Nature and adequacy of information on dispensed medications delivered to patients in community pharmacies: a pilot study from Penang, Malaysia

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Abstract

Objectives To determine the types and adequacy of information on dispensed medications given to consumers by community pharmacists and pharmacy assistants, and to compare this between the two categories of personnel in the community setting.

Methods Using a simulated client method, a total of 128 community pharmacies in the State of Penang, Malaysia, were visited. Medications were dispensed by the community pharmacy personnel upon presentation of hypothetical common-cold symptoms by the simulated client. The types of information delivered over the counter by the community pharmacy staff were documented and evaluated. A total score was given to determine the adequacy of information given.

Key findings Findings from the study revealed that there were no significant differences between pharmacists and pharmacy assistants in the delivery of information to the simulated client for the dispensed medications, except for information on indications of medication (25 compared with 5.3%; \(P = 0.001\)) and duration of drug therapy (7.7 compared with 0%; \(P = 0.014\)). None of the community personnel provided medication-related information that was deemed ‘adequate’ within the definitions of the analysis. Most community pharmacy personnel delivered the medication-related information in less than 1 min.

Conclusions Most of the community pharmacies surveyed did not provide adequate information to patients on medication use during the dispensing process. In view of the short duration of information delivery, the extent of the information delivered to patients was limited and its adequacy could not be guaranteed.

Keywords community pharmacy; dispensed medications; medication-use information; pharmacist; pharmacy assistant

Introduction

Correct information about the name of a medication, and how, when and why to use it should be delivered to patients, especially for non-prescription dispensed medications. This information should be presented in such a way that it can be understood and acted upon by the patients. Ideally, patients should receive information related to their medications from healthcare professionals such as a community pharmacist, general medical practitioner or their assistants. Yet the information provided by these healthcare professionals may be inconsistent, incomplete and insufficient for patients to understand. Without adequate and appropriate information conveyed to the patients, medication errors are likely to occur.

There is a globally growing trend for consumers to self-medicate with non-prescription medications for common ailments and pharmacists are the most accessible healthcare professionals who are equipped with specialised knowledge in relation to the safe and rational use of medications. Accordingly, pharmacists are in a unique position to deliver the correct and sufficient information about medications to their patients. The heart of pharmacy practice, particularly in community pharmacy setting, is the interaction between the pharmacist and the patient. During the interactions, pharmacists may provide medication-use and disease information, whereas patients may request medications and seek...
the pharmacist’s advice.\textsuperscript{[3]} Understanding the ways pharmacists interact with those they serve is vital as this can ensure that pharmacy continues to fulfill its mandate as a healthcare profession.\textsuperscript{[4]} The popularity of self-medication\textsuperscript{[5]} with non-prescription medications among patients and consumers has stimulated a great interest in research into information-giving within community pharmacies.

‘Counselling’ and ‘communication’ are the two most commonly used terminologies in the studies conducted for evaluating the pharmacist–patient interaction.\textsuperscript{[7]} Within the studies reviewed by Shah and Chewning,\textsuperscript{[7]} some researchers have defined pharmacist–patient communication solely as an information-related activity, while others focused on certain aspects of pharmacists’ interpersonal behaviour in addition to the information-provision activity. Various methodologies, such as telephone interview, mail survey, nonparticipant observer, simulated client and audio analysis have been used in the studies of pharmacist–patient interaction.\textsuperscript{[7]} Evidence suggests that appropriate counseling about proper administration and adverse effects of medications occur infrequently.\textsuperscript{[8]} Studies have indicated the lack of communication with pharmacists in community pharmacy settings, in the process of dispensing either prescribed medications\textsuperscript{[9]} or non-prescription medications,\textsuperscript{[10,11]} or both.\textsuperscript{[12,13]} Pharmacists tend to provide little information during counselling,\textsuperscript{[12]} particularly when it is a request to buy a specific medication.\textsuperscript{[11]} An observational study involving pharmacies in Switzerland indicated that direct sale, which refers to a sale without discussion except to mention the price of the product, was a common practice for non-prescription medicines.\textsuperscript{[10]} The total score with regards to the assessment of community pharmacy personnel–patient interaction during the sale of non-prescription analgesics was significantly lower before the community pharmacists and their assistants underwent interventional training.\textsuperscript{[10]} In the study by Berger et al.,\textsuperscript{[15]} advice was only given upon request by the simulated clients in 36% of cases and most of the time the information was not sufficient, especially for direct product request. Similarly, Sihvo et al.\textsuperscript{[14]} noted that counselling given by pharmacists with respect to non-prescription medicines is often insufficient. There was a common belief among Finnish pharmacists that self-medicating customers do not want drug information until it has been proven to be false.\textsuperscript{[15]} Hence, it is not surprising that patients do not fully understand that their pharmacists are the providers of medication information.\textsuperscript{[3]}

In Malaysia, cough and cold remedies such as decongestants, antihistamines and anti-tussives are classified as Group C poisons.\textsuperscript{[16]} According to section 22 of the Poison Act 1952,\textsuperscript{[17]} Group C poisons can be sold or supplied by retail as a dispensed medicine or as an ingredient in a dispensed medicine without prescription from a doctor. Thus, patients normally can either obtain common-cold medications from community pharmacies or from general practitioners by attending clinics. The common-cold remedies that can be obtained from community pharmacies in Malaysia are either sold as non-prescription dispensed medications or in over-the-counter packaging in combination with acetaminophen (paracetamol). Dispensing medications in the form of loose packaging (which is not the original packaging from the manufacturer, or over-the-counter packaging) is noted as a common practice among the community pharmacies in Penang, Malaysia. Thus, the nature and extent of information given to clients for these loose-packaged medications is of particular concern and interest, and hence our intention to explore these in this pilot study.

To our knowledge, there was no information on whether pharmacists or pharmacy assistants in the community pharmacy setting in Malaysia provide adequate information on non-prescription dispensed medications. Consequently, this exploratory study was carried out in the first attempt to determine the extent and nature of medication-related information provided to patients by community pharmacy personnel. Furthermore, a limited direct comparison study\textsuperscript{[18]} between community pharmacists and pharmacist assistants was conducted on the nature and extent of information given to patients on non-prescription medications.

### Methods

A recent list of retail pharmacies available within the State of Penang, Malaysia, which contained their addresses and the names of the full-time registered pharmacists, was obtained from the State’s Health Department. Of the 200 retail pharmacies in the list, eight were excluded from the study because the researcher knew the full-time pharmacists. Sample-size calculation was carried out to achieve a confidence interval of 95% and a power of 80%.\textsuperscript{[19]} One hundred and twenty-eight was estimated as the minimum sample size for the study. In December 2007, one of the authors (CF) acted as a simulated client with common-cold symptoms and visited the 128 conveniently selected pharmacies in the State of Penang. At the time of the study, there was no ethics committee established in Malaysia to look into non-institution-based observational studies, but the study protocol was examined in terms of methodological and ethical issues by an independent panel of experts consisting of senior academics at a public university. All the researchers strictly adhered to the confidentiality of the data. Besides this, obtaining consent might cause the service providers to modify their behaviours, which could cause observation bias.\textsuperscript{[20]} Hence, none of the community pharmacies was informed about the study so that the Hawthorne effect\textsuperscript{[21]} – a change of behaviour as a result of being observed – could be avoided.

All the medications were dispensed by the pharmacy personnel upon presentation of hypothetical symptoms of common cold by the simulated client (CF). The case scenario used in this study was a 26-year-old female (the investigator) who presented with early symptoms of a common cold (running nose, sneezing, no cough or sore throat) for the past day, coming into the pharmacy asking for a sedative medication. A sedative antihistamine was asked due to its lower acquisition cost compared with the second-generation non-sedating antihistamines such as loratadine that are available on the Malaysian pharmaceutical market. The detail of the information given by the simulated client to the community pharmacy personnel is shown in Table 1. The types of information delivered over the counter by the community pharmacy staff were noted using a standardised data-collection form with a dichotomous checklist. The data-collection form was filled in immediately after the simulated client left each
community pharmacy. The information given with regards to the medication was not defined as counselling in this study as it involved only information delivered during dispensing over the counter. Before leaving each community pharmacy the identity of the personnel that delivered the medication information was verified by asking the question ‘are you the pharmacist?’ Besides that, the time taken to deliver the information was also noted and recorded.

All relevant data were recorded in the data-collection form for further analysis. The results were analysed using SPSS version 15.0 (SPSS, Chicago, IL, USA). The data collected using the simulated client method included the following: type of personnel who dispensed the medication(s) and delivered the medication-related information, name of the medication, directions on how it should be taken (dosage, frequency, duration, before or after food), side effects, indication, drug interactions, storage of medication, date of expiry and other special instructions.

The adequacy of information was determined by the number of drug-related informational items (range 0–11) delivered by the community pharmacy personnel. The types of information were as previously indicated. Each type of information was allocated a score of 1 if provided or 0 if not provided. For the information on side effects of the medication, a score of 1 was given even if the pharmacy personnel conveyed more than one relevant side effect to the simulated client. We anticipated that the pharmacy personnel would inform or remind the simulated client on important precautionary warnings, such as not to drive or handle any machinery when taking this sedative medication. If an item of information was repeated by the personnel, it was considered as one information item for the purpose of analysis. A result for adequacy on delivered medication information was defined as ‘extremely inadequate’ if the total score was from 0 to 3, ‘intermediate’ representing a score from 4 to 7 or ‘adequate’, representing a score from 8 to 11.

Descriptive statistics including frequencies and percentages were used for the data analysis. Chi-square test was applied to compare pharmacists’ versus pharmacy assistants’ rates of providing the different types of information, whereas a Mann–Whitney U test was used to compare the time taken to provide medication information between the two groups of pharmacy personnel. The level of significance was set at $P < 0.05$.

**Results**

Fifty-nine per cent of the drug dispensing done at the 128 community pharmacies visited by the simulated patient was performed by pharmacy assistants. The study revealed that most of the personnel in the community pharmacies did not provide adequate information on the use of dispensed medications to the patient. It was evident that only 9.6% of the pharmacists and 6.6% of the pharmacy assistants had provided the simulated client with information on the name of the medicines they dispensed. Conversely, an overwhelming proportion of the pharmacists (94.2%, $n = 49$) and pharmacy assistants (86.8%, $n = 66$) had provided the clients with information on medication dosage and frequency of usage. Nevertheless, the difference between the two groups was not statistically significant ($P = 0.174$).

Apart from that, only nine pharmacists (17.3%) and 11 pharmacy assistants (14.5%) had informed the patient on how the medications should be taken in relation to food (i.e. before, after or with). There were 59.6% of the pharmacists ($n = 31$) and 50.0% of the pharmacy assistants ($n = 38$) who delivered information concerning the side effects of the dispensed medications ($P = 0.001$).

Surprisingly, none of the pharmacists or pharmacy assistants had provided the simulated patient with information on medication storage, date of expiry or drug interaction. In addition, only 13 pharmacists (25%) and four pharmacy assistants (5.3%) had informed the client about the indication of the drugs ($P = 0.001$). Furthermore, the pharmacist group had a significantly higher rate of providing patients with information related to the duration of drug therapy when compared with the pharmacy assistant group (7.7 compared with 0%; $P = 0.014$).

In terms of adequacy of the medication-related information, none of community personnel had a total score from 0 to 3. About 55.8% ($n = 29$) of the pharmacists and 76.3% ($n = 58$) of the pharmacy assistants obtained a total score from 0 to 3, which was categorised as ‘extremely inadequate’. The remainder of each group of community pharmacy personnel fell into the category of ‘intermediate’, which ranged from 4

### Table 1 Case scenario for a symptom-based request

<table>
<thead>
<tr>
<th>Enquiry</th>
<th>Response/information given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information for the simulated patient</td>
<td>Give the information if you are asked for it.</td>
</tr>
<tr>
<td>Patient identity</td>
<td>The product request is for you (20+).</td>
</tr>
<tr>
<td>Your symptoms</td>
<td>I have running nose and sneezing. I have no cough or sore throat.</td>
</tr>
<tr>
<td>Time frame</td>
<td>The symptoms began last night.</td>
</tr>
<tr>
<td>Prior usage of product you are requesting</td>
<td>I have tried a sedative medication before which is good for common cold. However, I do not know the name of the product.</td>
</tr>
<tr>
<td>Treatment already tried for these symptoms</td>
<td>I have not taken anything for the symptoms.</td>
</tr>
<tr>
<td>Other medications/medical condition</td>
<td>I am not allergic to anything. I do not have any other medical condition or take any other medication.</td>
</tr>
<tr>
<td>Other relevant medication</td>
<td>The pharmacy personnel may recommend non-sedative antihistamine preparation that is available in the pharmacy. Please ensure that you ask for a sedative medication.</td>
</tr>
</tbody>
</table>
Discussion

The findings from the present study have shown that dispensing medications in loose packaging is a common practice among community pharmacies in Malaysia, given that 92.2% (n = 119) of the common-cold medications that were obtained were dispensed in loose packages. Thus, this highlighted the importance of delivering adequate information to patients when dispensing such medications in loose packages, most of which were not well labelled. For all the visits in the present study, one person was involved in the process of labelling for the medication and delivering the information to the simulated client in each of the visited premises. Among the medications information delivered over the counter, dose and frequency of use were the most widely given pieces of information by the pharmacists and the pharmacy assistants. This could probably be due to the perception of community pharmacy personnel that medication dosage and frequency were the most important items of information to be delivered during the dispensing process, to ensure that medications were taken appropriately. In spite of the importance of this critical information, three pharmacists (5.8%) and 10 pharmacy assistants (13.2%) did not provide this information to the simulated patient at all.

Nonetheless, it was interesting to note that the vast majority of the community pharmacy personnel did not provide the simulated patient with information on the name of the dispensed medication. The name of the medication is one of the most things that a patient can know about the drugs received, especially for dispensed medication. Most of the dispensed medications obtained from this study were in loose packaging (instead of the original packaging). Thus, it is important for community pharmacy personnel to inform patients what medication is actually given. Even though the patient may not be an expert on drugs, they should be able to recall the name of medication they are taking if asked. This is to avoid patients from taking the same medication given by different community pharmacies or clinics, thereby preventing medication errors from occurring. In this pilot study we could hardly identify what ‘sedative’ medication had been dispensed to the simulated patient except for those that were dispensed in blister packaging, which had the name of the medication printed at the top of the strip. One possible reason why the community pharmacy personnel failed to inform the patients about the name of the medicines is the concern that patients can purchase the same medicines from other pharmacies in the future.

In terms of the duration of medication use, only 7.7% (n = 4) of the pharmacists and none of the pharmacy assistants provided this information to the simulated client. Similar findings have been reported in a study that involved 12 mystery shoppers who visited community pharmacies in New Zealand to purchase two kinds of product: diclofenac 25 mg, which was requested for ‘back pain’ and vaginal anti-fungal agents requested for ‘thrush’. In the New Zealand study, the author claimed that it was less common for the pharmacy staff (27.7% of the visits) to give information about how long to take the medication for.

In this case scenario, knowing about the side effects of the drugs was important for the patient as the medications dispensed for the common-cold symptoms were mostly sedatives. Nonetheless, the study found that merely 60% of pharmacists and half of the pharmacy assistants had indicated the common side effects of the dispensed medication, such as drowsiness, to the simulated client. On the other hand, crucial instructions pertaining to the side effects of the dispensed medications, such as ‘do not take this medication while driving or operating machines’, were normally delivered.

There were 19.2% of pharmacists (n = 10) and 10.5% of pharmacy assistants (n = 8) who gave extra advice and

Table 2: Information related to use of the dispensed medications delivered in the community pharmacies

<table>
<thead>
<tr>
<th>Information</th>
<th>Pharmacists (n = 52)</th>
<th>Pharmacy assistants (n = 76)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Name of medication</td>
<td>5 (9.6)</td>
<td>5 (6.6)</td>
<td>0.530</td>
</tr>
<tr>
<td>2. Directions to take</td>
<td>49 (94.2)</td>
<td>66 (86.8)</td>
<td>0.174</td>
</tr>
<tr>
<td>3. Dose</td>
<td>49 (94.2)</td>
<td>66 (86.8)</td>
<td>0.174</td>
</tr>
<tr>
<td>4. Frequency</td>
<td>4 (7.7)</td>
<td>0 (0.0)</td>
<td>0.014</td>
</tr>
<tr>
<td>5. Before, after or with food</td>
<td>9 (17.3)</td>
<td>11 (14.5)</td>
<td>0.665</td>
</tr>
<tr>
<td>6. Side effects</td>
<td>31 (59.6)</td>
<td>38 (50.0)</td>
<td>0.284</td>
</tr>
<tr>
<td>7. Indication</td>
<td>13 (25.0)</td>
<td>4 (5.3)</td>
<td>0.001</td>
</tr>
<tr>
<td>8. Storage of medication</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>*</td>
</tr>
<tr>
<td>9. Date of expiry</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>*</td>
</tr>
<tr>
<td>10. Drug interaction</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>*</td>
</tr>
<tr>
<td>11. Other special instructions</td>
<td>10 (19.2)</td>
<td>8 (10.5)</td>
<td>0.164</td>
</tr>
</tbody>
</table>

*No statistics were compared because storage of medication, date of expiry and drug interaction are a constant. P < 0.05 was considered statistically significant.

Table 3: Time taken to deliver medication-related information over the counter at the community pharmacies

<table>
<thead>
<tr>
<th>Duration</th>
<th>Pharmacists (n = 52)</th>
<th>Pharmacy assistants (n = 76)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 min</td>
<td>42 (80.8)</td>
<td>73 (96.1)</td>
<td></td>
</tr>
<tr>
<td>1–5 min</td>
<td>10 (19.2)</td>
<td>3 (3.9)</td>
<td>0.005</td>
</tr>
</tbody>
</table>

P < 0.05 was considered statistically significant.
information (such as drink more water, and take more rest and vitamin C) to the simulated client. Only five community pharmacy personnel informed the simulated client when the resolution of symptoms might occur. However, none of the pharmacists or pharmacy assistants informed the simulated patient about storage conditions, date of expiry or drug interactions. Perhaps they did not perceive this information as essential. Furthermore, it was surprising to note that six pharmacy staff (one pharmacist and five pharmacy assistants) did not deliver any medication-related information at all, except informing the client about the amount of money to pay for the dispensed medications.

The differences between pharmacists and pharmacy assistants in delivering medication-use-related information to the simulated client were found to be significant in only two respects: indications of the medications and duration of use. It was highly anticipated that pharmacists, as experts on drugs and drug therapy, should be able to adequately inform patients about important information related to the medications given. Most of the pharmacy assistants who work in community pharmacies in Malaysia have not undertaken or successfully completed an accredited course on over-the-counter medicines or managing minor ailments as required for Medicines Counter Assistants in the UK. Therefore, the ability of pharmacists to deliver more information when dispensing should have been highly distinct from pharmacist assistants in this study. Contrary to our expectations, the extent of most of the information delivered by pharmacists and pharmacy assistants was not significantly different.

As indicated before, pharmacists tend to provide little information, particularly when faced with a request to buy a specific medication. This could be a further reason why limited information was delivered, since the simulated client requested to purchase a sedative medication for a common cold. However, the attitude of community pharmacy personnel in assuming that patients have previous experience with a particular medication should be cast off. Preferably, they should provide adequate information to all patients even if a common medication is being dispensed.

Only about 20% of pharmacists and far less than 5% of pharmacy assistants spent between 1 and 5 min in delivering the information about the dispensed medications. Our data have shown that with the short duration of exchange, the extent of the information delivered was limited and the quality of the information obtained over the counter was doubtful.

This pilot study is of utmost importance in determining the adequacy of information given by community pharmacies in Penang, Malaysia, as most of the medication dispensed is in loose packaging. The Ministry of Health of Malaysia intends to educate and to create awareness among the public about the medications that they are dispensed. Hence, this exploratory study could provide the preliminary data on the accessibility of the public to medication-related information in the community healthcare setting. With the findings from this study, we hope that policy-makers will look seriously into this issue that the public may not have sufficient medication-related information delivered to them when they obtain a non-prescription medication in the community setting. Limited information-giving may be a potential risk for medication errors and we wish to highlight this underlying issue for policy-makers in Malaysia.

There are other important implications from these findings. By virtue of their education and training in terms of medication counselling, pharmacists should perform a much better job than pharmacy assistants. They should be able to provide information about the dispensed medication that is more relevant to the patients. Future studies should evaluate the quality of medication information or counselling provided to patients by pharmacy staff, similar to a study conducted in Germany. Additionally, factors associated with the quality of information delivered over the counter are yet to be elucidated.

Limitations

The present study was an exploratory study involving samples from Penang State only due to time and resource constraints. Hence, the results obtained cannot be generalised to the whole population of healthcare providers in Malaysia. A similar study in a larger context should be conducted in the future. Additionally, the mystery-shopping technique does not allow for observing inter- and intra-observer variability. We used only one simulated client to minimise the inter-observer variability and the amount of data collected is small and easy to memorise. As our primary interest was to explore the nature of medication-related information delivered by the community pharmacies personnel, we did not look into the quality of interaction. Unlike studies by Krishnan and Schaefer and Alte et al., data on the sufficiency of information gathering for verification of the self-diagnosed symptoms before the community pharmacy personnel dispensed the common-cold medication were neither collected nor evaluated. The extent of information delivered could not be well determined since only a score of 1 was given even when the pharmacy personnel provided more than one relevant side effect to the simulated patient. However, in the pilot study none of the pharmacy personnel gave more than one drug-related side effect. We did not give a distinctly higher score for any specified information as we perceived all the information as equally important. A negative score was not given when the pharmacy personnel gave the wrong information. This could potentially lead to misinterpretation of the adequacy of the medication information delivered by the community pharmacy personnel.

Lack of validation of the ‘adequacy’ scoring is one of the important limitations of the current study. Besides that, only one visit to each community pharmacy was conducted throughout the study period. The study also did not investigate the influence of demographic factors such as gender or age of the pharmacy personnel on the types and extent of information delivered during the dispensing process. The authors also acknowledge that there is a possibility that the inadequacy in delivering adequate information could be due to the dispensed medications as observed in our study, which was limited to common-cold preparations only. Perhaps pharmacy personnel underestimated the value and did not perceive this information as essential when compared to medications for chronic illnesses, such as antihypertensives or anticoagulants.
Conclusion

Most of the community pharmacy personnel surveyed did not provide adequate information to patients on medication use during the dispensing process. Failure to deliver important information such as the name of medication, as noted in this study, is critical and needs to be addressed seriously. In terms of the types and extent of information related to dispensed medications given to patients at community pharmacies, it was surprising that there were no significant differences between pharmacists and pharmacy assistants. Furthermore, the extent of the information delivered to patients was very limited and the adequacy of the information obtained over the counter was doubtful.

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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References