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ORIGINAL ARTICLE

A snapshot of pharmacist attitudes and behaviors surrounding the management of pediatric asthma

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Abstract

Objective: The aim of this study is to identify the current status of pediatric asthma management in the Australian community pharmacy setting from the pharmacists' perspective. This research will allow us to identify training needs of community pharmacists. **Method:** Pharmacists were recruited from the Sydney metropolitan region and asked to complete a self-reported questionnaire that elucidated information on four general domains relating to pediatric asthma management within community pharmacy. All data collected were analysed descriptively. Bivariate Pearson correlations were performed to determine whether interrelationships existed between specific domains. **Results:** All 77 pharmacists completed the questionnaire. Thirty-two percent had not completed any asthma related CPD in the past year and only 25% of pharmacists reported using the national asthma guidelines in practice. Just over half of the pharmacists (54%) reported that they provide device technique demonstrations for new inhaled medicines, and 35% of pharmacists reported that they check for written asthma self-management plan possession. Although 65% of pharmacists reported confidence in communication skills, most pharmacists were not confident in setting short-/long-term goals with the patient and carer for managing asthma at home. Pharmacists believed that they are just as effective as doctors in providing asthma counseling and education. Lack of time was identified as a significant barrier. **Conclusion:** We have identified a gap between guideline recommended practices and the self-reported practices of community pharmacists. Pharmacists need more appropriate continuing education programs that can translate into improved pediatric asthma self-management practices and thus improved asthma outcomes in children. This may require an alternative approach.

Keywords

Pediatrics, childhood asthma, pharmacy, primary care, management

History

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Introduction

Asthma is the most common chronic disease in children, placing a significant health burden on the individual, their carers and the Australian health system [1]. The prevalence of childhood asthma in Australian children is high and ranges from 13.0% to 24.6% [2,3]. Regular review, patient education and written asthma self-management plans are important in influencing outcomes in children with asthma [4], and are emphasized on a global scale in most national asthma guidelines [1,5–7]. However, there is evidence from around the world that asthma care is not in line with guidelines and patient ownership of a written asthma self-management plan is suboptimal [8–13]. A study exploring the status of pediatric asthma management in Australian general practice found that there is ample room for improvement [13]. Specifically, there is a need to bridge the gap between knowledge and behavior

with regards to; written asthma self-management plan provision, confidence in patient education and monitoring of inhaled corticosteroid side-effects [13].

General practitioners are no longer solely responsible for delivering education and skills training to patients, this has become a multidisciplinary responsibility. There is increasing interest in involving healthcare professionals, such as pharmacists, since they are in an ideal position to facilitate optimal chronic disease management [14–16]. A wealth of research has demonstrated that pharmacists can successfully deliver asthma care models through community pharmacy, and thereby improve asthma related outcomes [14–18]. Despite this, the extent of patient education, skills teaching and counseling provided to patients by pharmacists appears to be variable. In fact, several studies that explored the views of parents, children and asthma educators indicate that pharmacists do not always provide optimal asthma care to pediatric asthma patients and their parents/carers [19,20]. However, studies exploring Australian pharmacists' reported attitudes, confidence and behaviors surrounding asthma management in children, from a pharmacists' perspective, are scarce.

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Research in this area will help identify the reason behind why pharmacists are not providing adequate care to this subgroup of asthma patients.

Parents themselves have reported not having enough information on asthma and asthma management [9,10,19,20]. Concerns such as steroid phobia still exist and a deeper understanding of how asthma medicines work still eludes parents, carers and children with asthma [9,19]. Current research has presented evidence that less than half of families ever studied received education about their child's asthma [21,22].

In light of these findings and given that primary care pharmacists have the responsibility to provide medicine and disease management advice, it is important to understand the current status of pediatric asthma management in the Australian community pharmacy setting. Therefore, the aim of this study is to identify the current status of pediatric asthma management in the Australian community pharmacy setting from the pharmacists' perspective. This research will allow us to identify training needs of community pharmacists.

Ethical approval

Ethics approval for the study was obtained from the University of Sydney ethics committee (Approval No. 2013/1023).

Methods

The aim of the study was achieved by focusing on four general domains relating to pediatric asthma management from a pharmacists' perspective: (1) guidelines: guideline awareness/use and continuing professional development (CPD); (2) medicines: counseling strategies/practices following the dispensing of new asthma medicines and confidence around the use of inhaled corticosteroids; (3) communication and management practices: confidence and frequency of use of communication and self-management strategies; (4) attitudes and barriers: attitudes and barriers to the appropriate delivery of education and counseling. Relationships between specific domains were also explored.

Pharmacist recruitment

Pharmacists were recruited into the study in two ways. A pharmacist peer (research member) invited 79 pharmacies to participate in the study. These pharmacies were located within the Sydney metropolitan and had previously expressed interest in participating in pediatric asthma related research at the Woolcock Institute of Medical Research. Second, social media was used to advertize the project by posting a study flyer on pharmacy related Facebook pages/groups. The pharmacy related Facebook pages/groups used in this study were chosen specifically because their members were predominantly pharmacists. They included: SUPA – Sydney University Pharmacy Association (1777 members), Sydney Locum Pharmacists (670 members), Pharmacist (161 members), Pharmaceutical Society of Australia Early Career Pharmacists (3193 members), University of Sydney Pharmacy 2009–2012 (208 members), PACE – Practitioner Asthma Communication and Education (64 members). A

previously published study investigating pharmacists' perceptions of their role in asthma management in adults found that a sample size of 75 pharmacist participants was representative [23]. Therefore, for the purpose of obtaining a representative sample for this study, a sample size of 75 pharmacists was sought.

The questionnaire

Participating pharmacists completed a structured, self-reported questionnaire (Appendix) that is based on the published questionnaire tool of Roydhouse et al. [13]. Although the questionnaire used was not validated, it has been shown to be effective in determining general practitioner attitudes, levels of confidence and self-reported pediatric asthma management practices in Australia [13]. The purpose of the questionnaire was to collect demographic data and to elucidate information on the four general domains as outlined below.

Domain 1 (Guidelines and CPD)

Pharmacists were asked to report on their use of asthma management guidelines and asthma related CPD. Three items were included in Domain 1. Item responses included binary responses (yes/no) to determine national asthma guideline awareness and possession/use. A close ended question was used to determine the number of hours devoted towards asthma related CPD within 1 year.

Domain 2 (Medicines)

Seven items explored pharmacists' frequency of use of strategies and practices when counseling on new asthma medicines. These items used a five-point Likert scale ranging from "Never" to "Very often" (1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Fairly often, 5 = Very often). The three items relating to confidence with inhaled corticosteroids used a five-point Likert scale that ranged from "Not confident" to "Very confident" (1 = Not confident, 2 = A little confident, 3 = Somewhat confident, 4 = Moderately confident, 5 = Very confident).

Domain 3 (Communication and management practices)

Ten items surrounding pharmacists' confidence and frequency of use of communication and self-management strategies used five-point Likert scales that ranged from "Not confident" to "Very confident" and "Never" to "Very often", respectively.

Domain 4 (Attitudes and barriers)

Pharmacists were asked to report on the significance of barriers to the delivery of appropriate education and counseling. Six items were included, and responses were collected using a five-point Likert scale ranging from "Not significant" to "Very significant" (1 = Not significant, 2 = A little significant, 3 = Somewhat significant, 4 = Moderately significant, 5 = Very significant). Pharmacists were asked to report on their attitudes towards the provision of asthma education and counseling. Three items were included and responses were collected using a six-point Likert scale that

Table 1. Collapsing of five-point and six-point Likert scales into dichotomous categories.

Likert Scale		Dichotomous categories
Frequency	Frequent (4 = Fairly often, 5 = Very often)	Infrequent (1 = Never, 2 = Rarely, 3 = Occasionally)
Confidence	Confident (4 = Moderately confident, 5 = Very confident)	Unconfident (1 = Not confident, 2 = A little confident, 3 = Somewhat confident)
Significance	Significant (4 = Moderately significant, 5 = Very significant)	Not significant (1 = Not significant, 2 = A little significant, 3 = Somewhat significant)
Acceptance	Agreement (4 = Slightly agree, 5 = Moderately agree, 6 = Strongly agree)	Disagreement (1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree)

ranged from “Strongly disagree” to “Strongly agree” (1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Slightly agree, 5 = Moderately agree, 6 = Strongly agree).

Data management

Demographic data were analysed descriptively. The internal consistency of items within Domains 2 and 3 were assessed through the Cronbach's alpha coefficient (values > 0.70 were sought).

All data collected within Domains 1–4 were analysed descriptively. Specifically, data collected in Domain 1, including binary responses, were dealt with by using proportions. When undertaking descriptive analyses employing graphs, collapsing Likert scale responses into dichotomous categories has distinct advantages in terms of capturing trends in the data [24]. Therefore, data collected using Likert scales within Domains 2–4 were collapsed into dichotomous categories using a strategy put forth by Grimbeek et al. [24]. The collapsing of the five-point and six-point Likert scales into dichotomous categories is outlined in Table 1.

Bivariate analyses assessed correlations between pharmacist reported use of guidelines/asthma related CPD (Domain 1) and mean pharmacist reported practices (Domains 2 and 3). As well as correlations between the six items relating to the significance of barriers to the appropriate delivery of education/counseling (Domain 4) and mean pharmacist reported practices (Domains 2 and 3). Bivariate analyses were performed using Pearson product-moment correlation coefficients. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. This was an exploratory and fact-finding analysis to determine if national asthma guidelines and training influenced pharmacists' practices or if barriers influenced pharmacists' practices. Analyses were performed using SPSS version 21.0 (SPSS Inc., Chicago, IL).

Results

Of the 79 pharmacies who were contacted directly by a pharmacist peer (research member), 57 pharmacies expressed interest (72%) and 66 pharmacists from these pharmacies enrolled in the study. After posting a promotional flyer on seven pharmacy-related Facebook pages with a cumulative number of 6073 Facebook users, 27 pharmacists expressed interest (0.44%) and 11 of these pharmacists enrolled into the study. Seventy-seven enrolled pharmacists completed the study questionnaire.

Table 2. Demographics of pharmacist participants.

Characteristic	(n = 77)
Male (%)	42
Age range	
23–35 years (%)	67
>35 (%)	33
Mean years since graduation	11 (range 2–39)
Years practising as a pharmacist (%)	
0–10	65
11–19	14
20+	21
Country of graduation (%)	
Australia	93
Other	7
Number of pharmacists working in your pharmacy (%)	
<3 pharmacists	69
3–6 pharmacists	23
7+ pharmacists	8

Demographics

Participating pharmacists were practising in pharmacies located throughout the Sydney metropolitan. The majority of pharmacists were female (42% male) and aged between 23 and 35 years (67%). Demographic data are summarized in Table 2.

Domain 1 (Guidelines and CPD)

The majority of pharmacists (71%) were aware of the national asthma guidelines, however, only 25% of pharmacists reported having the guidelines available for use within their community pharmacy. Pharmacists reported the number of hours they devoted to asthma related CPD over the last 12 months and 32% reported not having taken part in any, with 19% completing more than 10 h or more. The majority of pharmacists (49%) completed 1–10 h.

Domain 2 (Medicines: counseling strategies/practices following new asthma medicines and confidence with inhaled corticosteroids)

Pharmacist responses to items exploring the frequency of use of strategies and practices when counseling on new asthma medicines are presented in Figure 1. Almost 65% of pharmacists reported a negative response with regards to checking for written asthma self-management

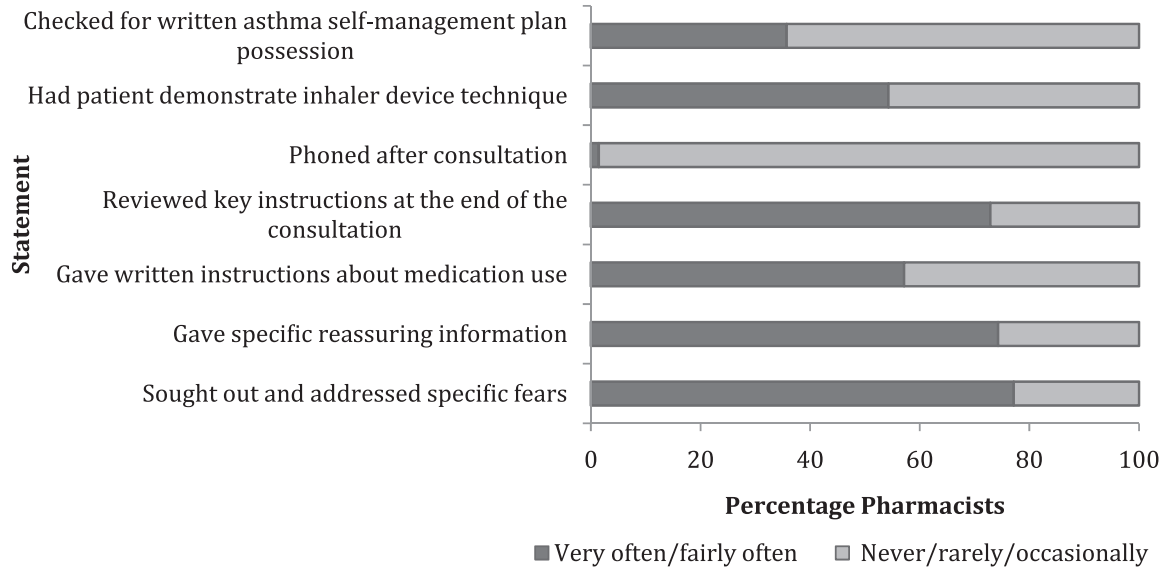
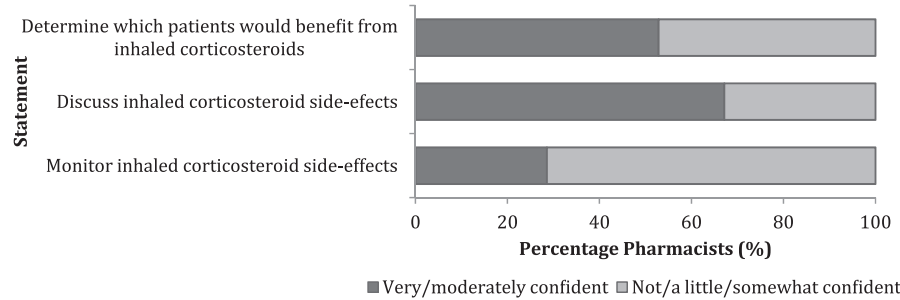


Figure 1. (Domain 2) Pharmacist self-reported frequency of use of counseling strategies and asthma related practices following new asthma medicines ($n = 77$).

Figure 2. (Domain 2) Pharmacist self-reported confidence surrounding corticosteroid use in the management of pediatric asthma ($n = 77$).



plan possession. Just over half of the pharmacists (54%) reported a positive response to inhaler device technique demonstrations and 43% of pharmacists reported a negative response to providing the patient or carer with written medicine information. Figure 2 presents pharmacists' reported confidence with inhaled corticosteroid use in the management of pediatric asthma. Only 29% of pharmacists reported confidence in monitoring for inhaled corticosteroid side effects in children with asthma.

Domain 3 (Communication and management practices: confidence and frequency of use of communication and self-management strategies)

Pharmacist reported confidence in the use of communication and self-management strategies are presented in Figure 3. Over 65% of pharmacists reported confidence in providing nonverbal encouragement/attentiveness, verbal praise and in forming interactive conversations. Approximately one-third of pharmacists felt confident in setting short-term or long-term goals with the patient and carer for managing asthma at home.

Pharmacists also reported on the overall frequency of use of communication and self-management strategies (Figure 4). Most pharmacists (83% and 76%) reported a negative response to setting short-term or long-term goals with the patient and carer for managing asthma at home, respectively.

Domain 4 (Attitudes and barriers: attitudes and barriers to the appropriate delivery of education and counseling)

Figure 5 presents pharmacists' attitudes towards the provision of pediatric asthma patient education and counseling. All pharmacists (100%) agreed that trained nurses and pharmacists are just as effective as doctors in providing asthma counseling and education. The most significant barrier reported by pharmacists was lack of time, while the least significant was lack of reimbursement (Figure 6).

Relationship between domains

A significant correlation was detected between guideline use (Domain 1) and mean pharmacist reported frequency of use of communication and management practices (Domain 3) ($r = 0.24$, $p < 0.05$), however, this correlation was weak. There was no relationship detected between the number of asthma related CPD hours completed (Domain 1) and pharmacists' mean reported practices (Domain 2 and 3). There were significant, but weak, negative correlations between the barriers Time/Lack of Training (Domain 4) and mean pharmacist reported frequency of use of communication and management practices (Domain 3) ($r = -0.25$, $r = -0.28$, $p < 0.05$, respectively). Thus, higher reports of the significance of "Time" and "Lack of Training" as barriers to the

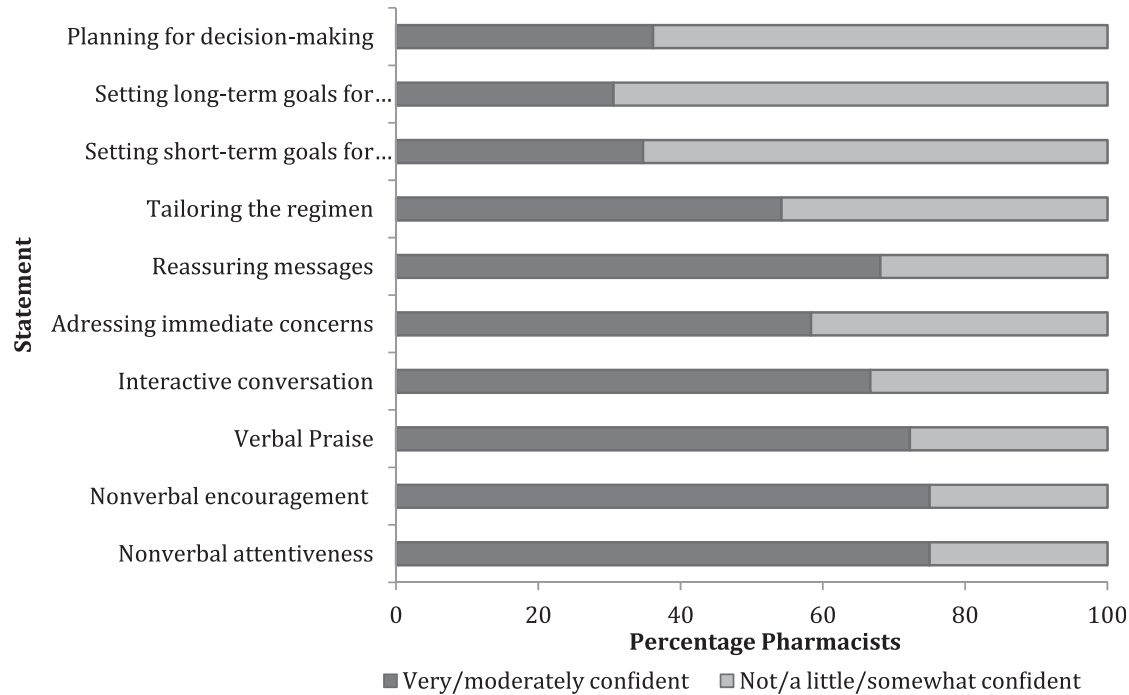


Figure 3. (Domain 3) Pharmacist self-reported confidence in implementing communication and self-management strategies during a pediatric asthma consultation (n = 77).

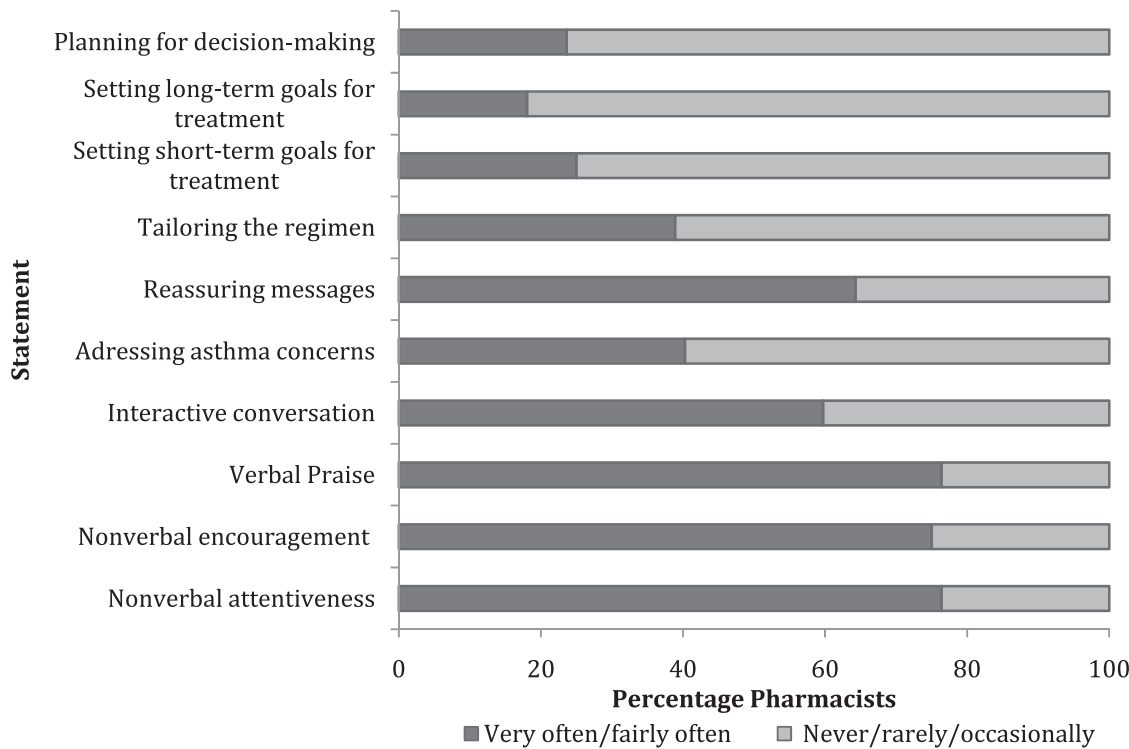


Figure 4. (Domain 3) Pharmacist self-reported frequency of use of communication and self-management strategies during a pediatric asthma consultation (n = 77).

delivery of appropriate education/counseling were associated with lower reports of frequency of implementing communication/self-management strategies when counseling.

Discussion

The aim of this study was to identify the current status of pediatric asthma management in the Australian community

pharmacy setting, from the pharmacists' perspective. In doing so, this study has recognized strengths and weaknesses when it comes to pharmacists engaging with parents/carers of pediatric asthma patients. Pharmacists lack confidence in engaging around individualized self-management, goal setting, making asthma management decisions and inhaled corticosteroid use in children. Pharmacists are also not implementing basic asthma management tasks such as inhaler

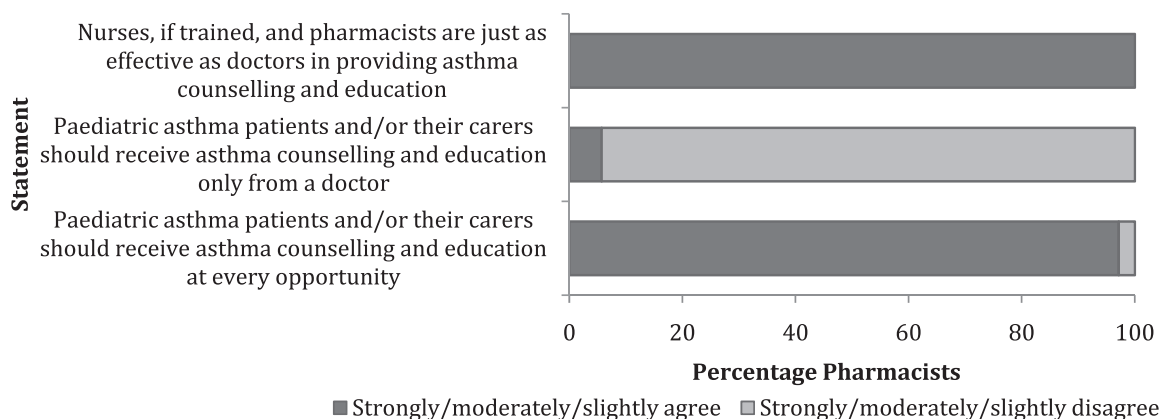


Figure 5. (Domain 4) Pharmacist attitudes towards education delivery and counseling in the management of pediatric asthma ($n = 77$).

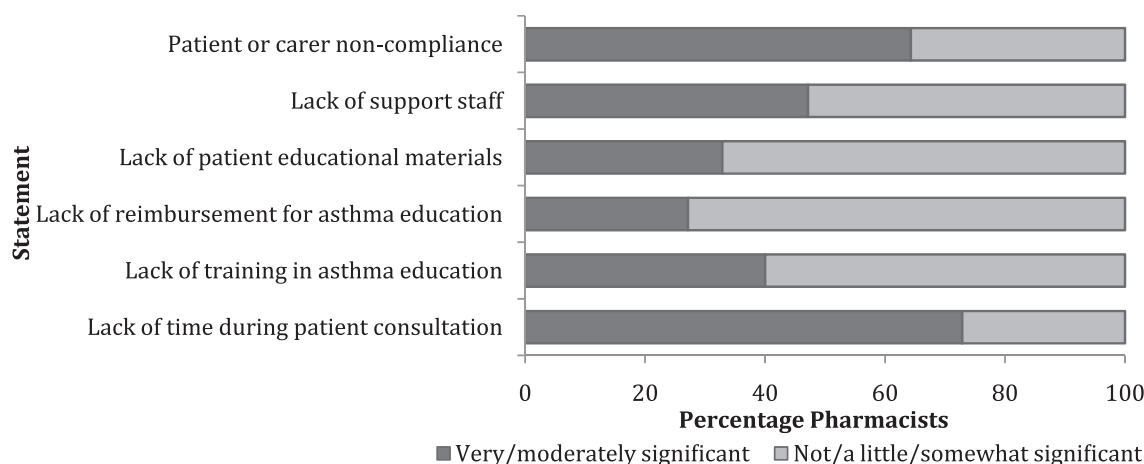


Figure 6. (Domain 4) Pharmacist reported significance of barriers to appropriate education delivery and counseling in the management of pediatric asthma ($n = 77$).

device technique training and providing written information for new medicines. These pharmacists have also demonstrated a lack of national asthma guideline use in practice. Meanwhile, the pharmacists in this study reported that pediatric asthma patients and their carers should receive asthma counseling and education at every opportunity. This mismatch in pharmacist attitudes and actual practices is not surprising since our data demonstrated that guideline use and asthma training influenced pharmacist communication and self-management practices. In addition, this study found the barrier time, to be associated with suboptimal communication and self-management practices. Thus, this research demonstrates that addressing the training needs of community pharmacists may lead to improved guideline adherent practices.

Despite recent evidence highlighting the unmet needs of parents/carers when it comes to managing their child's asthma medicines [9,19,25], up until now, there has been little research into the role of pharmacists in pediatric asthma. Data exploring the training needs of pharmacists, with regards to managing parents/carers and children with asthma, are scarce. Pharmacists are at the frontline of the primary healthcare team and are in an ideal position to exercise their expert knowledge in medicine use and disease management. Research has shown that pharmacist interventions can improve asthma-related outcomes of adults with asthma

[14,26,27]. Therefore it is important to report on the current status of pediatric asthma management in community pharmacy so that the needs of pharmacists can be identified and addressed. This will allow pharmacists to better support this subgroup of people with asthma in future.

Countries such as Australia, who have had a long standing history of developing national asthma guidelines [28], readily available asthma medicines and who have integrated CPD as a compulsory requirement for all healthcare professionals, still continue to present high rates of uncontrolled asthma in children [2]. CPD is defined as the maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional. Each year, pharmacists are required to take part in 40 h of CPD [29]. This study identified that pharmacists are devoting little time towards asthma related CPD, with many not completing asthma related CPD at all. The number of hours pharmacists devote to asthma related CPD may impact on their level of awareness of current national asthma guidelines and their level of adherence to best practice in the management of pediatric asthma. Therefore, asthma related CPD programs that are tailored to address the current training needs of pharmacists should be made available.

When comparing the data in our study to the results of a study exploring the pediatric asthma management practices of

general practitioners, it is noteworthy to recognize that a greater percentage of general practitioners reported higher levels of confidence surrounding the use of inhaled corticosteroids in children. While almost all pharmacists reported that they address parental fears concerning their child's new asthma medicines, only one-third of general practitioners employed this strategy. This is a concern because a strong parental fear of side effects from asthma medicines, especially from corticosteroids still exists [8,9]. This may be because general practitioners – who are confident in inhaled corticosteroid use in children – are not addressing these fears. While pharmacists are trying to address medicine fears, it is difficult to determine whether they are able to address them successfully as a substantial proportion of pharmacists did not feel confident in doing so. It would be important to explore the perceptions of the parents/carers with regards to pharmacist's success in addressing medicine fears and concerns in pediatric asthma.

It is important to note that just over half of the pharmacist participants are providing inhaler device technique demonstrations when providing new inhaled medicines to pediatric asthma patients. When looking at the data obtained from general practitioners, they too had suboptimal reports, with less than a quarter providing inhaler device technique demonstrations following the prescription of a new inhaled medicine [13]. In addition, just over half of the pharmacists in this study, and less than a third of general practitioners, reported providing written medicine information to parents of children with asthma, after supplying a new medicine [13]. A recent study revealed that most parents of children have a poor understanding of asthma medicines, and therefore lack the knowledge base for the prescribed regimen [9]. The lack of the provision of verbal medicine information in conjunction with written information may be another example of a missed opportunity and a contributor to parental confusion over their child's inhaler device technique, and their poor understanding of asthma medicines, which have both been recently reported [9].

The majority of pharmacists reported low levels of confidence in setting short-term or long-term goals with the patient and carer for managing asthma at home, and infrequently implemented these strategies. Written asthma self-management plan possession was not being monitored by most pharmacists. Written asthma self-management plans, as well as setting short and long-term management goals, provide patients with a framework to recognize and respond to worsening asthma, and when combined with self-management education and regular review, have been shown to lead to substantial improvements in asthma outcomes [30,31]. This lack of action is a problem as it can pose as a detriment to patients, for example, a recent study reported that parents of children with asthma have an inability to recognize symptoms and initiate medicines at appropriate times, this often leads to the worsening of a child's condition and overall lack of asthma control [8]. This is the result of parents and children not receiving appropriate self-management information.

While this study provides us with new data regarding pharmacists' guideline use and awareness, attitudes, confidence and pediatric asthma related practices, the results of

this study need to be considered in light of the fact that they are based on pharmacists' self-report rather than actual indicators of practice. Clinical audits may be a possible alternative, however, it still requires self-report of clinical practices, thus impose similar limitations. The recruitment process may have potentially limited the generalizability of the findings of this study. While the sample size of pharmacists was suitable for this study it was not a random sample. In addition, using Facebook as an avenue of recruitment resulted in a low response rate, these methods may have lead to sampling bias. Bivariate Pearson correlations were performed and statistically significant correlations were only found between Domain 1 and Domain 3, and the barriers Time/Lack of Training (Domain 4) and Domain 3. This study was not powered to show significance, therefore it is unknown if relationships between specific domains were missed due to sample size. Thus, asthma related CPD and national asthma guideline use/awareness (Domain 1) may be important predictors of pharmacists' pediatric asthma counseling strategies/practices following new asthma medicines and confidence with inhaled corticosteroids (Domain 2), yet it remains undetected here. This requires follow up in future studies.

Conclusion

The results from this study provide a better understanding of how involved pharmacists are in counseling on pediatric asthma currently, and demonstrate how well prepared pharmacists are to meet the needs of parents/carers. This research has identified strengths and weaknesses in the management of pediatric asthma through community pharmacy. Pharmacists are confident in using effective communication skills, however when it comes to higher order pediatric asthma management tasks such as decision-making, engaging around individualized self-management and goal setting, pharmacists report low confidence. In considering our results, it is important to reflect on the fact that the pharmacists in this study devoted a low number of hours to asthma related CPD. The findings of this study provide strong impetus for the development of more appropriate CPD programs for pharmacists specifically focusing on the importance of pharmacist–patient education with regards to written asthma self-management plans, inhaled corticosteroids, side effects of medicines and inhaler device technique, as well as how to derive tailored self-management goals with individual patients. Pharmacists agree with the idea that pharmacists, if trained, can provide asthma counseling and education as effectively as doctors. Thus, by equipping pharmacists with guideline adherent management skills and more effective patient teaching behaviors, community pharmacy can become an additional venue for collaborative asthma care.

Declaration of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. A. Elaro is the recipient of scholarships from the Australian Postgraduate Award (APA).

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Appendix



Baseline Questionnaire
ID number *

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** ID numbers will be used for the purpose of the study only*

Pharmacist
Questionnaire

NB: Please note that from now in this questionnaire the terms 'patient' and 'patient with asthma' refer to *paediatric asthma patients, aged 2-14 years*.

Domain 1: Guidelines

(Guideline awareness/use and Continuing Professional Development)

1	Are you aware of the National Asthma Council (NAC) Asthma Management Guidelines?	Yes	No
2	Do you have a copy of the National Asthma Council (NAC) Asthma Management Guidelines available for use in practice?	Yes	No
3	Please state the total number of hours you have devoted to Continuing Professional Development about asthma in the last 12 months (including courses, lectures and other activities).		

Domain 2: Medicines

(Counselling strategies/practices following the dispensing of new asthma medicines and confidence around the use of inhaled corticosteroids)

The following statements relate to strategies sometimes used when dispensing new medicines or when the medicine regimen for paediatric asthma patients has changed. Please indicate **how often** you use the following strategies **when dispensing new medicine or if the regimen has changed** for a paediatric asthma patient. Please circle **one** response for each statement.

When dispensing a new medication:	Never	Rarely	Occasionally	Fairly often	Very often	Always
3.1 I seek out and address any specific fears the patient or carer may have had about the new medication or regimen that was prescribed	1	2	3	4	5	6
3.2 I give specific reassuring information to address problems the patient may have had with the type of medicine before	1	2	3	4	5	6
3.3 I give written instructions, for later reference, about using the medication	1	2	3	4	5	6
3.4 At the end of the consultation, I go over the instructions with the patient or carer for giving the patient the medication	1	2	3	4	5	6
3.5 I (or someone in the pharmacy) telephone the family within a week of the consultation to see how things are going	1	2	3	4	5	6
3.6 I make the patient or the carer demonstrate the patient's asthma device to me	1	2	3	4	5	6
3.7 I check with the carer as to whether written instructions have been provided on how to adjust the medication at home when the patient's asthma symptoms changed	1	2	3	4	5	6

Please indicate **your level of confidence** for each of the following statements. Please circle **one** response for each statement. How confident are you in your ability to:

	Not at all confident	A little confident	Somewhat confident	Quite confident	Very confident
5.6 Determine which paediatric asthma patients would benefit from daily inhaled corticosteroids	1	2	3	4	5
5.7 Discuss the side effects of daily inhaled corticosteroids	1	2	3	4	5
5.8 Monitor for side effects of daily inhaled corticosteroids	1	2	3	4	5

Domain 3: Communication and self-management strategies (Confidence and frequency of use of communication and self-management strategies)

The following questions all have to do about your confidence in using certain specific communication and self-management strategies during a consultation with a child with asthma. Please indicate **how confident** you are in your ability to use the following strategies are during a consultation with a paediatric asthma patient **whether or not you actually use the strategy in your current practice**. Please circle **one** response for each statement.

How confident are you in your ability to use the following strategies:	Not at all helpful	A little helpful	Somewhat helpful	Quite helpful	Very helpful
1.2.1 Show attentiveness through nonverbal communication	1	2	3	4	5
1.2.2 Give encouragement through nonverbal communication	1	2	3	4	5
1.2.3 Give verbal praise for things that have been done well by the patient or the carer	1	2	3	4	5
1.2.4 Maintain an interactive conversation using open-ended questions, simple language and analogies in your explanation	1	2	3	4	5
1.2.5 Find out the patient's and the carer's worries and concerns about asthma	1	2	3	4	5
1.2.6 Give specific reassuring information in response to worries expressed by the carer or the patient	1	2	3	4	5
1.2.7 Check whether the medication schedule is tailored to the patient's and the family's routine	1	2	3	4	5
1.2.8 Review with the patient and the carer on a short-term goal for managing asthma at home	1	2	3	4	5
1.2.9 Review with the patient and the carer a long-term plan for the patient	1	2	3	4	5
1.2.10 Help the patient and the carer to use criteria for making decisions about asthma management	1	2	3	4	5

The following questions all have to do with how often you use each communication strategy during a consultation with a child with asthma. Thinking of **all** the consultations by paediatric asthma patients and their carers please indicate **how often** you used the **following strategies** during their consultation. Please circle **one** response for each statement.

How often do you:		Never	Rarely	Occasionally	Fairly often	Very often
1.3.1	Show attentiveness by using nonverbal communication	1	2	3	4	5
1.3.2	Give encouragement by using nonverbal communication	1	2	3	4	5
1.3.3	Give verbal praise for things that have been done well by the patient or the carer	1	2	3	4	5
1.3.4	Maintain an interactive conversation using open-ended questions, simple language and analogies in your explanation	1	2	3	4	5
1.3.5	Find out the patient's and the carer's worries and concerns about asthma	1	2	3	4	5
1.3.6	Give specific reassuring information in response to worries expressed by the carer or the patient	1	2	3	4	5
1.3.7	Check whether the medication schedule is tailored to the patient's and the family's routine	1	2	3	4	5
1.3.8	Review with the patient and the carer on a short-term goal for managing asthma at home	1	2	3	4	5
1.3.9	Review with the patient and the carer a long-term plan for the patient	1	2	3	4	5
1.3.10	Help the patient and the carer to use criteria for making decisions about asthma management	1	2	3	4	5