

Development and review of a team project for undergraduate pharmacy students

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Abstract

Objective: This paper describes a team project designed for 15 Bachelor of Pharmacy students. The project was a coordinated survey of non-prescription medicine customers in Queensland, Australia that aimed to provide both community pharmacy and research experience for the students.

Method: The students received research training and each was stationed in a pharmacy for 5 days during mid-August 2004. The method involved approaching all eligible customers buying non-prescription medicines for a brief interview. Student diaries were maintained daily for critique of the research methods and reflective learning.

Results: A review of the diaries confirmed that learning objectives were met. Students suggested minor improvements to the questionnaire and approaches to enhance the survey response rate. Pharmacy staff were very supportive of the study.

Conclusion: The project diary allowed critique of the methods in anticipation of future research. It is feasible to conduct comprehensive pharmacy-based data collection involving a team of 15 students.

Keywords: *Student, project, research, experience, non-prescription, purchasing behaviour*

Introduction

Pharmacy students require experience in community pharmacy practice before graduating and undertaking pre-registration training. In the School of Pharmacy at The University of Queensland, Australia, this experience is gained through organised periodic “placements” in host sites through all 4 years of the undergraduate curriculum. Two of the experiential placements during the final year of study take place in two four-week blocks (during March and August), and incorporate “quality use of medicines” research projects. Students’ preferences are matched to the available placement sites, or the academic supervisors attempt to locate a suitable placement. The learning objectives of these “quality use of medicines” placements include medicines-related workplace experience, self-education, peer learning, reflection and appreciation of research conduct (McKauge & Coombes, 2005).

This paper describes a placement project that involved a coordinated team of 15 undergraduate students. It further developed methods previously trialled at the University of Otago, New Zealand (Emmerton & Shaw, 2000), and adapted them to the quality use of medicines experiential placements program at The University of Queensland. Emphasis was placed on review of the project methods, with a view to further expansion to a multi-institutional study in the future.

This project was a large-scale in-store survey of community pharmacy customers who purchased non-prescription medicines. Non-prescription medicines are a major component of community pharmacy practice in Australia, where pharmacies are the restricted suppliers of Pharmacy Medicines and Pharmacist Only Medicines (Australian Government Department of Health and Ageing, 2004). Attention to the professional role of pharmacists and pharmacy

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staff in the over-the-counter sale of medicines has resulted from growth in the non-prescription market in recent decades. This growth is attributable to expansion of product ranges, duplication of products and rescheduling of prescription medicines to non-prescription availability (Blenkinsopp & Bradley, 1996; Bond & Hannaford, 2003). Accompanying this has been various initiatives to enhance the quality supply of medicines in pharmacies (The Pharmacy Guild of Australia, 2005) and quality use of medicines in the community (National Prescribing Service Limited, 2005). The pharmaceutical industry has also received attention about the responsible provision and marketing of non-prescription medicines (Mansfield, Lexchin, Vitry, Doecke & Svensson, 2003).

In light of these developments, questions have been raised as to how non-prescription medicines are being purchased and used by the public. Various consumer studies using household market research methods have been reported (Shufeldt, Oates & Vaught, 1998; Cordina, McElnay & Hughes, 1998); these have cost-effectively utilised large samples of pharmacy customers, although the surveys are retrospective and may lack details about specific purchases. In-store monitoring by pharmacy staff has been used to document presentations dealt with in the pharmacy (Seston, Nicolson, Hassell, Cantrill & Noyce, 2001). Although this method also is relatively cost-efficient for the research coordinators, the extra workload required of pharmacy staff during the survey could compromise the documentation. Pharmacy staff have also been involved in the administration of questionnaires to customers for self completion. For example, a study in Scotland (Krska & Kennedy, 1996) involved 56 pharmacists who were asked to distribute questionnaires to 25 non-prescription customers each. Participation by 42% of the pharmacies was reported, with a 34% return rate (202 from 600 questionnaires).

The employment of in-store researchers attempts to relieve pharmacy staff of the burden and potential bias from surveying customers themselves. Such methods have been applied in the Gaza Strip (Beckerleg, Lewando-Hundt, Eddama, Alem, Shawa & Abed, 1999) and in Australia (Benrimoj, Stewart & Robinson, 1988).

The use of students for data collection presents a more economical option, while attempting to fulfil educational and research training objectives. A team of research students was first used to survey non-prescription medicine purchasing behaviour in New Zealand in winter 1999 (Emmerton & Shaw, 2000). Twelve community pharmacies (12 research students) were involved, in which 2597 purchases (69–397 per pharmacy) were recorded. The study was reported to hold potential for further development of the research methods.

Materials and methods

The objectives of this study were to:

1. Further develop methods from the 1999 New Zealand study (Emmerton & Shaw 2000).
2. Report on the medicines purchased, purchasing behaviour and influences on purchases of non-prescription medicines in the study pharmacies.
3. Review the project methods in light of the educational objectives and the study's potential for further application.

This paper focuses on description and review of the project methods as a potential team student project for adoption by other schools of pharmacy.

Improvements to the previous study methods included:

1. Expansion of the research team (from 12 to 15 students).
2. Introduction of a training manual to incorporate the project documentation and ensure consistency in the methods between students.
3. Introduction of a reflective project diary for review of the methods and students' experiences.
4. More comprehensive use of electronic communication for research coordination and communication within the project team.
5. More flexibility in the survey timing, to account for individual pharmacies' business operation.
6. Minor changes to the questionnaire (questions included the medicine purchased, intended use and user, influences on first-time purchases, intention to buy a particular brand, mode of purchase, changes in intended purchases and non-intrusive demographic data; the date, time, reason for non-participation and the staff member providing product-related consultation were also documented).
7. Revision of operational definitions for the study (Figure 1).
8. Incorporation of learning objectives consistent with the quality use of medicines placement program (to ensure medicines-related workplace experience, self-education, reflection, appreciation of research conduct and peer learning).

A 10-step approach to the methodology is outlined below.

Calculation of sample size

Based on the previous study (Emmerton & Shaw, 2000) and pilot data, an estimated 40 medicine sales could be recorded over 7 h (one business day less breaks) in a community pharmacy with average non-prescription turnover. The previous study reported

<p>Non-prescription medicines: All medicinal products available for sale without a prescription in Australia, including Pharmacy Medicines (S2 schedule), Pharmacist Only Medicines (S3 schedule), and unscheduled medicines that contain an active ingredient for a specific purpose, including nutritional supplements, and excluding food items, unmedicated dressings, sunscreens and tissue products.</p> <p>Purchaser: The person who bought the non-prescription medicine, regardless of the intended use and user of that product, at least 16 years of age and conversant in English.</p> <p>Purchase: Monetary transaction to obtain the medicine, excluding supply of non-prescription medicines on prescription.</p> <p>Interaction with a staff member: Product-related conversation, as observed by the student stationed out of obvious earshot for privacy reasons.</p>

Figure 1. Operational definitions.

that students could tolerate surveying for 5 business days. With the available team of 15 students recording 40 sales per day for 5 days, a sample of 3000 purchases was predicted. This exceeded the minimal sample size of 2400 purchases required to detect significant differences ($p < 0.05$) in key variables with 80% power.

Ethical approval

Ethical approval for the study was granted by The University of Queensland Human Research Ethics Committee approximately one month before the planned data collection.

Approach to pharmacies

The 15 students self-selected a pharmacy from metropolitan, regional and rural settings within a 400 km radius of Brisbane, and the distribution of pharmacies was checked to ensure a wide geographical spread. Pharmacies with suspected low non-prescription turnover were excluded in view of the target sample size. The students telephoned the pharmacist-in-charge of their selected pharmacy using a suggested script, after being briefed with information about the funding source, duration of the study, dissemination of the findings, included products, project supervision, previous research and confidentiality issues. All contacted pharmacists agreed to formal follow-up by the research coordinator.

Project preparation

The following documentation was provided to the students:[†]

- sufficient questionnaires for the 5 days of data collection;

- reflective project diary for feedback on methods and experiences;
- training manual for the study;
- time sheets to confirm the survey period and
- travel claim forms.

Confirmation of pharmacies

Each of the nominated pharmacies was mailed an official letter, study information sheet, consent form and sample questionnaire. The consent forms were returned by fax, mail or via the student. One pharmacy withdrew from the study upon receipt of the study information and discussion with the pharmacy owner and another was deemed unsuitable due to a temporary relocation. Both were replaced with nearby pharmacies.

Training of students

In addition to email communication, the project team undertook a 2-hour training session in the study conduct, operational definitions, ethical issues and data entry specific to this study.

Data collection

The survey was conducted during the week of 8–14th August, 2004. Weekends were included to account for pharmacies that were closed on a public holiday on 13th August, and to include a wider spread of possible sales types. The 15 students were stationed for 5 days each in their allocated pharmacy. Data collection took place during the hours 9am–5pm, with 1 h of staggered breaks daily (recorded on the time sheets), totalling 35 h of data collection per pharmacy.

The students were positioned in their pharmacy to observe eligible sales, but, in accordance with ethical

[†]Copies of all materials are available on request to the author.

approval requirements, out of direct earshot to maintain consumer privacy. In pharmacies with multiple serving areas, the student was preferentially positioned near the medicines counter, but remained mobile. Pharmacy staff were requested to direct customers to the student at their convenience; otherwise the student introduced him/herself. A suggested script was provided for consistency of the approach and to check eligibility of the customer. If more than one non-prescription medicine was purchased in a transaction, a separate questionnaire was completed for each and folded together. Supplementary observational data were documented in all possible cases, validated by the staff member. This was the sole source of data in cases of non-response and missed sales. Reasons for non-response were noted.

At the end of each study day, the time sheets, travel expense records and the daily project diary were completed, the questionnaires were numbered and supplies checked. At the end of the 5 days, a pharmacy details form was completed with the assistance of a senior staff member. The pharmacies were promised an individual report from the survey around 4 weeks after the survey.

Data entry

Data were entered by each of the students using a standardised Excel[®] spreadsheet, as soon as practicable following data collection. Medicines and their intended uses were coded using a flexible scheme adapted from the previous study (Emmerton & Shaw, 2000). Demographic details for purchasers of multiple non-prescription medicines were entered into the database once only. Ambiguous data were identified on the spreadsheet for clarification by the coordinator.

Data checking

The coordinator merged the 15 datasets for analysis. Preliminary data screening using SPSS[®] Version 12.0 identified out-of-range codes, missing data and invalid responses. Independent random checking (14h) was also commissioned. All identified errors were corrected against the raw data.

Data analysis

Analysis was performed using descriptive statistics and tests for significant differences in SPSS[®]. Individual reports compared pharmacies' data with the group total; these individual reports were written by the students as an exercise in data presentation and interpretation. The 15 project diaries were also reviewed to critique the study methods; this analysis is reported below.

Results

The pharmacy staff

Nearly all of the staff (particularly the pharmacists) were interested in the survey, supportive of the students' needs, and mentioned looking forward to receiving their results. The vast majority of staff assisted by referring customers to the student after eligible sales, which eased the students' introduction and implied pharmacy endorsement of the survey. However, two students commented that introductions by staff did not happen routinely, another reported variable interest in the survey between staff, and another perceived that staff only became more comfortable (or habitual) in introducing the survey towards the end of the week. On reflection, one student suggested that a few days' work experience at the pharmacy before conducting the survey would foster staff-student relationships.

Staff were generally helpful in validating observational data for missed sales, although, this was not always possible in busy periods.

The respondents

Customers were generally very willing to participate in the survey; it was suggested that perhaps they "felt sorry" for the student. In one pharmacy, a few customers who were in a hurry offered to return later to participate. Customers of 2345 of the 3017 observed purchases (78%, ranging from 54 to 94% per pharmacy) participated in the survey. The vast majority of customers were pleasantly surprised at the brevity of the questionnaire (one describing it as "painless").

There were several queries from customers about how the information would be used. A suggestion was received from one student to publicise the survey findings in newspapers, due to the interest of some customers.

There were only two reports of "rudeness" regarding the survey. However, one student suspected that staff were less likely to refer "difficult" customers to the students, and there were three instances of pharmacists recommending that certain customers not be approached.

Despite being issued suggested scripts for introduction of the survey, students reported some techniques that appeared to encourage response:

- Use of the term "student project" (four students) or "a few (or some quick) questions about your purchase" (three students), as opposed to the term "survey".
- Use of additional descriptors: (a) "this will be quick"; (b) "it won't require personal details"; (c) "this is only related to the product you just bought" and (d) "this excludes prescription items".

- Wearing the University's pharmacy student name badge and/or pharmacy student uniform shirt.

The study methods

Some issues were noted in finding a suitable position to stand in pharmacies that had multiple serving areas; these pharmacies were generally busier, and two students may be more appropriate to cover sales at peak times. Four students reported significant fluctuations in customer traffic, alternating between them being unoccupied and being too busy to interview all potential respondents. Some customers were not prepared to wait if the student was otherwise occupied. Where possible, observational data from the salesperson were recorded in "missed" sales.

The student at one pharmacy noted a "high" proportion of customers not fluent in English (a criterion for exclusion of potential respondents). In this case, English fluency was judged by the salesperson, and those considered insufficiently fluent were not referred to the student.

Four students noted that answering multiple questionnaires for multiple purchases was cumbersome for both the student and the customer, but recognized that increasing the questionnaire length would be off-putting for the majority of respondents.

Staff could benefit from training about which products were included in the survey, according to one student. Another suggestion was to supply an information sheet for pharmacy assistants, to be left in a convenient place. Three reports were noted of staff members' suspicion that the survey was monitoring their performance; they were reassured otherwise.

Flexibility may be needed in the hours of the survey, as two pharmacies were suggested to have a considerable number of after-hours sales that were otherwise missed after 5pm.

The questionnaire

Challenges were reported in the use of several questions:

- In the newly added open-ended question to confirm the degree of influence of staff on the purchase, nine students reported problems in extracting logical answers, in receiving perplexed responses, and in customers looking to the student for an answer. The proportion of missing responses and mis-coding confirmed these issues, and the responses to this question were disregarded.
- The "year of birth" question was reported by six students to be intrusive, although one student experienced no problems with this question. The alternative suggested was offering age brackets.

- Asking the intended use of the product resulted in reports of five customers discontinuing the survey.
- Customers sometimes had difficulty remembering the brand name of previous purchases for that condition (according to two students); another commented that "another product" (as opposed to "brand") could be more effective.

Discussion

This study built on previous research (Emmerton & Shaw, 2000) and tailored it to the learning objectives of the Bachelor of Pharmacy quality use of medicines experiential placements program at The University of Queensland. In a commercial research setting, a team of students could be recruited and trained as data collectors; requisites would be good verbal communication skills, familiarity with medicine proprietary names and accuracy in data entry.

Sample size calculations were based on a predicted 40 eligible medicine sales per pharmacy per "day" (seven hours of data collection), totalling 3000 records. Over the five days of data collection, observed eligible sales averaged 40.2 per day per pharmacy, and 3017 sales were recorded. Analysis of the purchasing behaviour is to be reported elsewhere.

Selection of the pharmacies and the research team may influence the findings. In an attempt to include a geographically diverse sample of pharmacies, logistical issues (travel and survey duration) must also be considered, particularly for a student project. A wider range of survey hours may be more appropriate for extended-hours pharmacies, and trends in customer types and sales at different times of the day may be explored to inform pharmacy services and future research methods.

The survey was well received by both the staff and customers, although, some minor communication-related issues were addressed. The main concern was lack of understanding of the survey by sales staff, due to ineffective staff consultation by the pharmacy manager who had consented to the study. To test the potential influence of the research on consultation rates with customers (an indicator of staff performance), this variable was monitored over the duration of the study period. The incidence of observed consultation with sales was not significantly higher at the start of the study period, as might be expected with staff more conscious than of the student's presence (the "Hawthorne effect") (Rice, 2005).

The methods adopted in this survey were suitable for large-scale data collection. The use of pharmacy students, personal interviews and the collection of partial data by observation were considered beneficial to the "capture" rate, data quality and cost efficiency of the survey.

Recommendations for future research include:

1. More thorough dissemination of information about the study to all pharmacy staff.
2. Provision of two students for larger pharmacies, and extension of the study hours for extended-hours pharmacies.
3. Minor modifications to the questionnaire as relevant for that research setting.

Inclusion of a project diary allowed review of the methods with respect to the learning objectives of the placement scheme. Students gained:

1. Community pharmacy experience in the areas of non-prescription medicines and customer behaviour;
2. Self-education during the data collection, analysis and report writing;
3. Reflective skills in completing the project diary;
4. Appreciation of a range of aspects in research conduct, including ethical issues and data management and
5. Peer learning through participation in a substantial team project.

This process has indicated that it is feasible to conduct a comprehensive pharmacy-based project involving a team of 15 pharmacy students, providing exposure to both pharmacy practice experience and research.

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