

Original Research

An investigation of the views and practices of Australian community pharmacists on pain and fever management and clinical guidelines

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Abstract

Background: Fever and pain are common conditions in the Australian healthcare setting. Whilst clinical guidelines provide important therapeutic recommendations, evidence suggests they are not always followed. Given that community pharmacy is one of the most frequently accessed primary healthcare services, it is important to understand the views and practices of community pharmacists in pain and fever.

Objectives: To investigate the views and practices of Australian community pharmacists in pain and fever management, and their views on relevant clinical guidelines.

Methods: A cross-sectional study of community pharmacists in Australia was conducted using a customised, anonymous, self-administered, online questionnaire between March and May 2018. To capture a broad range of demographics, pharmacists were recruited via local industry contacts and the Pharmaceutical Society newsletter, with further recruitment through snowball sampling. The main outcomes measured were pharmacists' views, practices and treatment recommendation of choice in pain and fever management, as well as views on clinical guidelines and training.

Results: A total of 113 pharmacists completed the survey. In general, paracetamol (72%) was preferred as a recommendation over ibuprofen, and was the drug of choice for most mild to moderate pain and fever scenarios. Majority of pharmacists reported good knowledge of pain and fever management, however, only approximately half reported recent pain management training. Greater than 87% of pharmacists believe that clinical guidelines are useful in fever management, and 79% of pharmacists believe that following clinical guidelines is important in pain management.

Conclusions: While most pharmacists recognise the importance of guidelines and demonstrated good pain and fever management, results suggests opportunities to promote additional education, upskilling, and research in this space to further optimise pain and fever management in the community.

Keywords

Pain; Fever; Pain Management; Acetaminophen; Ibuprofen; Pharmacies; Pharmacists; Choice Behavior; Professional Practice; Surveys and Questionnaires; Australia

INTRODUCTION

Australian community pharmacies are considered to be important sources of a wide range of healthcare services, and are regularly the first point of contact for most patients due to convenience, accessibility and availability of a plethora of medications at reasonable costs.¹⁻³

Primary healthcare professionals require reliable and up-to-date evidence and clinical information (for example clinical guidelines) to assist in making the most appropriate and safest therapeutic decision for patients.^{4,5} The importance of healthcare professionals appreciating and adhering to clinical guidelines is amplified particularly when patients present with symptoms that potentially warrant thorough medical analysis prior to initiating pharmacotherapy. Pharmacists should familiarise themselves with the medical recommendations adopted in Australian healthcare

practices, given that community pharmacies are one of the most frequently and easily accessed primary healthcare services.

In Australia, it is well documented that pain and fever symptoms are common complaints expressed by patients of all age groups.⁶⁻⁸ Failure to adequately manage pain and fever symptoms can have a significant impact on patient outcome and exacerbation of additional health consequences. Community pharmacists hold an advisory position and have an opportunity to effectively engage with patients and assess whether pharmacological management of pain and fever symptoms are appropriate and are attuned to the current clinical recommendations. For example, The National Institute for Health and Care Excellence (NICE) provides clinical guidelines to Australian healthcare practitioners and pharmacists on the diagnosis, assessment and treatment of feverish illness, for example using paracetamol or the Non-Steroidal Anti-Inflammatory drug (NSAID) ibuprofen; while the Australian Therapeutic Guidelines (TG) provides clinical guidelines on the general assessment and management of pain, including the 'Stepwise' approach adopted for pharmacological management of acute and chronic pain in Australia, such as using paracetamol, NSAIDs and/or opioids, depending on the nature of the pain.^{9,10}

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Interestingly, despite the importance of clinical guidelines to clinical practice, studies investigating whether guidelines are generally adhered to, or evidence supporting that clinical guidelines are being followed by healthcare professionals (particularly pharmacists) are quite variable. For example, despite significant efforts to promote and support guideline use, evidence indicates that adherence to guidelines by healthcare professionals is often suboptimal.^{11,12}

Thus, given the currently limited published literature in this context, it is important to understand and explore the views and perceptions of community pharmacist on the usefulness of clinical guidelines on pain and fever management, as well as assessing their usual practices, particularly investigating whether Australian pharmacists appreciate clinical guidelines, and apply them in this context.

The aim of this study was to investigate the current views and self-reported practices of Australian community pharmacists in pain and fever management, how they compared to current clinical guidelines and recommendations, and to identify the potential gaps and opportunities in this space.

METHODS

Ethics approval

This study was approved by the Human Research Ethics Committee of the study institution (Approval number: SEHAPP 99-17).

Study participants

This study was designed as a cross-sectional study to capture the current views and self-reported practices of Australian practicing community pharmacists in commonly encountered pain and fever management, as well as their views on clinical guidelines. Data collection was conducted over an approximately eight-week period (March-May 2018). Participation involved completing an anonymous online survey that took approximately 10 minutes. This survey was open to all community pharmacists across Australia, although it is estimated that survey participants would be predominately pharmacists in Victoria, due to the recruitment. Implied consent was sought by completion of the survey. The investigators were responsible for the initial recruitment of pharmacists via local industry contacts and the Pharmaceutical Society of Australia newsletter, with further recruitment through snowball sampling.

Questionnaire

An anonymous, self-administered questionnaire was developed to collect a broad range of data from Australian community pharmacists. Qualtrics software was used to develop and deliver the online questionnaire.

Questions were developed under four sections. To ensure that a broad range of pharmacist responses were captured, demographic data such as age, gender, employment status, area of primary employment, tertiary qualifications and approximate years of experience as an Australian registered pharmacist were obtained.

The main body of the questionnaire consisted of questions relating to daily pharmacy practice observations, which included questions on the most common types of pain, and the frequency of over-the-counter (OTC) analgesic requests. In the next section, pharmacists were presented with a series of hypothetical case scenarios of patients presenting to the pharmacy with symptoms of either fever or pain with different severities. The case scenarios are patient-based presentations typically seen in an Australian community pharmacy setting. Examples of scenarios include: general mild to severe musculoskeletal pain, headaches, migraines, osteoarthritis and fever; as well as preference for treatment options relating to adults and paediatric assessments of fever. Pharmacists were provided with a number of different available treatment (no brand names were used) and referral options, and were asked to select their preferred treatment strategy in each case (given that there are no contraindications in the case scenarios).

The final section of the questionnaire consisted of a series of categorical questions (5-point Likert scale ranging from Strongly disagree to Strongly agree) investigating the pharmacist's views and opinions on their knowledge, training, clinical guidelines and clinical experience in the context of pain and fever management.

The questionnaire underwent a series of pilot tests with a small group of pharmacists and pharmacy academics before final release. The survey was preliminarily pre-tested for ease of use and to identify any technical or interpretative issues, and a second round of pilot tests were conducted before the questionnaire was made available to Australian community pharmacists.

Data analysis

Statistical tests and descriptive statistics were conducted (using SPSS version 18) to assess responses to the questionnaire. A Chi-square goodness-of-fit analysis was also performed to specifically compare the demographic parameters of age and gender distributions of this study's surveyed population with Pharmacy Board registrant data to assess sampling and external validity.

RESULTS

Of the total of 149 pharmacists who attempted the survey, 36 incomplete submissions were excluded, with 113 completed responses used for this study. Table 1 describes the participant demographics. Registrant data was retrieved from the Pharmacy Board of Australia for the period 1 January-31 March 2018.¹³ The eligible responses (n=113) were multiplied by the proportions of each category in the registrant data, to determine the expected frequency of responses to the survey. The expected frequency was then compared to the actual/observed frequency of responses to the survey to determine any distribution differences between the survey data of pharmacists in this study, and the registrant data of pharmacists.

The chi-square goodness-of-fit test showed a statistically significant difference in the age distribution between the survey and registrant data (computed chi-square value (chi-

Characteristic	%	
Age	20-24 years	13.3
	25-35 years	54.9
	36-45 years	13.3
	46-55 years	8.0
	56-65 years	6.2
	65+ years	4.4
Gender	Male	32.7
	Female	67.3
Primary place of practice	Metropolitan	69.0
	Regional	22.1
	Rural	8.8
Approximate years of experience as a pharmacist	1-4 years	44.2
	5-10 years	26.5
	11-14 years	9.7
	15-20 years	2.7
	21-24 years	0.9
	25+ years	15.9
Primary pharmacy qualification obtained in Australia	Yes	91.2
	No	8.8
Work status	Full time	71.7
	Part time	19.5
	Casual/Locum	8.8
Highest qualification	Bachelor	64.6
	Post Grad Cert/Dip	16.8
	Master	14.2
	Doctorate	4.4

square=37.470) was more than the critical value (chi-square=11.071, at df=5, alpha=0.05)). Although there appears to be a similar trend between the proportions of the survey and registrant data, the proportions of the age groups under 34 years in the survey data appear to be over-represented, and the age groups over 35 years appear to be under-represented, when compared to registrant data. However, there was no statistically significant difference in the distribution of gender between the registrant and survey data (computed chi-square value (chi-square=1.351) was less than the critical value (chi-square=3.841, at df=1, alpha=0.05)). This indicates that the survey sample distribution based on gender is a reasonable representative of the greater population of Australian pharmacists.

There was a range of pharmacists who held experience in other aspects of pharmacy besides the community setting. Of the 113 respondents who completed the survey, approximately 16% of pharmacists held employment in academia, while more than 13% held employment in hospital settings.

Back pain (31%) and non-specific musculoskeletal pain

(29%) were the two most commonly encountered types of pain reported by pharmacists. While in their daily practice, 56% of pharmacist report 50% or more of their OTC encounters were patients requesting OTC analgesics.

Paracetamol was the medicine of choice for fever across all ages (Table 2). Additionally, it was also generally observed that paracetamol was the preferred choice for most mild to moderate pain scenarios; while anti-inflammatory drugs or 'referral' was preferred for severe pain scenarios (Table 3). It was also observed that the 'Paracetamol+ibuprofen' combination was generally preferred for more severe cases only (Table 3).

Paracetamol was the medicine of choice for mild headaches; however the preference for 'ibuprofen' or combination 'Paracetamol+ibuprofen' increases as severity increase (Table 3). Aspirin was the medicine of choice in adult mild-moderate migraines; with 'Referral' being the option of choice for severe migraine (Table 3). Paracetamol was the medicine of choice for mild-moderate osteoarthritis (Table 3). Ibuprofen was the medicine of choice for adult mild musculoskeletal pain; 'Diclofenac' or 'refer' were the options of choice as severity increases (Table 3).

Only approximately half of the pharmacists report having recent pain management training. Majority of the pharmacists agreed that guidelines are both useful and important, however, many also believed that "Clinical experience" is just as important as following clinical guidelines (Table 4 & Table 5). Majority indicated that their knowledge of pain and fever management were good (Table 4 & 5), however, it was also noted that majority of the pharmacists strongly agree/agree (89%) that they would benefit from more training/education on pain management (Table 4). Overall, 'paracetamol' (72%) was generally preferred as a recommendation over 'ibuprofen' (Table 4).

DISCUSSION

This study examined views and self-reported practices of Australian community pharmacists in commonly encountered pain and fever management, as well as their views on clinical guidelines. Results demonstrated that paracetamol and ibuprofen were the two options of choice, with paracetamol generally preferred as a recommendation; and that pharmacists value both guidelines as well as experience when making therapeutic decisions.

Paracetamol vs ibuprofen

Non-prescription medicines such as paracetamol and ibuprofen are important OTC medicines readily available and are important treatment components in primary healthcare for minor ailments such as pain and fevers.

%	Non-Drug Intervention	Paracetamol	Ibuprofen	Aspirin	Paracetamol /Ibuprofen	Referral	Other/s
6-month old Infant	3.5	76.1	1.8	0	0	3.5	0.9
5-year old Child	3.5	83.2	2.7	0	1.8	3.5	0
Teenager	2.7	79.6	5.3	0	8.0	1.8	0
Adult	1.8	71.7	6.2	0.9	15.9	1.8	0

Table 3. Treatment options selected by pharmacists for adult presentations of musculoskeletal, tension headache, migraine headache and osteoarthritis pain scenarios

%	Paracetamol	Ibuprofen	Diclofenac	Aspirin	Paracetamol/ Ibuprofen	Ibuprofen Gel	Diclofenac Gel	Referral	Other/s
Musculoskeletal Pain									
Mild	15.0	40.7	11.5	0	10.6	2.7	12.4	0.9	6.2
Moderate	4.4	23.0	36.3	0	26.4	1.8	1.8	0.9	5.4
Severe	0	1.8	21.2	0	19.5	0	0.9	41.6	15.0
Tension Headache Pain									
Mild	39.8	27.4	0	7.0	14.2	0	0	0.9	10.7
Moderate	14.2	16.9	0.9	10.6	38.9	0	0	3.5	15.0
Severe	1.8	3.5	1.8	6.2	19.5	0	0	52.2	15.0
Migraine Headache Pain									
Mild	14.2	21.2	0	35.4	18.6	0	0	2.7	7.9
Moderate	0.9	11.5	1.8	31.9	31.0	0	0	3.5	19.4
Severe	0	1.8	1.8	13.3	6.2	0	0	52.2	24.7
Osteoarthritis Pain									
Mild	69.0	3.5	2.7	0	7.1	0	10.6	0.9	6.2
Moderate	30.1	5.3	11.5	0	31.9	0	4.4	4.4	12.4
Severe	2.7	0	7.1	0	14.2	0	0	65.5	10.5

Patients frequently visit the pharmacists for pain treatment and patients frequently use OTCs to self-manage their pain.^{14,15}

Although studies and meta-analyses comparing the effectiveness, safety and tolerability profiles of paracetamol and ibuprofen have led to variable conclusions, many studies identified that ibuprofen is as safe and effective as paracetamol in many basic analgesic and fever scenarios, in both adult and paediatric populations.¹⁶⁻²⁰ Despite this, globally paracetamol is still perceived as having a better safety and overall better tolerability profile than ibuprofen.¹⁷ It was also suggested several reasons why this perception exists, including lack of distinction between the different Non-steroidal anti-inflammatory drugs (NSAIDs) resulting in a “class effect bias”; ingrained negative perceptions of NSAIDs, as well as lack of overall understanding with regards to ibuprofen safety and tolerability, and the lack of confidence to put this knowledge into practice.¹⁷ However, it is important to also recognise the risk of hepatic toxicity associated with paracetamol, particularly in high doses.

Interestingly, despite the popularity of OTC paracetamol and ibuprofen use, studies examining perceptions and practices of healthcare professionals and their preference for recommending paracetamol or ibuprofen are quite limited. One study examining non-prescription medicines for pain and fever identified that paracetamol was clearly the recommendation of choice by pharmacy staff, compared to NSAIDs.²¹ Furthermore, that study also

reported a small proportion of staff recommending NSAIDs when paracetamol was requested by the patient.²¹ This is supported in a large national cross-sectional study of NSAID use by GPs, paediatricians and pharmacists where NSAIDs were only recommended in a minority of cases.²² Furthermore, it was identified that NSAIDs use was generally associated with older children, higher temperatures, pain due to otitis and in the absence of a rash or gastroenteritis.²² In a study looking at analgesics recommended by dentists and pharmacists, it was reported that ibuprofen was the OTC analgesic preferred and recommended by majority of both dentists and pharmacists for toothache relief in adults, with paracetamol as the second-choice agent.²³

Choice of NSAID

Aspirin, ibuprofen, diclofenac and naproxen are the four OTC non-selective NSAIDs available in different formulations in Australia. The current Australian Therapeutic Guidelines suggests paracetamol remains the first-line treatment option for mild acute pain when non-pharmacological treatment strategies are inadequate.¹⁰ As the severity of pain increases, the use of a NSAID may be warranted and the choice of which NSAID is at the healthcare professional’s discretion. In moderate acute pain, clinical guidelines list ibuprofen as the drug of choice because of the widespread experience with its use.¹⁰ In migraine pain presentations, guidelines suggest the use of high dose (900-1000 mg) soluble aspirin as a suitable NSAID. Results of this study suggest that Australian

Table 4. Community pharmacists’ views and perceptions on pain management

%	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a) My knowledge of PAIN management is good	1.8	4.4	19.5	63.7	10.6
b) I could benefit from some additional training when it comes to PAIN management	1.8	0	8.8	61.1	28.3
c) Clinical guidelines are USEFUL when it comes to PAIN management	0.9	3.5	11.5	61.9	22.1
d) Following clinical guidelines is IMPORTANT when it comes to PAIN management	0.9	0.9	19.5	61.1	17.7
e) Clinical experience is more useful than following clinical guidelines when it comes to PAIN management	0.9	27.4	35.4	25.7	10.6
f) My general preference is to recommend paracetamol over ibuprofen	0.9	8.0	19.5	51.3	20.4

Table 5. Community pharmacists' views and perceptions on fever management					
%	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
a) My knowledge of FEVER management is good	0.9	4.4	14.2	65.5	15.0
b) Clinical guidelines are USEFUL when it comes to FEVER management	0.9	0.9	10.6	76.1	11.5
c) Following clinical guidelines is IMPORTANT when it comes to FEVER management	0.9	0.9	16.8	65.5	15.9
d) Clinical experience is more useful than following clinical guidelines when it comes to FEVER management	3.5	23.0	42.5	26.5	4.4

pharmacists are aware of the fact that soluble aspirin is the drug of choice in migraine pain symptoms, since it was the most selected treatment option in the hypothetical migraine pain cases. The Australian Medicines Handbook (AMH) advises medical practitioners and pharmacists that approximately 60% of patients will respond to any NSAIDs, and those who do not respond to one may respond to another.²⁴

Diclofenac has the least potential of causing gastrointestinal side effects but has the highest risk of causing adverse cardiovascular effects.^{10,24,25} Results from this study identified that diclofenac was the NSAID of choice as the severity of musculoskeletal pain increases in the hypothetical case scenarios. Motives behind the popularity of diclofenac in these instances remain unclear, although its availability in a specialised oral formulation with a more rapid absorption rate, and the fact that diclofenac has the shortest half-life, could be contributing reasons.^{10,26} The results in this particular section are not attuned to the recommendations of the clinical guidelines as diclofenac is listed as a second-line therapy (after ibuprofen) for moderate symptoms of pain.²⁷ However, it is important to note that clinical guidelines do not provide conclusive information on the comparative efficacy of the varying NSAID options, and hence guidelines advise health professionals to select a suitable NSAID based on patient comorbidities.¹⁰ Although studies comparing the effectiveness and safety profiles of diclofenac to other NSAIDs have led to variable conclusions, studies have identified that diclofenac is no more effective than other NSAIDs such as ibuprofen.²⁷⁻³¹ The difference between the results in the moderate pain scenarios and clinical guideline recommendations for moderate pain management highlights that there may be additional factors influencing a pharmacist's decision when recommending a suitable NSAID option.

Clinical guidelines vs clinical experience

Both clinical guidelines and clinical experience are critical to the application of evidence-based practice and are essential to patient care. The growth of research evidence impacts its translation into clinical guidelines, which impacts clinical practice.⁵ Many chronic conditions such as pain is currently under-diagnosed and under-treated and is likely to worsen unless there is a wider adoption of best pain management practice.³² Primary care management should be holistic and evidence-based, incorporating both pharmacological and non-pharmacological approaches, including complementary therapies and comprehensive management programs.³³

Although there is evidence to support the role of the community pharmacist in chronic disease management, it

has been identified that a pharmacist's skills, for example pain management, is often not fully utilised.^{34,35} Evidence suggests that chronic non-cancer pain (CNC) management in primary care is suboptimal and barriers to optimal management are numerous.³⁶ These includes clinician's knowledge and experience, particularly their perceptions on following and trusting in clinical guidelines. It is recognised that whilst guideline recommendations should be acknowledged, their implementation in practice may differ due to the complexity of perceptions and expectations, and due to the importance of focussing on the patient holistically.⁵

Interestingly, despite the importance of clinical guidelines to clinical practice, evidence supporting that clinical guidelines are being followed by healthcare professionals (particularly pharmacists) are more limited and variable. Despite significant efforts to promote and support guideline use, evidence indicates that adherence to guidelines for both pain and fever is often suboptimal despite its availability.^{11,12,22,37,38} It has been suggested that some pharmacists may even lack adequate knowledge of evidence-based practice for OTC medicines and make recommendations that lacks evidence.³⁹ Further, it has also been identified that barriers to adherence vary not only across guidelines but also across recommendations within guidelines.¹¹

Understanding and identifying barriers to evidence-based guidelines' uptake is critical to closing the "evidence-practice" gap.¹² It has been suggested that the use of guidelines is influenced by the believability of the underlying evidence, the health practitioner's consultation style, and uncertainties surrounding diagnosis and treatment.⁵ Other barriers include perceptions of the condition's seriousness, clinicians' preparedness, clinicians' personal beliefs, and dissonant patient expectations.⁴⁰ A systematic review also identified that many clinicians viewed guidelines were categorical, prescriptive, and constrained professional practice.¹² Other studies among GPs have also demonstrated that barriers across guideline adherence are patient related, suggesting that guidelines do not always adequately incorporate patient preferences, needs and abilities.¹¹

Additionally, it was also noted that popular clinical practices superseded the guidelines, with adherence to following protocols decreasing with increasing physician experience.⁴¹ Interestingly, clinicians' perceptions of guidelines often also demonstrates a lack of content knowledge, as well as a lack of appreciation of and trust in how guidelines are developed.¹² This indicates that targeted education on these aspects could be important in this context.

Limitations and future directions

Although a broad range of demographics were captured, it is likely that the pharmacists in this study do not fully represent all pharmacists. A larger sample size will increase generalizability of the results. To assess this, demographics data was compared with the Pharmacy Board registrant data. Furthermore, potential selection bias may also exist that can also influence sample representativeness. Another limitation of this study was that it was only designed to assess self-reported practice; the use of the simulated patient technique may be a more appropriate way to assess actual practice. Indeed, the use of simulated patients to assess analgesic recommendations have previously been reported in other contexts.^{42,43} Additionally, as this was a self-reported survey, response bias is possible. To minimise this, pharmacists were not explicitly told that their views were being compared to guidelines and were simply asked to suggest their recommendation of choice for the scenarios. To extend this work, it would be useful to further identify specific areas where practices may not align with guidelines, as well as further understanding how best practice guidelines can be optimally utilised to guide practice and decision making, including key drivers and barriers for specific views and practices, with the ultimate goal of improving patient care and health outcomes.

CONCLUSIONS

Pain and fever symptoms are common presentations experienced by Australians and inadequate assessment and management can result in significant impacts on the health and wellbeing of patients. Majority of the pharmacists in this study report and demonstrate good knowledge of pain and fever management. Furthermore, this study also comprehensively reported the practices of Australian community pharmacists in various pain and fever scenarios, as well as their views on pain and fever management and

clinical guidelines. Although healthcare professionals largely accept and adopt relevant evidence-based clinical guidelines, they may not always be strictly followed. Results from this study suggest a great potential to structure and develop further research studies in this space, as well as the importance to further facilitate training, education and resources for pharmacists that are consistent with the recommendations outlined by clinical guidelines and latest available evidence.

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CONFLICT OF INTEREST

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