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Patient experiences of their current asthma care and their views toward providing support for patients with asthma in community pharmacy: A Qualitative study

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ABSTRACT

Background: An estimated 300 million people live with asthma globally. In England, a significant percentage live with poorly controlled asthma symptoms. Community pharmacists might be able to play a role in filling gaps in asthma care as they have the expertise and are in regular contact with patients with long term conditions. This study described patients' experiences of the management of their asthma in the general physician (GP) practice and community pharmacy settings and explored patients' views on providing support for them in community pharmacy.

Method: This is a descriptive qualitative study. Thirteen adult asthma patients were recruited from a GP practice in the Northwest of England. Semi-structured qualitative interviews were conducted face-to-face or by telephone. The interviews were recorded, transcribed and analysed using a thematic analysis approach. Ethics approval was obtained before the study commenced and all participants gave informed written consent to participate.

Results: We identified challenges in the current asthma care provided to patients with asthma including lack of continuity of care, inability to book an appointment and other experienced differences in the quality of asthma care provided to them and/or access to annual asthma reviews across different GP practices. Additionally, there is lack of awareness of services provided in community pharmacy. These challenges along with having comorbidities alongside asthma may negatively affect asthma patients' engagement with their asthma appointments and their behaviour toward their asthma.

Conclusions: Patients showed trust in community pharmacists same as other HCPs to support them with their asthma care. Patients thought that being provided with regular asthma care including reviews in community pharmacy might be a suitable approach to respond to patients' needs and preferences in terms of their asthma management because of ease of access to community pharmacy. Pharmacists could be involved in the provision of community pharmacy-based asthma interventions that involve more than inhaler technique education. Further research should focus on developing structured approaches for asthma patient education that can be implemented consistently in the context of community pharmacy in England.

1. Background

Asthma is a common long-term respiratory disease that can affect people of any age. An estimated 300 million people live with asthma globally, and due to its high prevalence, chronic nature and impacts on quality of life, asthma poses a significant health concern.[1] A systematic review conducted in 2009 found that asthma had a high economic burden among Long Term Conditions (LTCs).[2]

Abbreviations: A&E, Accident and Emergency; AAR, Annual Asthma Review; COPD, Chronic Obstructive Pulmonary Disease; CPCF, Community Pharmacy Contractual Framework; GP, General Physician; HCPs, Health Care Practitioners; LTCs, Long Term Conditions; MURs, Medicine Use Reviews; MRC, Medical Research Council; NHS, National Health Service; NMS, New Medicine Service; NSAIDs, Non-Steroidal Anti-inflammatory Drugs; RCP, Royal College of Physicians; SRQR, Standards for Reporting Qualitative Research.

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In the UK, among LTCs, asthma is a national health concern; over 8 million are diagnosed with asthma, 82% of whom have uncontrolled asthma.[3] In England, there are 3,591,392 patients diagnosed with asthma and care costs were estimated as £894 million per year, of which £799 million were National Health Services (NHS) costs.[4]

Asthma is a complex and episodic condition, which needs innovative approaches to improve its management.[5–9] Asthma care involves an asthma management process undertaken by Healthcare Professionals (HCPs) in a range of healthcare settings and asthma patients.[69] Those three elements interact with each other and can affect the quality of asthma care in patients. Despite the British Thoracic Society (BTS)/Scottish Intercollegiate Guidelines Network (SIGN)[6] and National Institute for Health and Care Excellence (NICE)[7] guidelines, there is a lack of evidence to inform the best way to organise structured asthma care in practice and there is a need to improve asthma symptoms control in adult patients.

A variety of different HCPs, across different practice settings, are involved in the management of asthma patients.[10] However, the general physician (GP) practice is central to asthma care provision.[10] The current increasing workload and pressure on GP practices and the effect of COVID-19 might have negatively impacted on asthma care.[11] Some asthma patients have not been able to book appointments with their GP practice for an Annual Asthma Review (AAR) or a follow-up after having emergency care.[8,12] Additionally, less than 50% of asthma patients have an Asthma Action Plan (AAP) and only 77% have been provided with an inhaler technique check by an HCP.[13]

Inhaled medication is the cornerstone of pharmacological treatment of asthma, therefore correct inhaler technique is substantial for control of asthma symptoms.[14] This can explain the poor asthma symptoms in many asthma patients. Community pharmacists might be able to play a role in filling those gaps in asthma care as they have the expertise, are some of the most accessible HCP to patients and are in regular contact with patients with LTCs including asthma patients when picking their prescriptions.[15] This agrees with the recent Community Pharmacy Contractual Framework (CPCF) and NHS long term plan that enforced the expansion of the services in community pharmacy. Therefore, there is a need to further investigate and provide evidence on providing support for patients with asthma in community pharmacy.

This qualitative paper explores patients' experiences of the management of their asthma in GP practice and community pharmacy settings and explores patients' views on elements of asthma care at which community pharmacists can provide further support for patients with asthma. We employed qualitative interviews to gain an in-depth understanding of patients' experiences of asthma care.

2. Methods

This descriptive qualitative interview study forms a part of a larger study (additional file 3) that was conducted in the context of the Medical Research Council (MRC) framework.[16] AM, a female pharmacist, collected and analysed the data in collaboration with RM, PP and CWM and reported the study using Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist.[17] AM undertook training on qualitative data collection and analysis before conducting the research. RM, PP and CWM all have experience in research and are from pharmacy or nursing backgrounds. Ethical approval was issued by the Health Research Authority, Health and Care Research Wales and Research Ethics Committee on 29th August 2019 (Reference number 19/IEC08/0025) before data collection commenced. All participants gave informed written consent prior to participation.

2.1. Participants

We employed purposive sampling strategy to capture diversity in gender, age comorbidities, asthma symptoms control and attendance to their asthma appointments to enrich the data set.[18]

Potential participants were adult asthma patients registered with the GP practice in the Northwest of England whose medical records were reviewed in a previous study (case note review of patients' medical records)[70] and consented to be interviewed in this study. In the case note review, we employed a pre-published validated tool (PRIMIS Tool[19]) for identifying active asthma patients from the GP practice clinical system in England. The practice manager identified all eligible patients with active asthma from the asthma register. The practice manager searched for patients whose medical records were coded with any Read code (a coded thesaurus of clinical terms for clinicians to record patient findings[20]) for asthma, prescribed asthma medication in the last 12 months, patients who have received asthma monitoring or patients who have positive asthma spirometry recorded at any time in their medical history and aged 17–65 year old. Older adults over 65 years of age[21] were excluded because asthma and COPD overlap and converge in patients over 65 due to the similar pattern of the two diseases in terms of airways obstruction and the presence of other comorbidities.[22,23]

An invitation letter outlining the study was sent out by the practice manager to each potential participant ($n = 357$) with a participant information sheet and two consent forms, one for the case note review and another for the patient interview. Twenty-one participants consented to participate in the interviews. Out of the 21 participants, 17 were contacted by the researcher over the telephone to arrange an interview; four of them withdrew from the interview and the other 13 were interviewed. Further interviews were not conducted because new concepts or patterns were not emerging from the interviews with participants.[18] AM did not have any previous relation with participants before the study. AM probed the interviewees and encouraged them to answer the questions to get a rounded data set with explanations.[24] The interviews were conducted face-to-face or via telephone, depending on the participants' preference.[25]

2.2. Data collection

Interviews took place between September 2019 and December 2019. We employed semi-structured interviews to allow the participants to freely express their perspectives.[18,26] We developed a semi-structured interview schedule based on a previous literature review, Murray's review[27] and the results of previous studies from a larger project (interviews with stakeholders and review of patients' medical records). The interview schedule covered a range of topics about patients perceptions of the current asthma care provision and their suggestions on improvement of the current care with emphasis on any additional role for community pharmacists in asthma care (additional file 2).

AM piloted the interview schedule with two patients and the interview transcripts were reviewed by the research team, to ensure trustworthiness of the data. The interview schedule enabled consistency in the data collection, with the interviews flexible enough to allow the participants to explain what was important to them.[28] The audio-recorded interviews were transcribed by a data compliant transcriber and checked for accuracy by AM.

2.3. Data analysis

We undertook a thematic analysis approach, to highlight similarities and differences in the perspectives of the participants.[29] Thematic analysis is accessible for researchers and can be used for both deductive and inductive analysis.[30] AM used NVivo 12.0 [31] to manage the data and facilitate the analysis.

AM coded the transcripts of the interviews line by line. Then, the framework of the larger study[69] (see additional file 3) aided the grouping of the codes. This was considered a suitable approach to achieve the aim and objectives of the study. The thematic analysis phases[30] and a description of the steps undertaken by the researcher to analyse the interview transcripts are detailed in Table 1.

Table 1
Thematic Analysis Steps.

Thematic analysis phases[29,30,32]	Steps of the thematic analysis performed by the researcher
1.Familiarising yourself with the data	All the interviews were transcribed verbatim by a data compliant transcriber. AM then re-listened to the audio recordings and read the transcripts more than once to become familiar with the interviews. The full transcripts were utilised in the analysis. Notes and impressions were recorded in the margin of the interview transcripts to be used later for coding and interpretation. The notes were generated while keeping in mind the three ideas from the framework of the larger study[69] (see additional file 3).
2.Generating initial codes	The interview transcripts were read line by line searching for ideas or thoughts and underlining the sentence, line or paragraph that describes them. Initial codes were generated by the researcher by searching for similar ideas or thoughts that can be categorised into a code.
3.Searching for themes	The transcripts were re-read and some codes were merged together while codes that were related to each other were grouped into potential themes and data (quotes) related to each theme were gathered. Consequently, the codes, categories and potential themes were discussed with the research team.
4.Reviewing the themes	The theme and codes were reviewed continually during the analysis process. The interview transcripts were re-read by the researcher while having the codes and themes on hand to ensure that all the codes were applied to all the transcripts. Additionally, this allowed the researcher to ensure that ideas or thoughts from each transcript were coded under the right code. This was conducted to apply any new codes to the whole data set.
5.Defining and naming the themes	The final themes and sub-themes were identified by the researcher and discussed with the research team.
6.Producing the report	The analysis findings were reviewed by the research team and an external researcher.

3. Results

Thirteen adult asthma patients who consented to participate were interviewed. Respondents were aged between 32 and 64 years old, 6 were females and 7 males, and included participants with one or more comorbidities. Eight of the participants had poorly controlled asthma (asthma control level was identified for the participants from our previous study (review of patients' medical records). Of the interviews, 10 were conducted face-to-face and three were conducted over the phone, and average duration of the interviews was 19 min (Table 2).

We identified patterns about patients' perceptions of current asthma care and their views on opportunities for community pharmacists to be involved in their asthma care, then classified these patterns into two themes (Table 3) based on the framework of the larger study (Additional file 3).

Table 2
Participants' demographics.

Participant number	Age	Gender	Comorbidities
1	51-55	Female	Anxiety and depression
2	46-50	Female	Obesity and depression
3	46-50	Female	None
4	55-60	Male	COPD
5	30-35	Male	None
6	51-55	Female	Obesity, depression and allergic rhinitis
7	30-35	Male	Depression
8	61-65	Female	Depression
9	61-65	Male	Obesity and depression
10	46-50	Female	Depression
11	46-50	Male	Depression and allergic rhinitis
12	46-50	Male	Obesity and depression
13	30-35	Male	Depression
Average Age 48.8 years Age range 32–64			

3.1. Patients' experiences of asthma management in the GP practice and community pharmacy

This theme describes participants' experiences of their asthma management in GP practice and community pharmacy and explores factors that impact their experiences. These factors are summarised in four subthemes.

3.1.1. Healthcare Staff Competency

Regardless of their age or years of having asthma, participants showed trust in the GPs and nurses in providing asthma care and appreciated the AARs provided to them in the GP practices.

"It [AAR] is actually quite good, I've never had a problem," Participant-1.

"[AAR] has been brilliant, she's [the nurse] dead sympathetic, she knows her job, and she tells me what to do," Participant-9.

Similarly, the participants thought that community pharmacists were qualified to review asthma patients, perform peak flow measurements, and check their inhaler technique and medication use.

"I think a pharmacist is as knowledgeable as a doctor, and I'm sure they can take peak flows as well, and they will know that the patient is struggling," Participant-8.

Additionally, participants appreciated community pharmacists' knowledge about medication and disease interactions and mentioned how they had been told by community pharmacists that ibuprofen might increase their asthma symptoms.

"I was taking Ibuprofen for inflammation because I've got arthritis, and I didn't know I wasn't allowed to take them until the pharmacist told me," Participant-10.

Most of the participants perceived that the community pharmacists were trustworthy and can be helpful in terms of supporting asthma patients to better manage their condition.

"I've been over there [community pharmacy] a few times to see the pharmacist and asked him for his advice when I'm a bit wheezy. He's there for you, you can talk to him," Participant-13.

In the contrast, one of the participants who was a nurse and an asthma patient had a negative experience with community pharmacy on more than one occasion. This participant thought that pharmacists are not qualified to provide any support for asthma patients and that it would be difficult to provide them with sufficient training to support asthma patients. Another participant (who had both asthma and COPD) preferred the secondary care-based services and to be treated and managed by a specialist. This might be related to the complexity of this

Table 3
Themes and sub-themes.

Theme	Description	Sub-themes
Patients' experiences of asthma management in the GP practice and community pharmacy	This theme describes participants' experiences of their asthma and its management in the GP practice (mainly AARs) and community pharmacy settings.	Healthcare Staff Competency Healthcare Staff Capacity Access to Asthma Care Interpersonal factors
Participants' suggestions for improvement	This theme describes perspectives on opportunities to enhance asthma management.	More frequent reviews More patient education and better training on correct inhaler technique Better communication between asthma patients and HCPs Non-pharmacological treatment and preventative actions.

patients' condition as the participant mentioned that he is currently using an oxygen supply.

"If I wanted something over the counter and I wasn't sure what I wanted then that would be one thing [that community pharmacists could help me with], but not to start messing with medications that were prescribed by a specialist," Participant-2.

"I like to be managed by the specialist and the nurse in the clinic", Participant-4.

3.1.2. Healthcare Staff Capacity

Some patients thought that their appointments and visits to the GP practice could be utilised better. These participants were dissatisfied because of the lack of continuity of care; they often could not see the same healthcare practitioner each time they visited the GP practice and difficulties with their appointments in terms of long waits to book an appointment and the short duration of the appointment. Therefore, they could not build rapport and trust as the healthcare practitioners changed in each appointment.

"They're [GPs] all locums, it's like in a hospital when you have a locum consultant, they haven't got a vested interest because they're not going to be there that long, so they'll throw a drug at you, and they know they're not going to be there next week," Participant-2.

"It's like every doctor basically, if you need an appointment you've got to wait," Participant-12.

"I think if things are wrong at the moment it's because you only get 15 minutes with the GP," Participant-8.

Patients appreciated the increasing workload on the GP practices and thought that providing asthma care by community pharmacist may support the GP practices managing their workload. The availability of the community pharmacists due to the easy access, may help to overcome the difficulties that asthma patients were having in booking appointments in the GP practice. Additionally, pharmacist might be able to support them with follow-up of their asthma or urgent care.

"It puts your mind at ease, knowing that the shop's [community pharmacy] only across the road from where I live. If I have got a problem I don't have to wait until I get a doctor's appointment. I can go over there [community pharmacy] and have a word, it's like frontline for me," Participant-9.

"I think it [the NMS] is useful. I think anything that takes away the pressure on surgery is probably worthwhile," Participant-3.

3.1.3. Access to asthma care

Two of the participants who changed their living area found differences in the quality of asthma care and access to AARs in different regions. Those participants were so happy with the change in the AARs provided to them and the way their asthma is being managed in their current GP practice compared to the GP practice that they were registered with before.

"When I was in [name] GP, I didn't have an asthma review. But now since moving to [name] GP, I had a review to start me off, to ensure that they could give me the prescriptions in there," Participant-13.

"I think I've experienced different service in different NHS areas, but I certainly think it's improved here to what I've experienced elsewhere," Participant-3.

In terms of access to services in community pharmacy, it was prominent in the findings that the participants were not aware that community pharmacists could support them with services other than dispensing their prescribed medications.

Only picking up my prescriptions, I haven't received any other services in [community pharmacy]," Participant-7.

Some of the participants were surprised that community pharmacists could support them with their medication use by enhanced services like New Medicine Service (NMS), except one participant who had had a NMS before. However, some of them mentioned the emergency supply service and described their personal experience when they needed the community pharmacist's advice.

"I have not used these services [Medicine Use Reviews (MURs) and NMS] and I never heard about them," Participant-2.

"I remember one time I felt bad with my chest, and I'd used much Ventolin that day, I didn't have much and I was worried about the night. I didn't know you can get it [emergency supply] through your pharmacist, so I waited until the next day for the GP. I only knew that you can go to the pharmacy just recently, I mean the last few weeks," Participant-1.

3.1.4. Interpersonal factors

Some participants were not engaged with their AARs because they thought that other LTCs they have, were much more important than asthma or because of mood changes related to comorbid depression.

"I need follow-up for my back and nerves, not for asthma," Participant-1.

"This is me normally, any other time I can't get out the house because I feel low with the depression. Otherwise, I wouldn't have come if I was low, I wouldn't have been able to come," Participant-10.

3.2. Participants' suggestions for improvement

This theme describes opportunities to improve asthma care from patient's perspectives by exploring elements of asthma care that community pharmacists can provide further support for patients with asthma. These elements are summarised in four sub-themes below.

3.2.1. More frequent reviews

The participants perceived that asthma reviews can be provided in more than one healthcare settings to adapt to patients' needs and lifestyle.

"You've two points of access, if you're not going to your doctor but you're going for your medication, they [community pharmacists] will catch you" Participant-11.

Some participants suggested that they might benefit from being reviewed more than once a year to decrease the risk of asthma attacks especially in patients whose symptoms are affected by seasonal changes or have allergies and/or difficulties in using their inhaler technique.

"I'd prefer to be seen two or three times a year because you've got the change in the weather. Now with this cold weather, I can't breathe, now come spring, my chest will change again, and come summer it will change again," Participant-12.

"Patients get into bad habits with techniques or compliance and everything else, so it's never a bad idea for a recap," Participant-2.

On the contrary, some asthma patients might not engage with more asthma reviews than once a year because they know how to manage their asthma and do not need further support or reviews, other than their usual asthma care.

"I think once every year is fine, no need for twice a year," Participant-7.

"I'm quite lucky because I've got a background many years ago, I understand asthma and I understand what my inhalers are for," Participant-1.

More patient education and better training on correct inhaler technique.

Participants thought that more efficient asthma education should be provided to patients who need them and those who might benefit from more information or reviews. For example, newly diagnosed asthma patients and asthma patients with comorbid anxiety.

"When you get told you have asthma it's a daunting thing, you're getting told that straightaway. Just let me know what I can do and how to manage this, it's easy, and what steps to take, that would have helped me so much more at the very beginning, so I know how to handle it going forward," Participant-13.

"I think a better explanation of asthma itself, and also guidelines on what to avoid. What exercise you can do, how far to push yourself," Participant-8.

"When you have asthma and you start to struggle with your breathing, you tend to start to panic a little bit, because it's not a pleasant thing not to be able to get a good breath of air," Participant-8.

Other participants who were diagnosed with asthma for more than 10 years were not satisfied by the way the nurse checked their inhaler technique.

"Basically they [HCPs] just say, "Are you using [the inhaler] all right?"

or, "Is everything all right?" Participant-12.

Better communication between asthma patients and HCPs.

Additionally, the participants thought that there is a need for better communication and information sharing between asthma patients and their HCPs.

"Sometimes it's changing medication, which becomes a pain. It's like they say…, 'Oh that inhaler is not available anymore, you can't have that one, we have to find you something suitable'. I'm used to that inhaler, why all of a sudden have things changed?" Participant-11.

"To get a bit of comfort by speaking to a professional, who understands the condition," Participant-8.

Some participants mentioned that sometimes HCPs make assumptions or judgements without any further clarification.

"They [nurse] will often have an assumption of a patient's ability, and what they know and they don't know." Participant-1.

3.2.2. Non-pharmacological treatment and preventative actions

Participants thought that better knowledge of non-pharmacological management including exercise, weight management and management of triggers of their asthma symptoms can help to enhance their asthma care.

"More breathing exercises, because you don't get taught something like that, you don't get told that," Participant-11.

"I have a problem with my weight. If I lose the weight then I can control my asthma," Participant-6.

"I've noticed certain things like lime juice things like that, I've realised that triggers, the acidity in the lime sort of irritates my chest, and I end up wheezing," Participant-8.

4. Discussion

This study explored patients' experiences of the management of their asthma in GP practice and community pharmacy settings. This research adds to the current growing evidence on challenges in delivering asthma care and identified factors that impact patients' experiences. It provides suggestions to enhance asthma care by identifying elements of asthma care that community pharmacists can provide further support to patients with asthma.

4.1. Factors that impact asthma patients' experiences

We identified factors at the organisational level that have an impact on patients experiences of their asthma care. These factors include lack of continuity of care and lack of awareness of asthma services provided in community pharmacy among asthma patients.

Consistent with the literature,[33–35] the findings suggested that lack of continuity of care is affecting the asthma appointments and ability to build a relationship with the HCP. We found that participants might fail to attend their AARs due to inability to book an appointment and others experienced differences in the quality of asthma care provided to them and/or access to AARs across different GP practices. This is not a new phenomenon, as there is a need to improve the quality and access to care provided to patients in the GP practices in England.[12,36] Also, patients related the poor quality of AARs to the short duration of the appointments in the GP practices, which was raised by GPs in England before.[37]

We found lack of awareness of services provided in community pharmacy among asthma patients. This finding supports evidence that highlighted inequity in access to the medicine Use Reviews (MURs) among patients as one of the limitations that might be attributed to its recent decommissioning in England[38,39]

Beside these challenges at the organisational level, we identified having other comorbidities beside asthma as an interpersonal factor that may negatively affect asthma patients' engagement with their asthma appointments and their behaviour toward their asthma. Some asthma patients with comorbidities beside their asthma are prioritising other LTCs but not asthma. Those patients tend to prioritise the condition that is affecting their daily activity the most.[40] In asthma patients with allergic rhinitis, allergic symptoms could be misdiagnosed as an asthma attack and they may have more asthma attacks and visit the A&E more frequently than those without allergic rhinitis.[41,42] In this study participants with asthma and comorbid allergy were keen to be supported to reduce the effect of asthma triggers and allergic reactions to control their asthma symptoms. Participants with anxiety might be over worrying about having an asthma attack and this is affecting their asthma symptoms, anxiety is known to affect asthma symptoms control and patients might find it difficult to distinguish between asthma attacks and panic attacks.[43,44] On the other hand, some participants were not engaged with their AARs because of mood changes related to comorbid depression. Depression is classed as a psychosocial factor that can contribute to the risk of asthma deaths.[6] Emotional changes may exacerbate asthma symptoms and poor medication adherence and poor self-management were suggested to be related to poor asthma symptoms control in patients with comorbid depression,[44] as demonstrated in the demographics of participants in the study. Therefore, patients with asthma and other comorbidities may benefit from tailored support that take into account their comorbidities and not only asthma.

4.2. Elements of asthma care at which community pharmacists can provide further support for patients with asthma

Regardless of variation in age, gender and comorbidities the participants have beside their asthma, most participants considered that the delivery of asthma care should not be limited to those from specific profession or at a specific healthcare setting. Most of the participants showed trust in the skills and knowledge of community pharmacists to further support asthma patients especially their knowledge of medication use and interactions, this is consistent with previous studies.[45,46]

Participants perceived that the involvement of community pharmacist in supporting patients with asthma have benefits including allowing patients to access asthma reviews in more than one healthcare setting and ease in access community pharmacy in England. These findings are in line with the initiatives in the UK and Globally to extend community pharmacists role in providing care to patients with asthma[47–49] and other LTCs[27,50,51] and the NHS long-term plan and the CPCF in England that supports the provision of clinical role for pharmacists in England. From factors that impact patients' experiences and their suggestions to improve asthma care, we were able to suggest key areas of asthma care, at which community pharmacists can support patients in regular and preventive care for their asthma.

More frequent reviews may be targted to those who will benefit the most from it including asthma patients who have comorbid allergy, those who need help to use their inhaler and patients with high risk of an asthma attack. The provision of more frequent reviews in community pharmacy for asthma patients was highlighted by other studies, however, there was no sufficient evidence on the frequency of those reviews.[52]

Patients expressed the belief that community pharmacists could play a crucial role in identifying potential medication-disease interactions. For instance, some participants noted that the prescription of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) exacerbated their asthma symptoms. NSAIDs are known to trigger asthma symptoms in adult patients[6,53]. However, for community pharmacists to effectively support asthma patients with their medications, it may be necessary to improve their access to patients' medical records. This need for access to comprehensive patient information has been highlighted in previous studies examining pharmacy services, both in England[54] and internationally.[55–59]

The participants highlighted that they wanted, on many occasions, more education and information regarding their asthma and its management and to be able to discuss their management options better. The lack of efficient education and information sharing with asthma patients can be related to the poor communication between patients and HCPs

that was highlighted in a previous study in Scotland.[60] Consistent with the literature,[61–63] the findings suggested the need to improve inhaler technique in some asthma patients. Some of the patients in this study mentioned that their inhaler technique was checked verbally and felt that they were not satisfied with this. The current limitation of the process of checking the inhaler technique is that it is not consistent and it depends on the HCPs experience.[64] Physical demonstration of the inhaler technique by the community pharmacist aided by inhaler technique checking devices, videos and personalised image labels might be solutions to improve inhaler technique checks and training.[65,66]

Many of the participants in our study highlighted that they need more support with non-pharmacological management and preventative actions, including exercise, weight management and management of triggers of their asthma symptoms. Although the national[6,7] and international guidelines[5] recommend the inclusion of non-pharmacological management in the provision of asthma care by HCPs, a previous study in London suggested that HCPs are focusing on pharmacological management heavily compared to non-pharmacological management.[67]

Previous studies in adult asthma patients showed that community pharmacy-based educational interventions resulted in improvements in asthma patients' knowledge and behaviour toward their condition and medications[68] Therefore, community pharmacists could be involved in providing patient education including but not limited to inhaler technique training. However, further research can develop structured approaches for asthma patient education that can be implemented consistently[68] in the context of community pharmacy in England and internationally.

4.3. Strengths and limitations

The study was carried out in a single region; all of the participants were recruited from one GP practice only and this limited the transferability of the findings. On the other hand, conducting the research locally allowed the researcher to conduct more face-to-face interviews. Moreover, GPs, practice nurses and pharmacists were involved in the delivery of care in the GP practice, therefore, the approach for asthma care delivery in the GP practice was considered representative of asthma care delivery in general.

5. Conclusions

Patients showed trust in community pharmacists as providers of additional support with their asthma care outside of the GP practice. Pharmacists could be involved in the provision of community pharmacy-based asthma interventions that involve more than inhaler technique education. Also, there is a need to take into consideration needs of patients with asthma and other comorbidities and support them to change their behaviour toward their asthma management. However, there are challenges to the involvement of pharmacists in asthma care within the current stress on the community pharmacy in terms of increasing workload and limited access to patients' data.

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Ethics approval

The study was approved by the Health Research Authority, Health and Care Research Wales and Research Ethics Committee on 29th August before data collection commenced. All participants gave informed written consent to participate.

Consent for publication

All participants consented for the researcher to publish the anonymised study results using anonymised quotes in papers.

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CRediT authorship contribution statement

Aseel Mahmoud: Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Rachel Mullen:** Writing – review & editing, Supervision, Formal analysis, Conceptualization. **Peter E. Penson:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Charles Morecroft:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no competing interests.

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