

New Zealand pharmacists' experiences, practices and views regarding antibiotic use without prescription

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ABSTRACT

INTRODUCTION: Very few studies have investigated pharmacists' views, experiences and practices regarding the use of antibiotics without prescription. This study aimed to explore through self-report and hypothetical scenarios what factors determine New Zealand pharmacists' behaviour and attitudes towards non-prescription use of antibiotics.

METHODS: A purposeful sample of 35 registered community pharmacists of differing ethnic backgrounds was selected from a mixture of pharmacies that predominantly either serve New Zealand European customers or customers of other ethnicities. Semi-structured interviews including general background questions and six hypothetical scenarios were used for the investigation. Pharmacists' ethnicity, education, years of experience, and customers' ethnicity may influence their views, experiences and practices regarding the use of antibiotics without prescription. Customer demand or expectation, business orientation and competitiveness within community pharmacies, standards and practice of fellow pharmacists, ethics and professionalism, legislation, enforcement of the legislation, and apprehension of the consequences of such practice were hypothesised to have an effect on antibiotic use or supply without prescription by pharmacists.

FINDINGS: The supply of antibiotics without prescription is not common practice in New Zealand. However, personal use of antibiotics without prescription by pharmacists may have been underestimated. Pharmacists were aware of legalities surrounding selling and using antibiotics and practised accordingly, yet many used antibiotics without prescription to treat themselves and/or spouses or partners. Many pharmacists also reported that under certain legislative, and regulatory and situational conditions they would sell antibiotics without a prescription.

CONCLUSION: Views and practices regarding antibiotic use without prescription by community pharmacists require further exploration.

KEYWORDS: Non-prescription antibiotics; hypothetical scenarios; legislation enforcement; New Zealand

Introduction

Antibiotic use and consumption contribute to the emergence of bacterial resistance.^{1,2} Antibiotics, while often classified as prescription-only medicines, can be purchased without prescription from various drug outlets and community pharmacies in a range of countries around the world.³⁻¹⁶ Lack of regulations or enforcement of existing regulations, failing health systems,

lack of professionalism and/or knowledge among pharmacists and pharmacy staff, demand from customers, financial incentives and business orientation of pharmacies have been suggested as some of the reasons for this malpractice, especially in developing countries. The influence of the pharmaceutical industry, pharmacists' familiarity with treatment options and their belief that doctors would prescribe the same medication were also reported.^{7,17-19}

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While it is illegal for pharmacists to supply antibiotics without prescription in many Western countries, there are still reports of this occurring.¹⁴⁻¹⁶ Although this practice is more prevalent in some countries than others, few studies in the literature investigate why this is the case.

In New Zealand (NZ), antibiotic use and supply without prescription by pharmacists is considered an unlawful and unprofessional practice. Pharmacists' competency and practice according to the accepted standards would not only be questioned by the New Zealand Pharmacy Council, pharmacists could also be prosecuted. NZ pharmacists are accustomed to the restriction on the availability of antibiotics. The NZ public generally know that they need a prescription to purchase antibiotics from pharmacies.

Very few studies have investigated pharmacists' attitudes and practices regarding the use of antibiotics without prescription. The current study describes an original approach using hypothetical scenarios to explore NZ pharmacists' practices regarding the use of antibiotics without prescription.

Methods

Selection of subjects

A purposeful sample of 35 NZ-registered community pharmacists was selected using the New Zealand Pharmacy Guild's *Directory of Retail Pharmacy in New Zealand*—March, 2007. All the pharmacists were based in the metropolitan city of Auckland—NZ's largest, culturally diverse and most populous city. The selected pharmacists represented a range of ethnicities—New Zealanders of European descent and non-European descent, including Middle Eastern, Asian and Pacific peoples. Pharmacists' ethnicities were inferred from their names, as listed in the retail pharmacy directory. The pharmacies selected also represented a mixture based on the ethnicity of the majority of their clientele; that is, a mixture of pharmacies either serving predominantly NZ European customers or customers of other ethnicities. The suburb location of each pharmacy was used to determine the likely ethnic background of customers.

Interview procedure

Pharmacists were initially approached by telephone, and their participation was requested. They were reassured that their participation was voluntary, were guaranteed that they would not be disadvantaged for expressing their honest opinion and were reassured that their anonymity would be preserved.

Initial response to participate in the study was poor. Pharmacists were reluctant to take part in the study; many said they were too busy, others declined without giving a reason. It was then decided to visit the selected pharmacies in person and invite the pharmacists to participate in the study at that time, or at any other time that would suit them. Pharmacies were visited (at the least busy times) in the mornings, and at lunch times between 12 and 2 pm; final working hours were avoided. Wherever a pharmacist declined to participate, another pharmacist with a similar combination of pharmacist ethnicity and likely customer base was sought as an alternative.

The study design relied on qualitative methods using semi-structured interviews, including general background questions and six hypothetical scenarios. General questions were asked about pharmacists' age, ethnicity, place and year of qualification, working experience and, finally, whether and how often customers ask them for antibiotics without a prescription. The study's protocol was reviewed and approved by the National School of Pharmacy, University of Otago (D06/139).

The duration of the interviews was set at 30–45 minutes. It became apparent from the telephone calls with pharmacists that this duration was not feasible for many pharmacists, so it was shortened to 20 minutes. Pharmacists were visited at the exact times they set and informed that they could pause at any stage during the interview if they needed to attend to any duties before resuming the interview.

The hypothetical scenarios

Hypothetical scenarios have been used in various health care research studies.²⁰⁻²⁴ In this study, six hypothetical scenarios were used based on

realistic incidents to make them relevant and engaging for the participating pharmacists. They were concise to minimise inconvenience and fit the duration of the interviews.

The scenarios explored how pharmacists thought they would respond regarding the use and supply of antibiotics in different situations. The legal situation and expected apprehension of getting caught or being reported for supplying or using antibiotics without prescription varied in each hypothetical scenario. For example, in the order from strictest to least strict, one of the scenarios described encountering a foreign tourist demanding antibiotics over the counter (OTC) in an NZ pharmacy. This scenario represented the most likely situation in which NZ pharmacists would be asked for antibiotics without prescription. Another scenario setting was in a country where the legislation is strictly enforced and OTC use of antibiotics was very uncommon. A third and fourth scenario explored pharmacists' perceptions with regard to self-medicating with antibiotics personally or for a family member; in both cases the chances of complaints against the pharmacist involved are low. In the least strict scenarios the pharmacist was asked to imagine working in a country where pharmacy was business-oriented and antibiotics were freely and widely available OTC despite regulations. The last scenario was based in a country where antibiotics were legally dispensed from pharmacies without prescription. Table 1 outlines each of the six hypothetical scenarios used in the interviews.

The interview questions and hypothetical scenarios were piloted with four pharmacists. The primary investigator (MD) conducted all of the interviews which were recorded using a personal digital assistant; where participants declined to be recorded, detailed handwritten notes were taken. Pharmacists were encouraged to explain their reasoning in detail and any ambiguities were clarified at the time of the interviews.

Analysis

Complete transcripts of the interviews were prepared. Analysis involved coding and categorising the interview data into main themes assisted by NVivo software for managing qualitative data.

WHAT GAP THIS FILLS

What we already know: Indiscriminate use of antibiotics contributes to the emergence of resistance. The availability and use of antibiotics without prescription in community pharmacies is not well understood and the role of pharmacists in antibiotic utilisation and health-seeking behaviour is often overlooked.

What this study adds: This study elucidates views of New Zealand pharmacists on the use of antibiotics without prescription and demonstrates the importance of enforced legislation in regulating antibiotics and other pharmaceutical products with regard to health-seeking behaviour.

Table 1. Outline of the six hypothetical scenarios.

Scenario	Explain if you would sell/use or supply an antibiotic without prescription in the following settings or situations
1	Thailand: where the sale of antibiotics without prescription is illegal but commonly practised. Both the pharmacist in charge at the pharmacy where you work and the pharmacies next door sell antibiotics over the counter. If you didn't you might lose business.
2	Ireland: where the sale of antibiotics without prescription is illegal and not common practice. However, your employer wants you to sell antibiotics over the counter to his friend/regular customer Mr X.
3	Personally: for a previously diagnosed urinary tract infection that was treated with a course of antibiotics by your doctor.
4	For a family member who has cold/cough signs and symptoms every winter that frequently develops into bronchitis. Your family doctor always prescribes the same course of antibiotics to cure it.
5	A tourist from Portugal walks into your pharmacy in NZ, and requests an antibiotic to treat his obvious wound infection.
6	Burkina Faso: where it is common and legal practice to sell antibiotics over the counter in pharmacies.

The aim of the study was to explore pharmacists' attitudes and practices regarding antibiotic use without prescription, to enhance understanding and generate hypotheses rather than achieve significance in a statistical sense. Therefore, the findings are presented thematically, not numerically. However, an indication is given of the numbers of pharmacists' responses to the hypothetical scenarios in Table 2.

Findings

Seventy-one pharmacists were approached and 35 consented to participate in the study (49.3% response rate). Twenty male pharmacists and 15 female pharmacists were interviewed. The aver-

Table 2. Pharmacists' responses to the hypothetical scenarios.

N=35	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6*
No	22	30	14	28	35	0
Yes	3	1	14	5	0	29
Maybe	10	4	7	2	0	6

* All the hypothetical scenarios (S1–5) presented situations where the use/supply of antibiotics without prescription is illegal, with the exception to S6 where it is legal.

age age of the pharmacists interviewed was 35 years old. The average years of pharmacy working experience was 13.4 years (range 2–44 years). Of the 35 pharmacists recruited, 16 were NZ European and 19 were non-European. The majority of the pharmacists had an NZ pharmacy qualification. Only four were overseas graduates.

On average the interviews took about 20 minutes. In general, older and more experienced pharmacists talked for longer. Some pharmacists were perplexed by the hypothetical scenarios especially at the beginning, but appreciated the purpose of using them towards the end.

Pharmacists' responses to the hypothetical scenarios show that when antibiotic supply without prescription is legal, the majority would supply them without prescription (S6). Pharmacists were more likely to say 'yes' or 'maybe' when the antibiotics were for themselves (S3), but not for their family members (S4). Responses to the first scenario (S1) where it is common practice to supply antibiotics without prescription, although illegal, show that some pharmacists would or might consider their supply. A minority stated they might supply antibiotics because of employer pressure (S2). However, none of the pharmacists would sell the tourist antibiotics without prescription in NZ (S5). A summary of the pharmacists' responses to the six hypothetical scenarios is presented in Table 2. The themes arising from analysing the pharmacists' responses to the hypothetical scenarios are presented below.

Interview themes

Seven key themes relating to pharmacists' attitudes, views and practices regarding the use of non-prescription antibiotics emerged while coding the data. These are:

1. Legislation
2. Enforcement of legislation and consequences
3. Ethics
4. Pressure—peer, patient and employer
5. Education, training and clinical knowledge
6. Experience—professional and personal
7. Business orientation.

These themes are discussed in detail below. Verbatim quotes of participating pharmacists are used to illustrate the key themes that arose from the interviews conducted.

Legislation

The first theme to emerge was pharmacists' awareness of the current legal framework surrounding pharmacists' scope of practice. All of the pharmacists viewed legal status as the decisive factor on whether or not to supply the antibiotics.

I would definitely say no because it is illegal! (P2)

Some were adamant about following the law regardless of whether others breached it. All the pharmacists were very clear on refusing to sell the tourist any antibiotics in the NZ context, because they are prescription-only medicines. They stated they would refer the tourist to the nearest doctor, and if need be could sell an antiseptic product instead. Also, in Scenario 6 where it was legal to sell antibiotics without prescription, none of the pharmacists declined the sale.

If it was legal, I would, why not? (P4)

Also in relation to abiding by the law, in most cases where a pharmacist thought he or she would consider using or initiating antibiotic treatment for themselves, the pharmacist highlighted that

they would back themselves by obtaining a telephone or fax prescription from the doctor in the practice next door or their personal doctors.

Enforcement of legislation and consequences

Most pharmacists considered enforcement of the legislation and concern about the consequences or penalties for breaking the law important factors. Pharmacists believed that their qualification and reputation were not worth jeopardising. A few pharmacists expressed fear of contributing to the deterioration of a patient, despite the best of their knowledge and the consequences for themselves if this was to occur.

What if I was 99% of the time correct and 1% I got it wrong and as a consequence there were serious implications. (P11)

The public complains a lot. Even if you'd be doing them a favour, if you make a mistake they will tell on you. The risk is not worth it. (P17)

In the first scenario where the law was frequently not adhered to, and antibiotics were commonly sold without prescription, less than half of the pharmacists believed that they would sell antibiotics without prescription. Many pharmacists seemed more concerned about punishment for supplying the antibiotics without prescription, rather than potential harm to customers from supplying antibiotics unnecessarily.

Have to go with it! Since the law is already bent. It's not like I'd be the odd one out. They would have to go around punishing all the pharmacists; they wouldn't. I'd stick to the common antibiotics. (P10)

I'd do what everyone else is doing using my professional judgment. If I'm totally sure there would be no consequences like a punishment for doing that, within the boundary of my knowledge. (P26)

In contrast, in Scenario 3, where the antibiotic was indicated for personal use by the pharmacist, more pharmacists (n=21) considered they would or might use the antibiotics without prescription for themselves. This reflects that the previously described fear of getting caught or being reported for supplying or using antibiotics without pre-

scription contributes to pharmacists' responses, because the chances of being caught are clearly less when the antibiotic is used by the pharmacist.

Ethics

Pharmacists considered being ethical and professional very important. In the cases where pharmacists declined to supply antibiotics, many referred to the legalities then ethics as the main reasons underlying their decisions. Where the scenario stated it was illegal to supply the antibiotics without prescription, despite pressure or financial incentives, those pharmacists who declined supplying the antibiotics argued that their ethics and professionalism would prevent them from doing so. Yet very few pharmacists stated that they would feel ethically obliged or have a moral responsibility to report on other pharmacists' misconduct in those situations.

A few pharmacists stated that in circumstances where health professionals are scarce and people are in life or death situations, ethically pharmacists should use the best of their clinical judgment and supply patients with the suitable antibiotics if antibiotic treatment is required, even if that might be strictly illegal.

If there wasn't a proper health system in place and people can't go see doctors or the costs are very high and they absolutely can't afford it because of poverty or in a war situation. Basically if I was in that situation I'd do it to save people's lives, it would be unethical not to do so. (P29)

Ethically speaking in extreme cases I would, if the person can't see the doctor and he needs it, and it was an emergency case amnesty or poverty you'd take pity. If you were going to be the only health professional they'd see. All this should be considered. (P21)

Pressure—peer, patient and employer

This theme included peer and employer pressure as well as customer demand. The majority of pharmacists were confident that they would not be influenced by peer pressure to break the law. Most also responded that they would refuse to sell antibiotics under pressure exerted by their

employers in a country where it was illegal to sell antibiotics without prescription, as described in the second scenario. However, with the assurance that the customer would not report on them, a few pharmacists actually stated that they might be pressured and inclined to sell the antibiotics without prescription upon the request of their employers.

Yes I would, but I would be hush-hush about it, I wouldn't be able to tell my boss that what he or she is doing is wrong. (P8)

I would do it for the boss's friend, the selected person whom you know wouldn't tell on you. (P7)

I wouldn't want to lose my job, there would be no choice, but on the other hand I have to be responsible for what I'm doing. In an ideal world I wouldn't. I would stick to the code of the profession. But in reality... I would be reluctant. I might, it is a hard one. (P29)

If I had to do it, I'd do it under the boss's name. (P24)

As for customer demand, some pharmacists felt that in a place where there is overwhelming demand for antibiotics and where antibiotics are very commonly supplied without prescription despite this being illegal, they might opt to supply them without prescription. Some pharmacists believed that attempting to change customers' attitudes towards purchasing antibiotics without prescription would be useless and time consuming.

I wouldn't do it unless everyone else was doing it and there was high demand or pressure from customers. (P8)

I'd have to go with what they do there. It is not like they would listen to me, if I didn't sell it they'd go buy it from the pharmacy next door! (P14)

Others, however, believed that even if there was great demand for antibiotics without prescription, supplying them without prescription was against the law and they would not sell them without prescription. They said that they would explain to their customers the rules and offer them alternative remedies.

In this study, 10 of the pharmacists interviewed (28.6%) stated that they frequently get asked for antibiotics without prescription—that is, on a daily and weekly basis (Figure 1). These requests were mostly by tourists or new immigrants who are not familiar with the restrictions placed on antibiotics in NZ, and a few locals who hoped to find Bactroban® (mupirocin) ointment preparations still available without prescription. This finding seemed to be consistent across all the pharmacies irrespective of location.

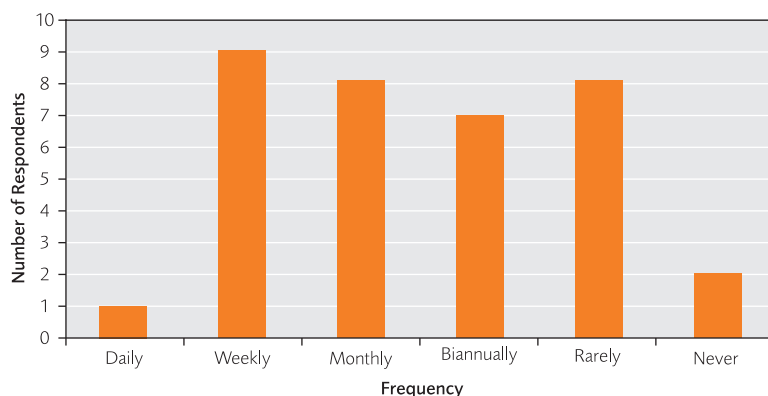
Education, training and clinical knowledge

Most of the pharmacists interviewed completed their undergraduate study in NZ. Only four pharmacists had obtained their Bachelor of Pharmacy qualification overseas (from the UK, South Africa and another European country—not specified in order to preserve the pharmacist's anonymity). There did not seem to be differences in pharmacists' responses to the hypothetical scenarios based on origin of pharmacy qualification.

The majority of the pharmacists said that they would apply their clinical judgment in the instances where they would legally be able to supply antibiotics without prescription. Some felt that they were well equipped and had sufficient clinical knowledge about various infections, but lacked laboratory diagnostic tools (such as swab/culture testing).

If it was legal, I'd do it. I believe I had good training and that I'm well qualified to do so. (P28)

Figure 1. Frequency of patient requests for antibiotics without prescription from participating pharmacists



Pharmacists who felt that they had sound clinical knowledge admitted that they would only feel confident to manage acute cases of infection, for example urinary tract infections, cystitis and wound infections. They excluded conditions involving complications such as cellulitis or acne, where regular monitoring is required. They considered such conditions beyond their scope of expertise.

Other pharmacists stated that one of the reasons they would not use or supply antibiotics without prescription other than it being illegal was because their undergraduate university training did not equip them to do so. Some of those pharmacists felt they would need specialist postgraduate training if they were to prescribe antibiotics, in settings where it is legal.

We are taught that pharmacists are not trained to diagnose, through the four years of pharmacy study at university then during your internship, prescribing antibiotics is beyond pharmacists' scope of practice. (P30)

A minority of the pharmacists interviewed gave their knowledge and awareness of antibiotic resistance as an important factor that would affect their decision on whether to supply or use antibiotics without prescription.

Research tells us that there are problems associated with the misuse of antibiotics, we're well educated about resistance. (P25)

Here we are very cautious about resistance and careful to preserve antibiotics. We are taught not to abuse them. (P26)

Experience—professional and personal

About half of the pharmacists thought that they would personally use antibiotics without prescription. A few were uncertain and suggested that they might consider using them for a personal condition that was previously cured by a prescribed course. Those pharmacists who stated they would use antibiotics without prescription admitted to actually having done so in the past (while also acknowledging that they should not have). They specified personal use of antibiotics without

prescription especially when going overseas, or for treating a recurrent condition that was recently diagnosed and treated with a course of antibiotics prescribed by the doctor. For the latter, they stated that they used the same antibiotic that was previously prescribed to resolve the same condition.

Honestly? I probably would. I shouldn't, but I would. (P20)

Yes, we always take a course of norfloxacin among other meds for personal need when going overseas. (P10)

Some pharmacists explicitly stated that they do not have a problem with personal use.

I can take or try anything for myself. (P6)

Yes, for me? It's OK. I'd try it again and if nothing works then I'd check with the doctor. (P7)

Most pharmacists who believed that they would use antibiotics without prescriptions stated that they would obtain a fax or phone prescription from their doctors, to remain on the safe side legally and for reassurance purposes. Many pharmacists stated that it is easy and convenient for them to obtain fax or phone prescriptions, because they have good relationships with the doctors next to their pharmacies. A few, however, insisted they would not take any antibiotics without prescription, because it is illegal. Some expressed a fear of embarrassment should complications arise as a result of their self-prescribing, then having to report that when checking it with their doctors.

With regard to antibiotics supply to family members without prescription, the majority of pharmacists disapproved of this practice. A few, however, did not object to supplying them to their spouses or partners if necessary, but not to children.

It depends on how close the family member was, if it was for the wife or own kid, I would. Because I know I can take responsibility for them. But if it was a distant relative I can't take the responsibility in case something went wrong. (P29)

If it was my mum, I'd do that. But not for other family members or friends, because I trust her. (P33)

No, not for a child. There are a lot of safety concerns with a child. (P6)

No with children no matter how common, [I] would always have to check it with the doctor. It's free! (P18)

Business orientation

Some pharmacists commented that in a situation where business survival would be affected by not selling antibiotics OTC and dispensing antibiotics without prescription was the common practice, they would be inclined to follow that practice.

If I was working in Thailand as a pharmacist I wouldn't. If I was the owner, I'll sell it or else I'll run out of business, I'd sell it if I was the owner. (P23)

However, some stated that they would take it on a case-by-case basis, not just supplying solely to make a profit. Others did not believe that a pharmacy would go out of business for not supplying antibiotics OTC and saw selling non-prescription medicines, supplements and/or natural remedies as an alternative to save the business without jeopardising or abusing antibiotics.

No not an option, even if I was to go broke. (P18)

Discussion

This study confirms that the supply of antibiotics without prescription is not common practice in NZ. However, personal use of antibiotics without prescription by pharmacists may have been underestimated. NZ pharmacists were aware of the legalities surrounding selling and using antibiotics and practised accordingly. Yet many pharmacists admitted that, at times, they used antibiotics without prescription to treat themselves and/or spouses or partners. Many pharmacists also reported that under certain legislative, regulatory and practice conditions they would sell antibiotics without a prescription.

Studies have shown that the supply of antibiotics without prescription is a usual practice among pharmacists and drug retailers in developing countries. In Kathmandu, Nepal, it was documented that all 100 pharmaceutical retailers

contacted by simulated patients engaged in diagnostic and therapeutic behaviour beyond their scope of training or legal mandate.²⁵ Pharmacy retailers there dispensed antibiotics unnecessarily for diarrhoea (97%) and dysuria (38%). Another international survey that included participants in developed countries as well as developing countries (United Kingdom, France, Belgium, Italy, Spain, Turkey, Thailand, Morocco, and Colombia) revealed that it was possible for participants to obtain antibiotics directly from pharmacists without prescription in all the nine countries, even where this practice was illegal.²⁶

In Spain, heavier workload, and underestimating physicians' prescribing while overestimating pharmacists' qualifications to prescribe was associated with pharmacists dispensing prescription medicines without prescriptions. Pharmacists who emphasised the role of pharmacists in safeguarding and rationalising the use of medicines demanded prescriptions from their customers more often. Sixty-six percent of the participating pharmacists reported dispensing antibiotics without prescription.²⁷ In Greece, simulated clients visited 98 pharmacies, with pharmacists offering antibiotics without prescription for 69% and 86% of cases of rhinosinusitis, with and without high fever respectively.²⁸

Pharmacists' self-prescribing of medicines for personal or family use has not been extensively researched. A few studies have focused on pharmacists' misuse of controlled substances.²⁹⁻³¹ They suggest that pharmacists' engagement in self-prescribing behaviour could be as a result of their greater access and perceived expertise in prescription medicines. One study that specifically investigated pharmacists' self-prescribing of non-controlled medicines in the US, found that 79% of their study sample reported self-prescribing antibiotics.³² The authors found that familiarity with treatment options, believing that their doctors would prescribe them with the same medication and lack of time were the most important reasons given for self-prescribing. The authors suggested that rather than implementing punitive or judgmental consequences on self-prescribing pharmacists, employers and pharmacy school programmes should provide appropriate educational material that emphasises the negative

impact of such behaviour. The authors suggested that the privacy surrounding pharmacists' workplaces and their long working hours are additional factors that might encourage self-prescribing among pharmacists.³²

In this study, the most important factors that seemed to affect pharmacists' views and practices regarding the use and supply of antibiotics without prescription were the legislation in place followed by apprehension of the consequences of getting caught or being reported for practising against the acceptable standards. This was particularly evident in the last scenario where antibiotic sale without prescription was explicitly legal and where none of the participants reported that they would refuse to sell the antibiotics. Similarly in Scenario 5, where it was obviously illegal, all pharmacists declined selling the antibiotics without prescription. Again, in Scenario 2, where it was strictly illegal, the majority of pharmacists declined selling the antibiotics without prescription (despite the apparent chances of being reported or caught being relatively low, their fear of undesirable consequences was still high). In contrast, for personal use, which is also illegal, more pharmacists believed they would or might use antibiotics without prescription, most likely because the chances of being reported or caught were presumed to be low.

Limitations

While the study included pharmacists with a range of demographic characteristics, who practised in a variety of locations, it is possible that important information could have been obtained from those pharmacists who declined participation in the study. Pharmacists who consented may have been those who tended to have strong personal views about the subject of the study.

In general, participating pharmacists were reserved initially, but with encouragement and reassurance that their anonymity would be guaranteed, expressed their views more openly. A few felt confronted by the scenarios and questioned their relevance. These pharmacists appeared distrustful and kept their answers to a minimum, despite efforts to put them at ease, to reassure them of confidentiality and to probe their re-

sponses while maintaining a conversational tone throughout the interviewing process.³³

The study relied on hypothetical scenarios and self-reports of pharmacists. The scenarios were brief, therefore pharmacists might not have fully immersed in them. Also, this may have removed some of their intended realism and reduced the quality and depth of the assessment that can be obtained. To a certain extent pharmacists were cautious of the implications surrounding the scenarios, so they might have responded to the scenarios in an espoused manner indicative of their best practice knowledge rather than their actual performance.

The duration of the interviews was relatively short, which might not have been sufficient for obtaining rich in-depth data about the pharmacists' views and attitudes. Unfortunately this constraint was placed by the participating pharmacists and the time that they could spare. Our sample size was small. Future studies can overcome these limitations by conducting the interviews outside pharmacists' working hours, for example in continuous professional development workshops and including a national empirical survey that covers a larger sample of NZ pharmacists.

Conclusion

The interviews uncovered intriguing views and practices regarding antibiotic use without prescription in community pharmacists. Besides being unlawful and unprofessional, pharmacists' self-prescribing of antibiotics may result in treatment failure (especially if inappropriate antibiotics were selected), unnecessary costs and increased potential for developing antibiotic resistance. This would complicate future therapy for the persons involved, whether the pharmacist or their close family members.

The results suggest that the key factors determining whether pharmacists sell antibiotics without prescription are the legal situation, and pharmacists' perceptions of the consequences of disobeying the law. The implication of this for countries that wish to reduce the availability of antibiotics without prescription is to ensure that this practice is illegal. In NZ the law is widely known, is enforced frequently, pharmacists believe that

they will be caught and fear the consequences if they break the law. While the lessons learned during their education and their ethical beliefs were important to many pharmacists, it appears that it is the legal situation and the perception of negative consequences that is the most important factor in preventing the supply of non-prescription antibiotics.

Additional studies are required to further explore pharmacists' practices and beliefs regarding the use of antibiotics without prescription. Also worth further investigation is the relationship between pharmacists and general practitioners and the effect of this relationship on pharmacists' self-prescribing and personal use of prescription medicines, including antibiotics.

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COMPETING INTERESTS

None declared.