, care for the elderly and disabled, psychiatric treatment, social psychiatry, and placement of neglected children.¹³

The Danish Health Authority has developed 11 prevention packages with recommendations for the work on prevention and health promotion in the municipalities. The prevention packages are knowledge-based tools for the municipalities and include recommendations which can contribute to prioritising and developing the quality of their work and the topics of alcohol, physical activity, hygiene, indoor climate in schools, nutrition, mental health, obesity, sexual health, sun protection, drug abuse and tobacco.

The package on obesity recommends that local initiatives for children and adults are visible at community pharmacies. The package on sexual health mentions that pharmacies can provide counselling on e.g., pregnancy tests, contraception, emergency contraception or medication in connection with sexual dysfunctions. The package on tobacco describes how the municipalities can collaborate with pharmacies who have trained advisors to offer smoking cessation programmes so that the municipality can meet the recommendations for smoking cessation

services.¹⁴

As part of the Danish prevention and health promotion strategy, self-care courses for people with long-term illnesses and their relatives have been offered since 2006 by the Danish Committee for Health Education. The courses are entitled "Learn how to tackle" and are based on the principle of equality; the so-called peer to peer approach. The Danish Committee for Health Education is a non-profit, non-governmental organization with working relations with public authorities and private organisations in the health care field.¹⁵

The Danish Health Authority has also made efforts towards prevention and public health at a national level in relation to alcohol, nutrition, hygiene, sexual health, tobacco and nicotine, drug abuse, physical activity, mental health, environment, and health, screening, and vaccination – all these are considered as prevention initiatives in Denmark.

Several national screening programmes for cervical cancer, breast cancer and bowel cancer exist, along with material for conditions and diseases in pregnant women and newborns. The regions take care of these programmes. Children are offered free vaccination against e.g., diphtheria, tetanus, whooping cough, measles, mumps, rubella and other serious diseases and infectious diseases like pneumococcus. Young people are offered a HPV vaccination. Adults can be vaccinated against the flu, COVID-19 and pneumococcus, and some risk groups can also be vaccinated against hepatitis. Danish community pharmacies are not mentioned in Danish law on vaccination, but they offer and deliver vaccination against the flu, COVID-19, pneumococcus, shingles, tetanus, HPV-vaccination, TBE-vaccination, and travel vaccinations.¹⁴

The activities and offers described in this section cover the seven pillars of self-care¹ and the model of self-care by Benrimoj et al.⁴ except for minor ailments. The community pharmacies are mentioned and contributes to the described activities on obesity and sexual health through counselling and health care campaigns at the pharmacies. They also deliver community pharmacy services on vaccination and smoking cessation as described above through which they contribute to local and national prevention activities on tobacco and vaccination.

3. Community pharmacies and pharmacy education in Denmark

As of October 2022, there were 523 community pharmacies in Denmark, including pharmacy branches. In 2021, their turnover was DKK 12.7 billion (EUR 1.69 billion) and the approximate turnover per pharmacy was DKK 24 million (EUR 3.2 million). Danish community pharmacies are privately owned by a pharmacist, following a license given by the Danish Medicines Agency.^{16,17} Further details are described in reference [18].

Danish community pharmacies are some of the largest in Europe in terms of the number of staff (12 employees per pharmacy and 29 per pharmacy owner²²) as well as the number of citizens per pharmacy (11,200 citizens per pharmacy²²) and visits to the pharmacy each year (90,500 visits). In December 2022, the pharmacies employed 188 pharmacy owners (pharmacists), 854 pharmacists (equivalent to 690 full-time employees), 2517 pharmacy technicians (equivalent to 2069 full-time employees) and 595 pharmacy technician students.^{16,19} Additionally, approximately 200 pharmacist interns complete their pharmacy internship every year.

Pharmacy technicians are the largest employee group in Danish

Box 1

World Health Organization's (WHO) definition of self-care.

"Self-care is the ability of individuals, families, and communities to promote health, prevent disease, maintain health and cope with illness and disability with or without the support of a health worker. The scope of self-care thus includes health promotion, disease prevention and control, self-medication, providing care to dependent people, seeking hospital/specialist/primary care if needed, and rehabilitation, including palliative care"²

pharmacies. The pharmacy technician education is a three-year programme equivalent to 180 ECTS (European Credit Transfer System) points. The academic part, which takes place at Pharmakon, the Danish College of Pharmacy Practice (Pharmakon), corresponds to 85 ECTS points. The practical part corresponds to 95 ECTS points and takes place at a pharmacy, where students are employed full-time. The competences that pharmacy technicians gain include professional knowledge of diseases, medication, self-care, ethics, and patient communication.^{20–22}

The pharmacist education in Denmark is provided by two Danish Universities, the University of Copenhagen (KU) and the University of Southern Denmark (SDU). At both universities, the five-year full-time education consists of two parts: A three-year bachelor's degree, which leads to the title BSc pharm., Bachelor of Science in Pharmacy, and a two-year master's programme, which leads to the title cand.pharm., Master of Science in Pharmacy.^{23,24} A pharmacist is trained in the drug areas: development, production, quality assurance, testing, registration, and counselling.^{23,24} In the master's programme offered by SDU, the students can choose between two different directions of specialisation: clinical pharmacy or technological pharmacy.²⁴

In Denmark, the postgraduate training of the pharmacy workforce related to pharmacotherapeutics, and sector specific topics is primarily delivered by Pharmakon. The training is performed both online and offline depending on the topics and the purpose of the courses. Since 2022, the staff in Danish pharmacies have been offered an education in patient-centred communication developed and tested by Pharmakon and the University of Copenhagen in 2021 called "Counselling first hand – understanding the customer and yourself through mentalising" that aims to increase patient-centred care in pharmacies.²⁵

4. Self-care activities in Danish community pharmacies

To gain knowledge of self-care activities carried out at Danish community pharmacies, a quantitative survey was sent to all 104 pharmacies (pharmacy owners) through the Danish Network for Community Pharmacy Practice Research and Development²⁶ and to all supervisors of pharmacy internship students from the University of Copenhagen in March 2023. Together these people represented 126 pharmacies. Furthermore, reading of published papers on counselling and community pharmacy services at Danish community pharmacies and a dialogue with the Association of Danish Pharmacies were carried out. The purpose of the mapping was to get input to the description of activities regarding self-care offered by Danish pharmacies. The survey is presented in English in Appendix A.

The self-care activities in Danish community pharmacies are described in the following two sections and in Table 2, the self-care activities are gathered regarding the model of self-care by Benrimoj et al.⁴

4.1. Self-care activities and support to patients in counselling, health campaigns and collaborations

The main tasks of the Danish community pharmacies are to distribute medication and counsel patients about health, self-care, prescription medication and OTC medication to support correct medication use, medication safety and to contribute to health promotion and

Table 1
Danish community pharmacy financials.¹⁸

Danish community pharmacy financials
Every second year, a gross profit agreement is made between the Ministry of Health and the Association of Danish Pharmacies. The gross profit is the Danish community pharmacies' total contribution margin for all goods (drugs and other products) and services. It is calculated as the entire turnover minus the consumption of goods and must cover all expenses in the pharmacy. In the gross profit agreement, the total profit margin for the pharmacies is imposed. ^{16,30} Further details are described in reference number [18].

prevention.^{17,18,27–29} Dispensing of medication and counselling are remunerated at a national level as described in Table 1.

Regarding self-care when it comes to counselling, the Danish pharmacies counsel patients when they ask for medication, open selling products and herbal drugs. Counselling is also provided for patients with acute or chronic diseases who have been prescribed medication and as when the patient presents a symptom or asks for a specific OTC medication. The term "minor ailments" is not used in Denmark, but similar OTC counselling will take place when the patient presents a symptom or asks for a specific drug or product. The pharmacy staff will then discuss the patient's symptoms and needs and counsel about medication/products and self-care.

A Danish study has shown that "personal care" was the third most common subject in counselling patients who requested OTC medication or presented a symptom (24.6%), and the second most common subject in counselling patients who requested non-medical products (34.0%).³¹ Other Danish studies have also shown that when the pharmacies meet patients presenting a symptom or requesting OTC medication or other self-care products, staff can identify and help the patients solve drug-related problems (DRPs). One study on DRPs in self-medication has shown that pharmacy staff identified DRPs for 21% of pharmacy customers presenting a symptom or requesting OTC medication,³² and another study showed that one or more DRPs were identified by pharmacy technicians in 12.7% of patients requesting OTC medication or presenting a symptom and 6.9% of patients requesting non-medical products.³¹

Counselling on the risk of kidney failure when the patient asks for NSAID while taking diuretics and ACE inhibitors/angiotensin II receptor blockers (the so-called triple whammy effect) is an example of an important and successful self-care activity from Danish pharmacies. A Danish study under review has shown that 8.0% ($n = 142$) of pharmacy customers asking for NSAID were at risk of the triple whammy effect, so pharmacy staff need to be educated in identifying and counselling these patients.³³

Danish community pharmacies also provide written patient information as part of this process.

Table 2
Self-care activities in Danish community pharmacies in terms of the model from Benrimoj et al.⁴

Self-care activity	Prevention	Detection	Minor ailments	Chronic diseases
Counselling on medication (prescription and OTC), free trade products and herbal drugs	X		X	X
Counselling on how patients can overcome a symptom	X		X	
Written patient information	X		X	X
Health campaigns	X		X	X
Referral to others	X	X		X
New medicines service				X
Medication adherence service				X
Inhaler technique assessment				X
Vaccination	X			
Smoking cessation	X			
Blood pressure assessment	X	X		
Cholesterol assessment	X	X		
Risk test for diabetes type 2		X		
Hearing test		X		
Sale of COVID-19 test		X		
Teaching of self-care to citizens or health care professionals	X			X
Local agreements with patient associations	X			X
Local agreements on referral to municipal services	X	X		

Many Danish pharmacies participate in health campaigns provided by the Association of Danish Pharmacies.³⁴ Typically, four campaigns run every year, with each one lasting one month. Counselling on self-care is part of the campaigns and sometimes takes place at the same time as international or national patient days on conditions, e.g., International Diabetes Day, the Danish Foot Day, or the Danish Arthritis Day. Examples of health campaigns from the Association of Danish Pharmacies from the last five years (2018–2022) include³⁴:

- Men, with a focus on erectile dysfunction, stomach acid and type 2 diabetes
- Children, with a focus on medication in schools and infectious diseases
- OTC medication, with a focus on colds and hay fever
- Stomach and bowel diseases
- OTC medication, with a focus on smoking cessation and fungus
- Pain, with a focus on chronic pain and acute pain
- Healthy feet and healthy mouth
- Medication safety, with a focus on handling medication and insulin
- Better sleep and medications for insomnia.

If relevant the health campaigns are run together with strategic collaborators e.g., patient associations. Sometimes as part of health campaigns and collaborations with patient associations and municipalities, Danish pharmacies teach citizens (e.g., patients, relatives, and children) about self-care, e.g., at the pharmacy, at citizen meetings or at schools. Municipalities, patient associations, or citizens themselves pay for this teaching. One example is a pharmacy which held evening arrangements for citizens about e.g., osteoporosis, arthritis, blood pressure, diabetes, chronic obstructive lung disease and asthma/allergy. Other pharmacies have collaborated with patient associations on meetings for citizens about dementia and diabetes. Another example is the funded project School Medicine Day, where pharmacists teach school children in grades 4–6 about medication and alternatives to medication.³⁵

All seven pillars of self-care¹ on knowledge and health literacy, mental wellbeing, physical activity, healthy eating, risk avoidance and mitigation, good hygiene and rational use of products and services have been addressed in health campaigns for the last five years on supporting patients' self-care.

4.2. Self-care in community pharmacy services to support patients

Danish community pharmacies provide evidence-based pharmacy services to enhance patient and medication safety through rational drug therapy and correct use of medication.^{17,18,27–29} In Denmark, providing self-care is seen as prevention activities and these community pharmacy services contribute to the prevention of disease and incorrect use of medicines. Six community pharmacy services are remunerated at a national level. The Inhalation technique assessment is fully remunerated, and the Medication adherence service is agreed as part of the gross profit agreement (Table 1) with a set price for each service. The remuneration of the New medicines service is a subsidy to the pharmacy which is imposed in the pharmacy law on payment and calculation of all fees and subsidies in the pharmacy sector.^{18,27} The three services are for patients with chronic diseases and involves self-care counselling related to adherence and how to live with a chronic disease and all seven pillars of self-care¹ are considered when pharmacies support patients on self-care through these services.

The preventive vaccination service for specific patient groups is fully remunerated^{18,27} and is delivered as a self-care activity for preventing diseases. This service belongs to the sixth pillar, "Risk avoidance or mitigation", in the seven pillars of self-care.¹

Two services are partly remunerated by the government, partly by the patient; re-prescribing for a limited number of medications, e.g., insulin and blood pressure medication and automated dose dispensing

with subsidy.^{18,27} The two services support the patients' self-care by ensuring the accessibility of medicine, thus supporting the patients to be adherent.

Danish pharmacies can also offer Smoking cessation, Blood pressure assessment, Cholesterol assessment and Risk test for diabetes type 2 to support self-care. Some pharmacies sell COVID-19 tests and provide hearing tests. The patients must pay for the service themselves if there is not a local collaboration with the municipality. These preventive and detection/screening services address the first five pillars of self-care: knowledge and health literacy, mental well-being, physical activity, healthy eating, risk avoidance and mitigation.¹

The pharmacies also provide established and evidence-based teaching on medication and self-care for other health care professionals in e.g., nursing homes, home care and residential facilities (42%). These teaching activities are remunerated by the municipalities through local contracts, with each pharmacy setting the price.^{18,27} The collaborative care is important for ideal self-care for the patient.³⁶ In 2016–2018, Pharmakon and the Danish Committee for Health Education carried out two projects on collaboration between municipalities and pharmacies in health promotion and prevention of disease. The results showed that pharmacies and municipalities became aware of each other's services and how the two complement each other. Pharmacies constitute a new entrance gate to reach citizens who are otherwise rarely reached by municipalities. Additionally, the citizens experience more continuity in health services when pharmacies and municipalities cooperate.^{37–39}

5. Opportunities and challenges for community pharmacies in providing self-care in the future

In September 2021, the Association of Danish Pharmacies published ten community pharmacy contributions to medication safety and prevention in future health care, as listed in Table 3.⁴⁰ Some of these are related to pharmacies' support of patients for better self-care because they support prevention of disease and incorrect use of medicines which in Denmark are seen as self-care activities.

Contributions 2, 7, 8 and 10 deal with expanding already existing pharmacy services on self-care and medication with support of preventing disease and incorrect medication use which in Denmark are seen as self-care activities. For example, the Association of Danish Pharmacies supports more patients getting the opportunity to receive New medicines service and Medication adherence service. Today, the New medicines service targets patients diagnosed with a new chronic condition who have initialised medication treatment within the past six months, whereas the Medication adherence service is available for patients who have been in long-term treatment for more than one year and who show signs of low medication adherence.^{18,40}

Contribution 5 ("Better prevention") describes how the association works towards making the vaccination programme a permanent service at pharmacies and even expanding it with more vaccines. The contribution to prevention is also about more collaboration between

Table 3

Ten community pharmacy contributions to medication safety and prevention in future health care from the Association of Danish Pharmacies.

1. New technology gives new possibilities for safer prescribing and dispensing of medication
2. More patients using automated dose-dispensing creates safety
3. There should be collaboration on medication safety in transitions between care and sectors
4. Everyone should have access to and be able to afford necessary medication
5. Better prevention should be made available
6. No patients should be taking unnecessary medication
7. The New medicines service and Medication adherence service should be available for more patients
8. Safe medication handling should be taught in more municipalities
9. Pharmacist should be able to prescribe medication against minor diseases
10. Patient relatives should be supported with and taught about safe medication use

pharmacies and municipalities about referral to each other's preventive initiatives such as smoking cessation, help with weight loss, conversations with patients about medication etc. The pharmacies should also collaborate with other parties in the health care sector on better prevention and new technology for early detection of diseases and relevant screenings.⁴⁰

"Pharmacist prescribing on minor disease" (Contribution 9) is also a self-care activity suggested by the Association of Danish Pharmacies, as the association believes that it should be possible for citizens to start their treatment with prescribed medicine as quickly as possible when the symptoms are unambiguous or when valid tests can determine the need for treatment. The pharmacist who is qualified to re-prescribe should therefore be given the right to start medication for e.g., chlamydia and threadworm based on an approved protocol from the Danish health authorities. This also ensures that physicians can focus on more complicated cases and relieve some of the physicians' workload.⁴⁰

Community pharmacies will also work towards becoming a more integrated part of prevention packages from the Danish Health Authority and other supporting self-care initiatives, as a wide variety of pharmacy services and initiatives support patients taking care of themselves and living good and healthy lives.

One barrier for providing self-care activities in Danish community pharmacies is a lack of remuneration. The pharmacies are remunerated from the gross profit agreement (Table 1), which includes fees for dispensing the prescription. Additionally, fees are charged per pharmacy service. Self-care and other preventive services are not remunerated as individual services, which means that the dialogue with these patients is included in the counselling at the counter. This could be a barrier for the full potential towards this group. Self-care and prevention are often activities that health care professionals should address as a collaborative initiative. The initiatives often include different professionals across sectors. In Denmark, the funding of the pharmacies comes from a different area than the rest of the health care system, which also presents a challenge for seamless counselling on self-care for the patients.

6. Conclusion

Self-care in Denmark is a partnership between the patient and the health care professional. Some self-care activities in Danish community pharmacies are mentioned in national and municipal guidelines for better prevention and self-care. The activities in the pharmacies are included in counselling, health campaigns, collaborations and community pharmacy services and cover all seven pillars of self-care¹ and the proposed model for community pharmacies and self-care.⁴

Danish community pharmacies can expand self-care activities by increasing the counselling, services and collaborations that already exist. However, remuneration is required to ensure sustainability of these self-care activities through community pharmacies. Pharmacies must focus on becoming a more integrated part of prevention packages and national initiatives that support self-care, as they provide several services and activities that support patient self-care.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A

A.1. Survey to Danish community pharmacies on self-care activities and collaboration

Which pharmacy do you work at?

What kind of counselling at the counter activities that support self-

care has the pharmacy carried out in the past three years? (You can tick multiple boxes).

- Counselling on medicine use
- Counselling on how patients can overcome a symptom (e.g., pain)
- Handing out written patient information
- Counselling about free trade products (e.g., medical equipment, nutritional supplements)
- Counselling on herbal drugs
- Health campaigns
- Other counselling supporting self-care
- Recommended dialogue with other health care professionals
- No completed services supporting self-care
- Others

What kind of community pharmacy services that support self-care has the pharmacy carried out in the past three years? (You can tick multiple boxes).

- New medicines service
- Medication adherence service
- Inhaler technique assessment
- Smoking cessation
- Teaching self-care to other professionals (e.g., at nursing homes or schools)
- Teaching self-care to citizens (e.g., citizen meeting, at schools)
- Preventive services (blood pressure, cholesterol, diabetes type 2)
- Vaccination
- No delivered services supporting self-care
- Others

Who has the pharmacy collaborated with to support self-care within the last three years? (You can tick multiple boxes).

- Patient associations
- The municipality
- General practice
- Local health care professionals, e.g., physiotherapists
- No experience with collaboration on self-care activities
- Others

How does the pharmacy communicate with patients regarding self-care? (You can tick multiple boxes).

- At the counter at the pharmacy
- On screens at the pharmacy
- With information videos at the pharmacy
- With written patient information
- On social media
- In local newspapers or radio
- Others

Describe a particularly good self-care activity which the pharmacy has carried out. What did the pharmacy do and why was it particularly good?

What kind of self-care activities would the pharmacy like to carry out in the future?

Additional comments regarding self-care at the pharmacy.

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