

***Recruitment and Retention of Community
Pharmacists in Pharmacy Practice Research***

B Saini, M Brilliant, J Filipovska, L Gelgor,
B Mitchell, G Rose, L Smith

May 2005

Faculty of Pharmacy
University of Sydney
Pharmacy Building A15
Sydney 2006

AUTHOR DETAILS

PRINCIPAL INVESTIGATOR

Dr Bandana Saini
Lecturer in Pharmacy Practice
Faculty of Pharmacy
University of Sydney
bandana@pharm.usyd.edu.au

ASSOCIATE INVESTIGATORS

Dr Martha Brilliant
Project Manager
Faculty of Pharmacy
University of Sydney
marthab@pharm.usyd.edu.au

Dr J Filipovska
Project Manager
Faculty of Pharmacy
University of Sydney
jfilipovska@usyd.edu.au

Dr Linda Gelgor
Research Only Academic
Faculty of Pharmacy
University of Sydney
lindag@pharm.usyd.edu.au

Dr Bernadette Mitchell
Project Manager
Faculty of Pharmacy
University of Sydney
bernadette@pharm.usyd.edu.au

Dr Grenville Rose
Project Manager
Faculty of Pharmacy
University of Sydney
grenville@pharm.usyd.edu.au

Dr Lorraine Smith
Lecturer in Pharmacy Practice
Faculty of Pharmacy
University of Sydney
lsmith@pharm.usyd.edu.au

ACKNOWLEDGEMENTS

The authors would like to express their gratitude to the pharmacists who responded to this survey.

We would also like to acknowledge the assistance provided by Dr Sheridan Henness in conducting the electronic literature search.

This research was funded by the Australian Government Department of Health and Ageing through the Pharmacy Guild of Australia and the Community Pharmacy Research Support Centre as a part of the Third Community Pharmacy Agreement.

EXECUTIVE SUMMARY

AIMS OF THE REPORT

The aims of this study were to examine Australian community pharmacists' attitudes and perceptions regarding community pharmacy-based research, and to clarify the barriers and facilitators to pharmacists' participation in research projects, by a review of the relevant research literature and a survey of a population of Australian pharmacists.

INTRODUCTION

The practice of pharmacy has seen a paradigm shift from product focus to service focus in the last few decades. This new 'extended role' for pharmacists includes such non-traditional tasks as patient education and counselling, monitoring and follow-up of drug non-compliance, referral and screening for risk factors of chronic disease. With the introduction of new roles comes the need to validate their effectiveness. For such research to proceed, the active participation of pharmacy practitioners is required. Although the need for research is clear, research in community pharmacy settings is traditionally difficult due to the reluctance of pharmacists to become involved. A literature review of the subject of pharmacists' perceptions of research was conducted to explore this issue.

The literature search revealed three studies in the UK on pharmacists' attitudes towards research in general, and five articles where pharmacists who had participated in pharmacy based practice research studies were asked their opinions on their involvement in that particular study. The search did not reveal any published Australian research on the topic. Other areas of investigation that may be utilised to gather information on pharmacists' attitudes to research include studies about pharmacists' perceptions of extended services. As research itself is, in effect, a non-traditional task undertaken separately from the traditional dispensing role it is reasonable to assume that those barriers and facilitators influencing participation in pharmacists' extended roles also apply to research.

The literature review revealed the following issues as barriers to pharmacists' participation in research and extended services: lack of time, poor monetary reimbursement, lack of expertise/training, physician resistance, lack of a private counselling area and increased responsibility to patients. In order to facilitate pharmacists' involvement the literature suggests: addressing barriers, utilising personal motivations and attitudes, being aware of the working environment, flexibility and communication.

METHODS

Several electronic databases were systematically searched for articles related to pharmacists' attitudes towards research and involvement in extended services. Several journals were also hand searched.

A survey instrument was developed based on feedback from a previous focus group held with community pharmacists and researchers. The survey (Appendix 2) was composed of three sections covering demographics, previous participation in research, and perceptions about participation in research. In March 2005 the survey was mailed to 267 pharmacists, 45% of whom were known to have previously been involved in pharmacy practice research and 55% of whom had previously been invited to participate in a pharmacy practice research study but had declined.

The survey results were analysed for differences between those pharmacists who had previously participated in research (PRP) and those who had never taken part or who had only participated at the level of filling in surveys (NPRP). Barriers and facilitators to research involvement were also identified by correlating the responses for 27 questions about perceptions of participation in research against the dependent variable "I would like the pharmacy I work in to be actively involved in research".

RESULTS

The response rate to the survey was 40% (n=108). The demographics of the respondents were representative of Australian community pharmacists with the exception that females were slightly overrepresented. The majority of respondents

(70%) indicated that they had taken part in past research projects to a greater extent than filling in surveys. Of those who had taken part in some form of research, 82% indicated that they would be willing to do it again.

When the PRP group and the NPRP group were compared, the PRP group were more likely to agree with the statement "I would like the pharmacy I work in to be actively involved in research" than the NPRP group. In general the PRP group placed more importance on research and were more interested in participating in all aspects of research than the NPRP group. Furthermore, the PRP group agreed more strongly with items related to motivation to participate while the NPRP group agreed more strongly with negative items (potential barriers to participation).

Both PRP and NPRP agreed that if they were involved in a research project, it should have clear and meaningful goals and they would like to be informed of the results of the research.

Lack of time, either real or perceived, is a **key barrier** to participation in research for both participants and non-participants. Restructuring the pharmacy, finding it difficult to interest patients in research, and a lack of trained staff were also identified as barriers to involvement

Three items were identified as **key facilitators** to participation in research for both previous participants and non participants: 1) having an interest in the research topic, 2) feeling that the research will benefit the customer and 3) a belief that community pharmacy research is important. Other facilitators to participation in research were a desire to be involved in developing new ideas for research, advertising a pharmacy's involvement in research and provision of frequent contact with researchers during research projects.

In the opinion of pharmacists, research protocols should be simple and not time consuming, the topic should be relevant and of interest, the research should benefit the patient, there should be remuneration for time spent and sufficient training to conduct the research. A wide range of topics that were of interest to pharmacists were identified.

DISCUSSION

The comprehensive review of the literature revealed that there is little published research on the topic of pharmacists' perceptions of research; however, combining the available literature with literature on pharmacists' extended services has revealed issues which may impact on community pharmacists' participation in research. Our survey of Australian pharmacists has successfully identified key barriers and facilitators to research participation and has revealed important differences between those pharmacists who participate in research and those who do not. A number of models for behavioural change have been outlined as future directions for research.

CONCLUSIONS AND RECOMMENDATIONS

Based on these findings we can make a number of recommendations.

- Create a 'research culture' in community pharmacies through:
 - Developing research networks.
 - Establishing research forums in professional meetings and conferences. Practitioners rather than researchers should conduct the presentations in these forums.
 - Promoting the concept of 'Research-Led Teaching' in Pharmacy Schools at Australian Universities.
 - Identifying and acknowledging practitioners and staff from community pharmacies who have contributed significantly to the research within the profession (eg have an "Australian Pharmacist Researcher of the Year").
 - Conducting research and related activities should be accredited for CE points (not just attending training about the project, but the actual activity itself).
- Emphasising the value of community pharmacy-based research by pharmacy profession representatives to the Government.
- Increasing public awareness at a national level of the role of pharmacists in health care research.
- Addressing workload issues.

- Conducting research about organizational/behavioural issues in community pharmacies.
- Using the participatory action research methodology, so that community pharmacy practitioners are active designers and doers of research.
- Ensuring incremental changes i.e. pharmacists who have not done research before should be offered smaller more 'doable' projects such as clinical audits/drug audits. The confidence and skill developed through these smaller projects will increase their confidence in their ability to undertake larger scale projects.
- Ensuring that project protocols pay attention to barriers and facilitators outlined in this study. For example, having clear and simple protocols that are not time consuming, the goals of which are clear and meaningful to practitioners and offer benefit to the customer. Issues of lack of staff training, practical help for reorganizing the pharmacy, and recruitment of patients should also be addressed (see discussion for more detail).
- Consulting with marketing experts to understand the approach to be used to recruit patients and pharmacists into a research study.
- Addressing pharmacist specified areas of interest for future projects. Pharmacists who responded to the survey listed a range of topics they find interesting (including disease state management and medication management and counselling). As these topics were specifically identified as important to community pharmacists they should be put forward as potential research projects.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	v
1. INTRODUCTION.....	1
1.1 LITERATURE REVIEW.....	2
1.2 BARRIERS	6
Lack of Time.....	6
Monetary reimbursement.....	7
Lack of Expertise/Lack of Training.....	8
Physician Resistance.....	8
Lack of a Private Counselling Space.....	9
Increased Responsibility Towards Patients.....	9
1.3 FACILITATORS	9
Lessening Barriers.....	9
Personal Motivation and Attitudes.....	11
Working Environment.....	12
Maintaining interest in the extended role.....	14
1.4 AIMS OF THE PROJECT.....	15
2. METHODS.....	16
2.1 LITERATURE REVIEW.....	16
2.2 SURVEY INSTRUMENT.....	16
Analysis of: Demographics and Previous Participation in Research.....	17
Analysis of: Perceptions about Participation in Research.....	17
3. RESULTS.....	20
3.1 DEMOGRAPHICS.....	20
3.2 PREVIOUS INVOLVEMENT IN RESEARCH.....	23
3.3 PERCEPTIONS ABOUT PARTICIPATION IN RESEARCH.....	25
Overall Trends.....	25
Comparing Item Means of Previous Participants (PRP) to Non Participants (NPRP).....	26
Factors that influence desire to participate in research – Bivariate Correlation.....	29
Factors that influence desire to participate in research – Partial Least	

Squares Regression.....	31
3.4 RESPONSES TO OPEN-ENDED QUESTIONS.....	34
Items Listed by Pharmacists as Affecting their Desire to Participate in Research	34
Important Areas for Future Pharmacy Research as Suggested by Pharmacists.....	35
Effect of research on expertise, knowledge and professionalism.....	37
3.5 KEY BARRIERS AND FACILITATORS.....	39
3.6 SUMMARY OF KEY FINDINGS	40
4. DISCUSSION	42
4.1 DEMOGRAPHICS.....	42
4.2 WILLINGNESS TO PARTICIPATE IN RESEARCH.....	43
4.3 PHARMACISTS' PERCEPTIONS OF RESEARCH PARTICIPATION.....	44
Barriers to Participation.....	45
Time	45
Other Barriers.....	46
Facilitating Participation.....	48
Importance of Community Pharmacy Research.....	48
An Interest in the Research Topic.....	48
Benefit to the Customer.....	49
Other Facilitators.....	49
Other Considerations	50
4.4 THE FUTURE OF PHARMACY PRACTICE RESEARCH.....	52
Suggestions for Future Directions of Research.....	53
Example 1: Continuous Quality Improvement.....	54
Example 2: Pharmacists Implementation of Pharmaceutical Care (PIPC) Model.....	55
Example 3: Stages of Change Model.....	57
Example 4: Krathwohl's Taxonomy of Learning	58
4.5 CONCLUSIONS.....	60
5. RECOMMENDATIONS	62
1) Organisational and policy level recommendations.....	62
2) Recommendations for individual researchers or research teams	64

6. REFERENCE LIST.....	65
-------------------------------	-----------

List of Figures

Figure 1: Age distribution of the respondents	20
Figure 2: Range of years in practice reported by respondents.....	21
Figure 3: Types of positions respondents worked in.....	22
Figure 4: Pharmacy settings reported by respondents.....	22
Figure 5: Number of prescriptions dispensed per week by respondents.....	23
Figure 6: Results of the PLS.....	33
Figure 7: The PIPC model	56

List of Tables

Table 1: Types of research respondents had been involved in.....	24
Table 2: Institutions/organizations conducting the research	24
Table 3: Analysis of variance comparing previous research participants (PRP) with non-participants (NPRP).....	28
Table 4: Bivariate analysis results.....	30
Table 5: Top of mind factors that would motivate pharmacist to participate in research.....	35
Table 6: Rest of the factors that would motivate pharmacists to participate in research.....	36
Table 7: Issues that need further research in respondents' opinion.....	37
Table 8: Opinions on the extent to which participating in research adds to the pharmacist's expertise/knowledge/professionalism.....	38

List of Appendices

Appendix 1: Search terms and strategy for electronic literature search.....	71
Appendix 2: Survey Instrument.....	73
Appendix 3: Invitation Letter to Pharmacists.....	81
Appendix 4: Participant Information and Consent Sheets	82

1. INTRODUCTION

The practice of pharmacy has seen a paradigm shift from product focus to service focus in the last few decades ¹. Since the 1960's and the takeover by the pharmaceutical industry of pharmacy's role as the main compounder of medicines, and the introduction of the concept of pharmaceutical care in the 1990's ², the focus of pharmacy practice has shifted away from the more traditional pharmacy role of dispensing medication to one promoting the safe, effective and rational use of medicines among the public. Thus the focus is on the pharmaceutical needs of the patient rather than the preparation of medicines ³.

Pharmaceutical care involves "pharmacists taking responsibility, in conjunction with physicians and patients, for the outcomes of drug treatment and not simply for the accurate dispensing of medications" ⁴. This new 'extended role' for pharmacists also includes such non-traditional tasks as patient education and counselling, monitoring and follow-up of drug non-compliance, referral and screening for risk factors of chronic disease ⁵⁻¹⁰. With the introduction of new roles comes the need to validate them through research into their impact. Indeed much of the pharmacy practice research to date, worldwide, centres on the justification, protection and development of pharmacy roles and services ^{11,12}. This is opportunity for further expansion of pharmacist roles as the aging population in developed countries and increases in lifestyle related diseases (eg type 2 diabetes and obesity) ¹³⁻¹⁵ are creating increased demand and pressure on the health care system. Pharmacists are ideally placed to play a role in services such as disease state management, health promotion and extended screening programs, to help relieve the burden on the health care system ¹⁶. Research into existing and new pharmacy-based services is essential to establish the impact of such services on patient outcomes and provide evidence of their feasibility. For such research to proceed, the active participation of pharmacy practitioners is required.

Although the need for research is clear, research into pharmacy practice, particularly in a community setting, is traditionally difficult due to the reluctance of community pharmacists to become involved. A survey of pharmacists' attitudes

towards pharmacy practice research in Scotland found that only 32% of respondents were willing to participate in research ¹⁷. A survey of pharmacy practice research in England found a higher rate of interest in participation (48%), but only one third of respondents indicated that they had a personal interest in practice research and only 6% of respondents were actually involved in research ¹⁸. Another English survey found a similar result, 48% of respondents agreed that they would like to participate in research, but 66% indicated that daily activities prevented them from doing so ¹⁹. The response rates to these surveys ranged from 35% to 60%. Such response rates may indicate there is an even lower level of interest in research amongst pharmacists in general than is reflected in these results and therefore the results may not be applicable to the profession as a whole. There are few published reports on the success rate of recruiting pharmacists into specific research projects, an exception being Pendergast et al ⁴ who achieved a 24% pharmacist participation rate in a US study of drug related problems in the elderly. Anecdotally, researchers report increasing difficulty in recruiting pharmacists to conduct research studies.

The reasons for pharmacists' reluctance to participate in research are not entirely clear as there is surprisingly little literature addressing pharmacists' attitudes and perceptions of research. Most research to date, involving pharmacists participation in research, has focussed on the results of the study itself, and it is only relatively recently that a few studies have begun to emerge that focus on the attitudes of pharmacists towards research participation.

1.1 LITERATURE REVIEW

A literature search on the topic of pharmacists attitudes towards research participation revealed three studies in the UK on pharmacists attitudes towards research in general ^{4,18}, and five articles where pharmacists who had participated in pharmacy based practice research studies were asked their opinions on their involvement in that particular study ^{4,20-24}. The search did not reveal any published Australian research on the topic.

Ellerby et al in 1993 ¹⁷ assessed the level of interest in pharmacy practice research among 124 community pharmacists in the Grampian Health Board, Scotland, by means of two questionnaires. The first assessed the feeling and interest of community pharmacists towards the concept of pharmacy practice generally and the research areas of most interest to the pharmacists. The second was sent to those who responded to the first and assessed the level of commitment to a specific pharmacy research project. The response rates were 45% to the first survey and 77% to the second.

Liddell in 1996 ¹⁸ measured community pharmacists' attitudes to involvement in practice research using a questionnaire sent to 734 registered pharmacists within the Yorkshire Regional Health Authority, England. Pharmacists' were questioned about their opinions on the importance of practice research, their current and potential commitment to practice research, training needs and awareness of available research support. The response rate was 35%.

Rosenbloom et al in 2000 ¹⁹ surveyed 651 pharmacists in the East London and Essex area of England, regarding their perceptions of pharmacy practice research and barriers preventing their participation. The response rate to the survey was 60%.

Pendergast et al in 1995 ⁴ examined how pharmacists who agreed to participate in a demonstration trial in Florida, USA, differed from those who declined to participate. The trial involved engaging in a process to identify and resolve drug-related problems in elderly patients. One hundred and two pharmacists who agreed to participate and 316 who declined were sent a questionnaire, which assessed their attitudinal, demographic and employment characteristics. The response rate was 86% for participants and 62% for non-participants. The responses were analysed to determine predictors of participation in the research project.

The opinions of 39 pharmacists in Scotland and Wales regarding their previous involvement in a drug use evaluation study were surveyed by Krska et al in 1998 ²⁰. The drug use study had involved administering two questionnaires to customers regarding their dyspepsia symptoms. The pharmacists were surveyed on their

demographic details, staff motivation, opinions on customers' willingness to participate, effects of incentives, time required of staff and study duration. The response rate to the survey was 82%.

Huyghebaert et al in 1999 ^{21,22} interviewed nine pharmacists who had been involved in the Pharmaceutical Care Research and Education Project (PREP), a three-year trial of pharmaceutical care in Alberta, Canada. The pharmacists were asked about their perceptions of pharmaceutical care, its implementation and the problems and barriers faced during implementation.

Simpson et al in 2001 ²³ surveyed 87 community pharmacists' regarding their opinions of their recent participation in the Study of Cardiovascular Risk Intervention by Pharmacists (SCRIP) in Alberta and Saskatchewan, Canada. SCRIP had involved a program of community pharmacist intervention in cholesterol risk management in patients at high risk of cardiovascular disease. The questionnaire addressed motivating factors to participate, barriers to participation, communication tools used by researchers and design issues for future studies. The response rate to the survey was 67%.

Pharmacists' perceptions of the factors that contributed to the success of the Asheville Project were studied by Garrett and Martin in 2003 ²⁴. The Asheville project is an ongoing program of support for patients with diabetes in North Carolina, USA, in which pharmacists coach patients on how to self-manage their diabetes. Twenty-one patients and four pharmacists participated in a series of focus groups. The pharmacist focus group explored the effectiveness, strengths, and weaknesses of the program; the motivating factors for participation; key skills and knowledge needed by patients to be successful; and issues that had to be addressed in helping patients manage their diabetes.

Other areas of investigation that may be utilised to gather information on pharmacists' attitudes to research include studies into pharmacists' perceptions of extended services. Research itself is, in effect, a non-traditional task undertaken separately from the traditional dispensing role and therefore it is reasonable to assume that those barriers and facilitators influencing participation in pharmacists'

extended roles also apply to research. Therefore research into pharmacists' perceptions and attitudes towards extended roles may indicate perceptions and attitudes towards pharmacy practice research.

Such research includes studies of pharmacists' attitudes towards extended roles in general. For example, Hansen and Ranelli ²⁵ examined the relationship between pharmacists' willingness to assume further professional responsibilities and their attitudes towards volunteerism and level of interest in their jobs in Florida (USA); Mottram et al ¹⁰ analysed the perceptions of a group of Liverpool (UK) community pharmacists as to what constitutes the extended role and to what extent this role had been adopted in their own practice; Amsler et al ²⁶ held focus groups examining the beliefs of Indiana (USA) pharmacists who worked in chain pharmacies towards pharmaceutical care, the pharmacists' role in health care and obstacles to providing pharmaceutical care; and in Australia, Berbatis et al ²⁷ surveyed pharmacists' provision of extended services and the barriers and facilitators to such services as part of a larger survey of Australian pharmacy characteristics (The National Pharmacy Database Project).

Other researchers have investigated pharmacists attitudes towards specific extended services, including, the influence of barriers and facilitators on the provision of pharmaceutical care in rural communities in West Virginia (USA) ²⁸; pharmacists' preparedness to adopt proposed new standards of assessing consumers' over-the-counter product selection in Canada ²⁹; Quebec (Canada) pharmacists' interest in expanding their role in cardiovascular disease prevention ³⁰; pharmacists' perceptions of providing information on medication management for depression in Birmingham (UK) ³¹; the influence of time pressure and time stress on pharmacists' medication counselling for patients with HIV infection in North Carolina (USA) ³²; and the impact of demographics, professional activities and job satisfaction on incorporating vaccinations into pharmacists' practice in Texas (USA) ³³.

Other relevant information can also be gleaned from reports on pharmacists working conditions ³⁴, recommendations and observations from researchers ³⁵, and pharmacists' perceptions of training programs ³⁶.

When this literature encompassing both research and the extended role is examined, several themes emerge as barriers and facilitators influencing participation.

1.2 BARRIERS

Lack of Time

A lack of time, either real or perceived, is often the most significant factor that influences pharmacist participation in additional tasks ^{10,22,26,30,32}. Ellerby et al¹⁷ found that 68% of respondents to a Scottish survey on pharmacy practice were unwilling to take an active part in a pharmacy practice research project and the majority of these (75.6%) gave lack of time as the main reason. Pharmacists in Yorkshire, England also indicated that time was the most significant issue when considering whether or not they would participate in a research project. Sixty-five percent of those who were interested in research gave lack of time as the main reason why they were not actively involved ¹⁸. Seventy-two percent of pharmacists responding to a survey in the East London and Essex area of England indicated that they would get involved in research if they had more time; 66% felt that their daily activities in the pharmacy prevented them from being involved ¹⁹.

A survey of Canadian pharmacists who had participated in the SCRIP study ²³ revealed that time was considered the greatest barrier to participation and recruitment of patients; with two-thirds of respondents either agreeing or strongly agreeing that time devoted to other duties at work diminished the time available to participate in the trial. Of pharmacists that had participated in a UK drug evaluation study ²⁰, only 28% felt that they had had enough time to discuss the study with all eligible customers. Pendergast et al ⁴ found a correlation between pharmacists' perception that time was a barrier to patient counselling and their subsequent participation in a study of drug related problems in the elderly in Florida. Furthermore, after pharmacists had agreed to participate in the study the drop out rate was higher in those assigned to the treatment group (where intervention was required) than those assigned to the control group where no intervention was required and demand on pharmacists' time was less.

Ninety percent of the respondents to the Australian National Pharmacy Database Project survey indicated that lack of time was a barrier to provision of enhanced pharmacy services ²⁷.

Related to lack of time, a lack of support by employers, technicians and other staff members can also be a barrier to implementing an extended role in pharmacies ^{23,26,30,33}. Reports of pharmacists working 12 to 14 hour days without adequate time for full meal or bathroom breaks because their pharmacy is understaffed ³⁴, explains how pharmacists can feel that they have not enough time in their working day to complete their existing workload, let alone any additional tasks imposed on them by the duties of their extended role ²².

Monetary reimbursement

Cost is another significant barrier to performing additional tasks. Fifty-seven percent of respondents to Liddell's ¹⁸ Yorkshire survey, who were interested in research, gave lack of funds as one of the reasons why they were not actively involved. Rosenbloom et al's ¹⁹ UK survey found that 66% of respondents agreed with the statement "I would not participate in research without adequate payment". Seventy-seven percent of respondents to a UK survey of pharmacists' attitudes towards the extended role cited finance as a constraint ¹⁰ and 63% of Australian pharmacists indicated "no extra remuneration" as a barrier to provision of enhanced pharmacy services ²⁷.

Many employers, particularly in the US, evaluate their staff based on the number of prescriptions they fill a day ²⁸. A survey of community pharmacists in Canada regarding their perception of pharmaceutical care, showed that most pharmacists viewed the additional tasks associated with pharmaceutical care as secondary to their practice, because they believed that dispensing was the work they were getting paid to do ²².

Pharmacists that participated in the SCRIP study were asked about reimbursement, and several respondents felt that they should be reimbursed for cognitive services provided as part of the study ²³. In the same study, one respondent commented that

while they themselves did not view reimbursement as necessary, other pharmacists within their organisation not participating in the study held the view that the extra services provided as part of the study should not be carried out if reimbursement was not forthcoming.

However, Krska et al ²⁰ found no agreement amongst pharmacists who had participated in a drug use evaluation study on whether monetary incentives improved recruitment rates of patients into the study.

Lack of Expertise/Lack of Training

Lack of expertise and lack of training have also been highlighted as potential barriers to the extended role. Liddell's ¹⁸ survey of Yorkshire pharmacists found that of the respondents who were interested in research, 61% indicated lack of experience and 54% indicated lack of training as barriers to actually undertaking research. Scottish pharmacists also indicated that lack of expertise was a barrier, both to submitting a bid for a pharmacy research grant (19.6% of respondents) and to participating in a research project (9% of respondents) ¹⁷. A survey of Quebec pharmacists by O'Loughlin et al ³⁰ found 42% of pharmacists gave lack of skills as a barrier to integrating prevention services into their practice. Neuhauser et al ³³ found that pharmacists involved in vaccination programs cited training as a very important factor that allowed incorporation of this service into their practice.

Lack of expertise and lack of training can result in a lack of confidence for many pharmacists ²¹, which in turn may translate into a reluctance to interact with other health professionals. However, Simpson et al ²³ found that pharmacists participating in the SCRIP study did not perceive lack of confidence to be a barrier to participation. Whether or not lack of training is perceived as a problem undoubtedly relates to the particular service in question.

Physician Resistance

Pharmacists' perceptions of physicians' possible response to their extended role and their involvement in practice research can be a barrier to involvement in a service ^{22,26}. This perception may be based on a negative experience with a specific doctor many years before ²². Mottram et al ¹⁰ found 29% of UK pharmacists

surveyed on their attitudes to extended roles listed conflict with the role of other health professionals as a constraint to adopting extended services. While 23% of pharmacists in the SCRIP study agreed that poor physician attitudes were a barrier to recruitment of patients ²³ and Amsler et al ²⁶ reported that pharmacists often have difficulty contacting the physician directly.

Lack of a Private Counselling Space

Patients and pharmacists identified a lack of a private counselling area as a barrier to pharmaceutical care in the Amsler study ²⁶. Badger et al ³¹ also reported lack of private space as a barrier to counselling and 31% of Quebec pharmacists surveyed by O'Loughlin et al ³⁰ listed lack of counselling space as a barrier to implementing prevention practices. Mottram et al ¹⁰ reported lack of space in general as a constraint to implementing extended services.

Increased Responsibility Towards Patients

Some research projects and many extended services, such as pharmaceutical care, require the pharmacist to become more directly involved with the patient and this may lead to a feeling of increased responsibility to the patient and a sense of obligation to help. Some pharmacists find it difficult to cope with this responsibility ²².

1.3 FACILITATORS

Lessening Barriers

Clearly the most obvious way to facilitate participation in research is to lessen the barriers preventing participation. Since the main barriers are lack of time, financial concerns, and lack of expertise and training, any strategy that seeks to alleviate these can potentially increase participation; several studies have put forth suggestions on how to do this.

Lack of time can be dealt with in several ways. Simpson et al ²³ suggested simplifying the data collection forms and improving data transmission (i.e. using computerised forms and emailing rather than faxing) to reduce the time required. Pharmacists participating in a study focussing on pharmaceutical care who indicated that they did not have enough time in their working day to complete their existing

workload ²², were taught to delegate some of their tasks, such as answering the phone, medication reordering, staff scheduling or ringing up sales, to other pharmacy staff and technicians, which in turn allowed them to concentrate more fully on providing extended care to their patients. Simpson et al ²³ suggest that participants should consider coordinating staff and resources to facilitate patient care and implementation of study procedures.

Simpson et al ²³ also recommend that academic researchers be sensitive to time constraints and responsibilities of pharmacists when they develop study procedures and have reasonable expectations of the numbers of patients that can be recruited. This may help to address the attitude held by 89% of respondents to the Rosenbloom survey ¹⁹ that “academic researchers need to ‘get real’ and understand what actually happens in community pharmacy”. Amsler et al ²⁶ held focus groups with pharmacists and patients prior to designing their pharmaceutical care program.

When asked about reimbursement, 96% of participants in the SCRIP study ²³ recommended a fee for patient recruitment, 52% of those cited from \$50 to \$75 as a reasonable amount; the authors of this study go on to suggest that for future studies, if reimbursement is not an option, restricting the recruitment target to 10 to 20 patients is a reasonable alternative. Of course each study will be unique in the amount of time and therefore reimbursement required per patient. Other studies structured reimbursement for pharmacists into their grants ¹⁷, or set up a system of gift vouchers as rewards for reaching recruitment goals ^{20,35}.

Most research studies that involve the recruitment of patients have training as an inherent part of the study ^{23,24,35,37,38}. Training has been shown to increase the knowledge of pharmacists ^{22,24} and as a consequence their confidence level. This facilitates a better pharmacist/patient interaction as well as a more comfortable pharmacist/physician relationship. Pharmacists feel more at ease discussing their recommendations with the physician when they are confident in their knowledge of the subject. Venkataraman et al ²⁸ found that rural pharmacists’ confidence significantly influenced their provision of pharmaceutical care services. Training has also been shown to increase job satisfaction through more effective interaction with patients ³⁶. Training in recruitment of patients into a study is also worthwhile as

approaching patients for recruitment into a study, and obtaining informed consent may be a new experience for many pharmacists and may act as a barrier to recruitment ²³.

Pharmacists participating in the SCRIP study commented that rather than train only one or two pharmacists per pharmacy, all pharmacists should be trained, not only to lessen the workload for each pharmacist, but also to encourage full participation ²³, however Weinberger et al³⁵ tried this approach unsuccessfully and instead recommend training one enthusiastic pharmacist at each pharmacy.

Personal Motivation and Attitudes

A great majority of pharmacists seem to agree that practice research is important to the profession of pharmacy ¹⁸⁻²⁰ and are very positive about their involvement in trials or research projects, often reporting a sense of professional growth and satisfaction ²⁴. Forty-seven percent of participants in a drug use evaluation study felt their involvement had positively affected their motivation to be involved in future projects, while 44% said it had no effect and only 3% reported a negative effect ²⁰.

Pharmacists that take on additional tasks and/or participate in research projects cite several reasons for doing so. Commonly reported motivations include, an interest in the topic ²⁰ a desire to improve the profession, to expand the pharmacist's role, to provide enhanced service to patients, to learn more about disease management ²³, and to improve skills or use different skills than usual ²⁴. Others indicate a sense of duty ³⁹ or a concern for public health ³³ as the motivation.

Given this, targeting pharmacists based on either their interests or the public health issues that they consider important is a way to facilitate participation. An instance where this method was used successfully is reported in ¹⁷. In an initial survey, Scottish pharmacists were asked to rank 12 projects in order of perceived priority. Using the results of this survey, a research project that blended the preferred topics into a single project was proposed in a second survey. Thirty-seven percent of the responding pharmacists agreed to participate, allowing the joint project to be proposed and to receive funding.

Pharmacists' attitudes are important factors influencing their participation in research and willingness to take on extended roles. Hansen and Ranelli ²⁵ found an association between pharmacists' attitudes toward social responsibility and their acceptance of the expanded role. Those pharmacists who had a higher sense of social responsibility were also more likely to have a favourable attitude towards implementing extended services in their practice. Pharmacists' positive attitude toward patient care has also been shown to increase their likelihood to implement extended services ²⁸ and Pendergast et al⁴ found that pharmacists who were more oriented toward, and positive about, patient counselling were more likely to participate in a research study.

Studies have shown that implementing a new service is most successful if pharmacists see the additional tasks as part of their job ³⁵. If a pharmacist fails to see the value of a particular task, or if they are discouraged as a result of a previous attempt, then it may be difficult to persuade them to participate in the same or similar tasks again ²⁹.

High job satisfaction also appears to be a factor that facilitates participation in extended roles, with several studies correlating contentment with current employment with a willingness to take on extra roles ^{4,30}.

Working Environment

Pendergast et al⁴ found no effect of gender, education, or number of hours worked per week on participation rates in their research study. However position in the pharmacy appears to have an influence on provision of additional services, as O'Loughlin et al³⁰ found that pharmacists who were owners reported more disease prevention activities than employee pharmacists. Size and type of pharmacy also has an influence. Pharmacists who work in small pharmacies are more likely to offer extended services than those working in larger pharmacies ³⁰ and pharmacists working in independent or small chain pharmacies had higher rates of participation in a research project than those in large chain pharmacies ⁴. It has been hypothesised that this is because owners may have more control over their daily routine and can therefore choose to spend time on non-traditional activities. Small

pharmacies may also foster ongoing and personal relationships with clients, which would encourage these kinds of activities. Alternatively, provision of extra services may be seen to offer a competitive advantage against other larger pharmacies³⁰.

The situation may not be clear cut however, as Rosenbloom et al¹⁹ found that although pharmacists working in independent pharmacies perceived that they had more opportunities for participating in research than did those working in large chains, they were less willing to create the time necessary for research.

Furthermore, in Australia, the National Pharmacy Database Project found that larger pharmacies, urban pharmacies and those in a banner group were more likely to provide enhanced pharmacy services than smaller pharmacies, rural pharmacies or those not in a banner group respectively²⁷. It is worth noting that Australia at present does not have large chains and therefore this is not a factor in pharmacists' participation in research for the time being at least.

The existence of extended services in a pharmacy may influence pharmacists' attitudes towards taking on new roles. A study of community pharmacists in the UK found that those pharmacists already offering some additional services in their pharmacies, such as pregnancy testing, cholesterol testing and blood pressure monitoring, were more likely to agree with the statement "The future for community pharmacy depends upon the adoption of the extended role by the whole profession"

¹⁰.

If an employer does not see the value of a service such as pharmaceutical care, then it is an inconvenience, diverting staff pharmacists away from other things and hence difficult to justify in terms of the time it takes away from traditional tasks such as dispensing^{21,22}. Several pharmacists participating in the SCRIP study raised lack of support from other pharmacy staff as a barrier to participating in the study²³. This lack of support made it difficult to complete expected duties with time left to conduct the study. Staffing and managerial support were also cited as major influences on recruitment of patients. The authors suggest obtaining a written commitment for training and participation from most of the pharmacy staff, including the manager and/or owner, before a site is accepted for participation in a study. However, Weinberger et al³⁵ trained all pharmacists within a large pharmacy chain and found

that pharmacists' interest and therefore implementation of the research program was not uniform. Rather than training all staff they recommend training one enthusiastic pharmacist at each pharmacy and having that person be responsible for implementation of the service.

Maintaining interest in the extended role

While recruiting pharmacists is the first hurdle researchers must face when implementing a study or a new service, maintaining interest is also a significant problem. Krska et al²⁰ found an overall decrease in motivation from the beginning to the end of their drug use evaluation study with 44% of the surveyed pharmacists reporting that the program was too long.

The most important facilitator of maintaining interest in the extended role for pharmacists is flexibility and an ability to devise specific solutions to problems that arise in any given study. For example, a project aiming at increasing community pharmacists' level of patient care found that some pharmacists were not compliant with some aspects of the study³⁵. The first attempt at a solution was to provide pharmacists with data comparing their performance to that of their colleagues in other pharmacies, but this was not successful. The second attempt involved alerting pharmacists' direct supervisors of the problem; this was also not successful. The final strategy was to offer financial incentives to meet predefined levels of compliance, and this last solution improved the situation. Researchers involved in the SCRIP study held recruitment challenges, with rewards given to the group that recruited the most patients, and individual recruitment milestones were celebrated with recognition at investigator meetings and lapel pins²³. Respondents indicated that they enjoyed having their achievements recognised and considered it a major factor in their continuing participation.

Communication is another important factor in maintaining interest. The SCRIP study utilised monthly newsletters, pharmacist investigator meetings and site visits by area monitors, all of which were well received by the participants and were rated as helpful or extremely helpful in maintaining interest²³. Other studies place emphasis on regular contact with research facilitators and regular reporting on the progress of

the research, so that participants can see the value of their contribution, and in this way ownership of the project can be fostered ²⁰.

1.4 AIMS OF THE PROJECT

The profession of pharmacy is in a state of flux, due to the introduction of the concept of pharmaceutical care and the 'extended role'. Research within the pharmacy is required to validate many of these non-traditional tasks; however recruiting pharmacists into research projects can be difficult. Literature on pharmacist attitudes towards research is scarce, with the majority of studies focussing on pharmacists in North America and the United Kingdom and no published research addressing the situation in Australia. Furthermore, the bulk of the literature only presents the perspectives of research active pharmacists, and these cannot be widely applied to all pharmacists. The issues and challenges facing practicing pharmacists must be clarified so that academic researchers can address these issues in their project design and develop and enhance facilitators to overcome them. The goal is to have a clear and mutual understanding between academics and practicing pharmacists so that a high standard of research can continue. This study aims to survey a population of Australian pharmacists to determine their attitudes towards research, and to clarify the barriers and facilitators to research participation. Both research active and non-active pharmacists will be targeted and their attitudes and perceived barrier/facilitators compared. The Australian situation will be compared and contrasted with that overseas. Strategies will be suggested at the individual, organisational and policy levels that may encourage community pharmacists to participate in practice based research projects.

2. METHODS

This report was commissioned by the Pharmacy Guild of Australia through the Community Pharmacy Research Support Centre and comprises a literature review and a survey of pharmacists. Ethical approval of this project was received from the Human Research Ethics Committee, Sydney University.

2.1 LITERATURE REVIEW

A search was conducted of the following electronic databases from 1995 to 2005: Biological Abstracts, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Database of Systematic Reviews (CDSR), American College of Physicians (ACP) Journal Club, Database of Abstracts of Reviews of Effects (DARE), Cochrane Central Register of Controlled Trials (CCTR), Ovid MEDLINE(R), and CAB Abstracts. The search terms and strategy used are presented in Appendix 1. This search revealed 303 potential articles. The authors then discussed the list of articles and 30 relevant articles were selected for review, 19 of these articles proved to be relevant and are discussed in the literature review.

The International Journal of Pharmacy Practice, The Journal of Social and Administrative Pharmacy, The Australian Journal of Pharmacy and The Australian Pharmacist were hand searched. This search revealed an additional article directly relevant to the topic of pharmacists' attitudes towards research.

2.2 SURVEY INSTRUMENT

A survey was developed based on the experiences of the authors and issues raised during focus groups held with research active pharmacists and pharmacy practice researchers by the Community Pharmacy Research Support Centre (Community Pharmacy Research Support Centre 2004).

The survey (Appendix 2) was composed of three sections covering demographics, previous participation in research, and perceptions about participation in research. The perception of participation in research section included 28 statements where respondents were asked to indicate their level of agreement on a 5 point Likert scale (1= strongly disagree to 5 = strongly agree). The first statement in the series was "I

would like the pharmacy I work in to be actively involved in research” and this statement was used as the measure of desire to participate in research. The perceptions section also included three open-ended questions on the most important areas of investigation, facilitators to future participation and the effect of research on pharmacists’ expertise, knowledge and professionalism.

The survey was mailed to a total of 267 pharmacists in NSW and ACT, 119 of whom were known to have previously participated in pharmacy practice research projects with the University of Sydney Faculty of Pharmacy and 148 of whom had previously been invited to participate in a pharmacy practice research project but had declined. Surveys were posted with a subject information sheet and consent form, along with a reply paid envelope. Pharmacists that completed and returned the questionnaire received one QCPP CQI point.

The returned questionnaires were decoded and the data entered into an SPSS database.

Analysis of: Demographics and Previous Participation in Research

Statistical analysis of demographics and previous participation in research was conducted using SPSS v11.5. Frequency analysis and descriptive statistics were conducted on each of the variables. The respondents were grouped into two categories, those who indicated that they had never been involved in research or had only been involved by filling out surveys (non-previous research participants (NPRP)) and those who had previously been involved in research (previous research participants (PRP)). The demographics of the two groups were compared using a chi-square test for non-continuous variables and the Mann Whitney U test for continuous variables. The level of significance was set at $p < 0.05$.

Analysis of: Perceptions about Participation in Research

Statistical analyses of perceptions of participation in research were performed using The Unscrambler v8, Camo Inc. The mean responses to all questions were calculated and an Analysis of Variance (ANOVA) was conducted on each of the questions to check for differences between the two groups of respondents (PRP vs NPRP). The ANOVA indicates differing perceptions between those who have taken

part in research and those who have not, even though members of both groups have previously been invited to take part in research. Those who have been invited to participate but have not participated might be expected, for example, to have less interest in taking part in research. The level of significance was set at $p < 0.05$.

While the ANOVA tests for differences between the two groups we also wanted to determine which questions were related to pharmacists' desire to participate in research. In order to determine this, the correlation between each question and the dependent variable (i.e. the first question in the questionnaire "I would like the pharmacy I work in to be actively involved in research") was measured. The first question was the dependent variable for this analysis as it is a measure of pharmacists' desire to take part in research. Including this as the dependent variable in a regression analysis of all variables in the study yields a measure of the strength of relationship between the questions and the desire to take part in research. This question was placed at the start of the questionnaire so as not to bias responses. Had this question been presented at the end or middle of the questionnaire the responses to it might have been biased, as the respondent's attention would have been already drawn to the particular issues of interest to the investigators. The bivariate correlations were performed separately for the NPRP and the PRP group.

Partial least Squares Regression (PLS) ⁴⁰ was then performed on the data set (both PRP and NPRP combined) using the first question "I would like the pharmacy I work in to be actively involved in research" as the dependent variable. PLS allows all questions to be compared against the dependent variable simultaneously and is a more robust test of which questions are strongly related to the pharmacists' desire to participate in research. "Leave one out" cross validation was performed to remove individuals whose responses had unduly large influence on the results ⁴¹⁻⁴³. This involves leaving out one subject's data then calculating a model, after which that subject's data is re-entered into the analysis and another subject's data is left out and so on until each subject's data has been left out once. The models thus calculated are compared to the model calculated from the complete data set. If there is significant variation a warning is issued. As a result of this cross validation two subjects' data were removed from the reported analysis. Additionally, an uncertainty analysis was calculated on the models ^{43,44}. In this analysis predictor

variables whose Beta weights do not cross zero in the above iterative process are regarded as being significant. That is, they contribute to the model under every cross validation model. These are the most robust of the predictors and are, therefore, the only predictors included in the final model. Data points that have unusually large influence on the outcome are excluded from the analysis prior to this uncertainty analysis.

The responses to the open-ended question “The following 5 items are the things that would be most important in making me want to take part in future research projects” were grouped into “top of mind” (i.e. the first item listed) and “bottom of mind” (i.e. the remaining items listed) and a frequency analysis was then conducted for each category for all respondents. The responses were also separated into PRP and NPRP and frequency analysis were conducted.

The responses to the open ended question “In your opinion, what are the three most important areas that should be investigated by pharmacists and pharmacy practice researchers. Please list in order of importance”, were grouped into general categories and a frequency analysis of each category was conducted.

3. RESULTS

Survey kits (pharmacist consent form, information sheet, reply paid envelope, and survey) were mailed out during the first week of March, 2005. One hundred and eight completed surveys were received by the research team by April 30, 2005, giving a response rate of 40%.

3.1 DEMOGRAPHICS

Figures 1 and 2 outline the age distribution and years in pharmacy practice respectively, as reported by the respondents. The median age was between 36-45 years and the mode was 46-55 years (27.1%, n=107). The median number of years in practice reported by the respondents was between 21-25 years and the mode was 16-20 years (18.7, n=107).

Figure 1: Age distribution of the respondents

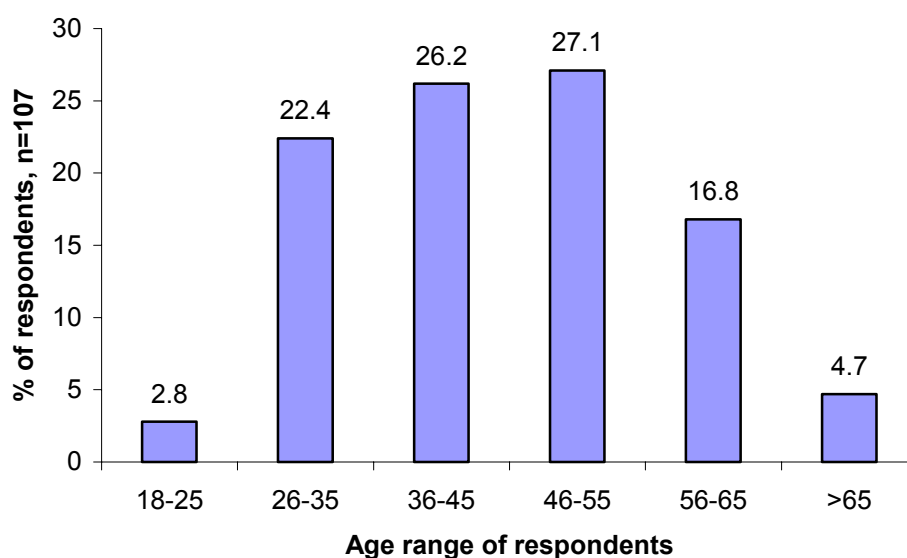
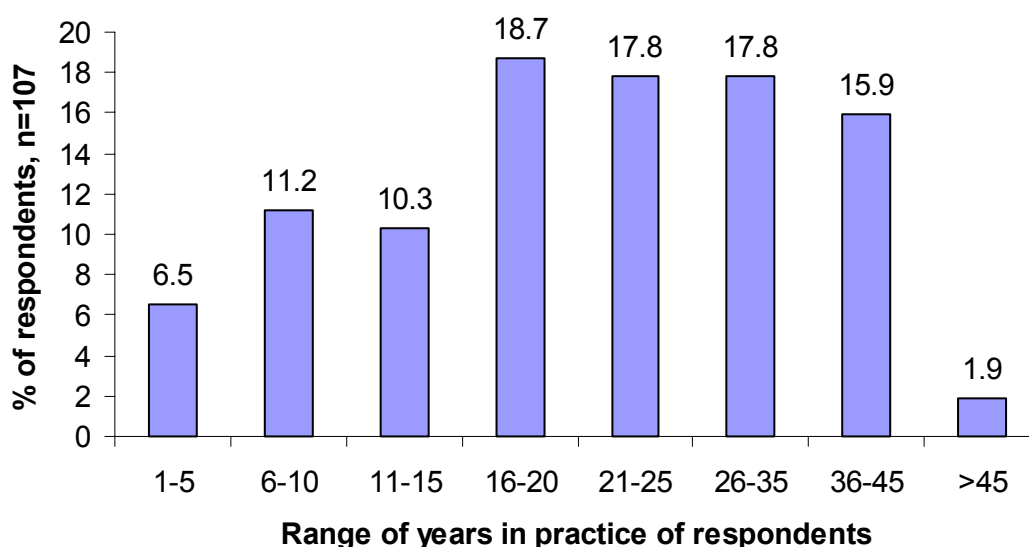


Figure 2: Range of years in practice reported by respondents



The majority of the respondents (96.3%, n=107) reported that their main job was working as a community pharmacist. Hospital pharmacy was the main job for 2.8% of respondents and a further 0.9% were retired or had 'other' roles (other implies not a community pharmacist, hospital/clinical pharmacist, industrial pharmacist, pharmacist in an administrative position, or a teacher/educator). The majority of respondents (89.7%) indicated that they did not have a second job. Of the 10.3% who reported having a second job, 3.7% worked as a community pharmacist, 2.8% worked as a teacher/educator, and 3.7% reported having 'other' roles in their second job. Overall, 51.9% of the 108 respondents were male.

Pharmacists were asked what their position in their main and second job was. Sole proprietorship was the most common position, followed by partnership and then salaried employment as a pharmacist (Figure 3).

Of the 108 respondents, 27.8% indicated that they worked in a rural pharmacy and 72.2% worked in a metropolitan pharmacy. Figure 4 shows the frequency distribution of the pharmacy settings. The great majority (81.5%) of respondents worked in stand alone pharmacies or pharmacies located in a shopping strip.

Figure 3: Types of positions respondents worked in

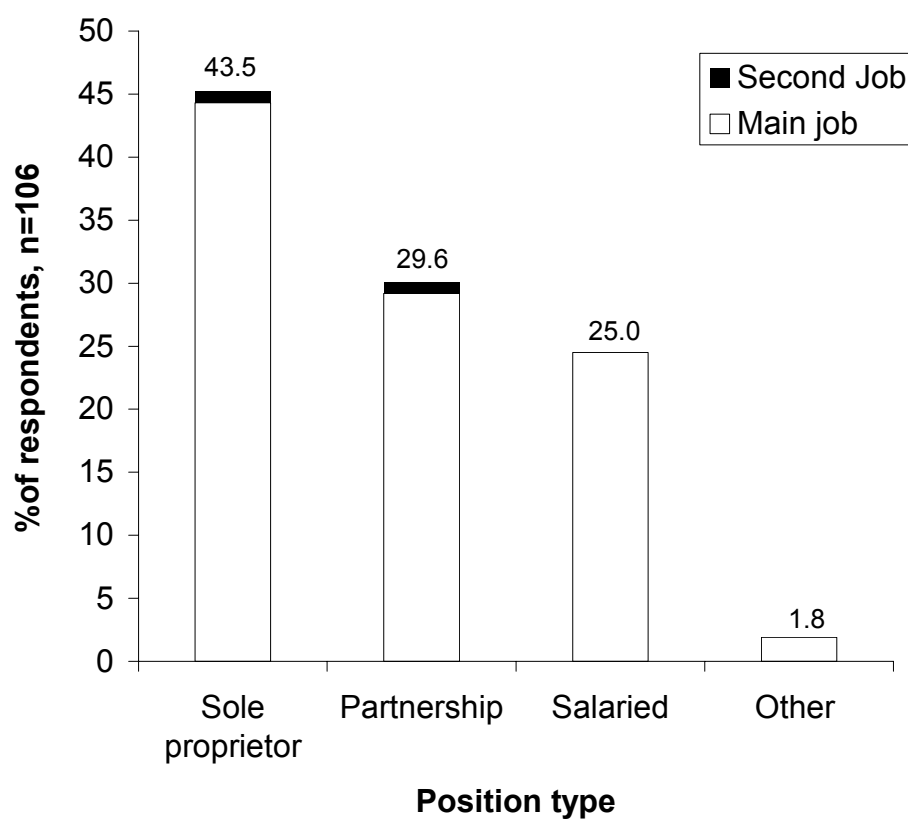


Figure 4: Pharmacy settings reported by respondents

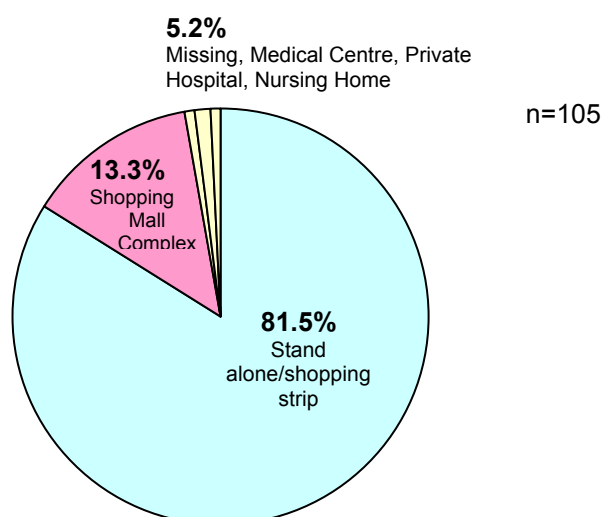
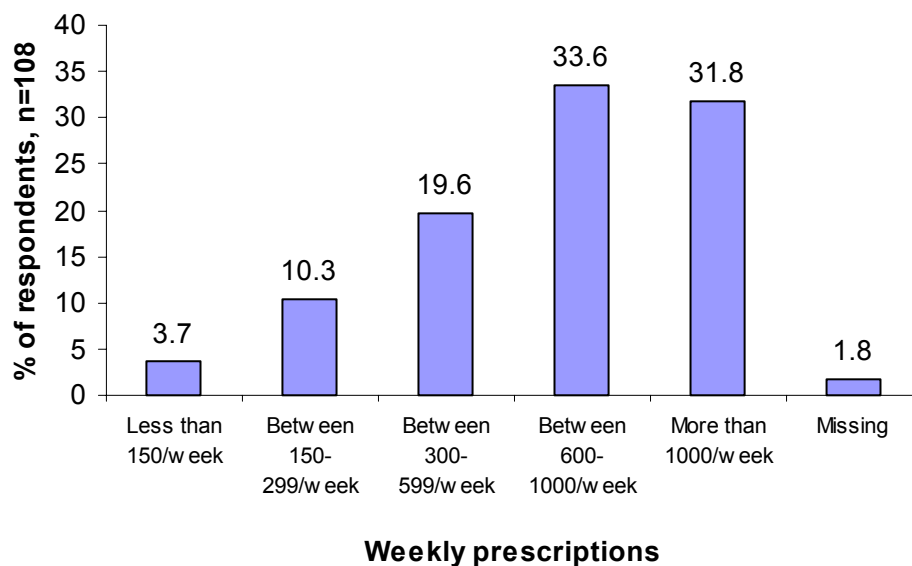


Figure 5: Number of prescriptions dispensed per week by respondents



Pharmacists reported working for a mean of 40.8 ± 11.7 (n=106) hours per week and there was a mean of 1.6 ± 0.7 (n=106) pharmacists working per pharmacy. Figure 5 illustrates the number of prescriptions dispensed through the participating pharmacies per week, with the median number between 600-1000 prescriptions per week.

3.2 PREVIOUS INVOLVEMENT IN RESEARCH

Of the 108 respondents 77.8% reported that they had previously been involved in some type of research. The most common type of research involvement was completion of surveys (59.8%) (Table 1) and the institution conducting the research was most often a university (70.4%) (Table 2).

Respondents who reported that they had previously been involved in research were asked, "Would you like to be involved in similar research projects in the future?". Eighty-two percent (n=84) indicated that they would like to be involved in similar future research, 15% indicated that they would not like to be involved, 1% did not reply and 1% were not sure. Those who

Table 1: Types of research respondents had been involved in

Type of research	% of respondents involved, n=84
Surveys	59.8
Recruitment of patients and delivery of interventions as part of a study	44.8
Recruitment of patients for a study	27.1
Education activities	25.2
Health promotion activities	14.0
Drug use audits	13.0
Other	5.6

Table 2: Institutions/organizations conducting the research that respondents had been involved in

Institutions/organisations responsible for research	% of respondents involved, n=84
Universities	70.4
Pharmacy Guild of Australia	33.3
Pharmaceutical Society of Australia	16.6
Pharmaceutical industry	15.7
National Prescribing Service	11.1
Hospitals	9.3
Local Area Health Service	8.3
Other /Not Sure	7.4
State Health Department	1.8

indicated that they would not like to participate in future research projects were asked to provide the reason why. The responses included: lack of time (8.4%), retiring from practice (1.9%), finding patient recruitment a problem (1.8%), lack of profit/remuneration (1.8%), perception that research did not impact patients' health care (0.9%), and working part time only (0.9%).

In order to look for differences and similarities between those pharmacists that are research active and those who are not, the respondents to the survey were placed into two categories depending on their previous level of involvement in research. Respondents who had never taken part in research or who had only participated at the level of filling out surveys were placed in the no previous research participation category (**NPRP**) (29.6% of respondents), while those who indicated that they had been involved in research at a more intensive level than filling out surveys were placed in the previous research participation category (**PRP**) (70.4% of respondents).

There were no differences between the two groups in age distribution, gender, years in practice, type of position, pharmacy setting or number of prescriptions dispensed per week.

3.3 PERCEPTIONS ABOUT PARTICIPATION IN RESEARCH

Table 3 presents the means scores for each of the 28 survey items as well as the p values for an ANOVA comparing the means of the two groups.

Overall Trends

The 5 items on the survey that were agreed with most strongly (on a scale of 1 to 5, 1= strongly disagree, 5 = strongly agree) by the PRP group were:

- Item 20: "If I was involved in research, it would be important to me that there was a clear and meaningful goal to the research" (mean = 4.5)
- Item 22: "If I was involved in research it would be important to me that researchers informed me of the results of the study once they became available" (mean = 4.4)

- Item 5: “I would like to be actively involved in research that I thought would directly benefit my customers” (mean = 4.3)
- Item 2: “I would be involved in research if I had a special interest in the specific topic” (mean = 4.3)
- Item 13: “I think it is important for research to occur within the community pharmacy setting” (mean = 4.1)

The 5 items on the survey that were agreed with most strongly by the NPRP group were:

- Item 25: “I feel time constraints restrict me from participating in research projects” (mean = 4.3)
- Item 22: “If I was involved in research it would be important to me that researchers informed me of the results of the study once they became available” (mean = 4.2)
- Item 20: “If I was involved in research, it would be important to me that there was a clear and meaningful goal to the research” (mean = 4.2)
- Item 11: “Pharmacists should be paid for participating in research projects” (mean = 4.0)
- Item 21: “If I was involved in research it would be important to me that I felt the results were directly applicable to my pharmacy” (mean = 3.9)

It is interesting to note that two items are common to both groups: item 22, being informed of the results of the study and item 20, having clear and meaningful goals to the research.

Comparing Item Means of Previous Participants (PRP) to Non Participants (NPRP)

The ANOVA revealed that the PRP and NPRP groups responded differently to several items on the questionnaire (Table 3).

Pharmacists in the PRP group were significantly more interested in being involved in research (item 1), in fact 76% agreed or strongly agreed with the statement “I would like the pharmacy I work in to be involved in research” while only 34% of the NPRP

group agree or strongly agreed. The PRP group also felt more strongly that it is important for research to occur in the community pharmacy (item 13), were more interested in being involved in developing new ideas for research projects (item 3) and were more likely to agree that being involved in research would give them a chance to do something out of the ordinary (item 6) than the NPRP group. They were also more likely to agree that they would be involved if they had an interest in the research topic (item 2), or if the research directly benefited their customers (item 5) than the NPRP group. Furthermore the PRP group agreed more strongly than the NPRP group that CPE/CQI points were important rewards for involvement (item 9), and that advertising their involvement in research would help their business (item 8). They also rated the importance of clear and meaningful goals (item 20), having frequent contact with researchers during research projects (item 15) and being informing about results of research (item 22) more highly than did the NPRP group.

On the other hand, the NPRP group believed more strongly than the PRP group that time constraints restricted them from participating in research (item 25), that a lack of trained staff prevented them from conducting research, (item 26), and that it is difficult to interest patients in participating in research (item 24). They were also more likely to agree that many projects seem difficult because they require pharmacy restructuring (item 23), and that they required extensive training prior to undertaking research (item 28), than were the PRP group. Although neither group was particularly interested in having a locum consultant conduct research for them, the NPRP group was more interested than the PRP group (item 17).

In summary, the PRP group placed more importance on research and were more interested in participating in all aspects of research than the NPRP group. The PRP group agreed more strongly with items related to motivation to participate while the NPRP group agreed more strongly with negative items.

Table 3: Analysis of variance comparing previous research participants (PRP) with non-participants (NPRP)

Questionnaire Items <i>1=Strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4= Agree, 5 =Strongly agree</i>	NPRP n=32	PRP n=76	p value
1. I would like the pharmacy I work in to be actively involved in research	3.1	3.9	<0.01
2. I would be involved in research if I had a special interest in the specific topic	3.8	4.3	0.01
3. I would like to be actively involved in developing new ideas for future research	3.1	3.6	0.01
4. I would like to be actively involved in developing methods and materials for the day to day running of research	3.0	3.0	0.88
5. I would like to be actively involved in research that I thought would benefit my customers	3.8	4.3	<0.01
6. Being actively involved in research would give me a chance to do something out of the ordinary in my pharmacy	3.4	4.0	<0.01
7. Being actively involved in research would improve community perception of the pharmacy	3.7	3.9	0.20
8. Advertising my involvement in research with Uni would help my business	3.2	3.7	<0.01
9. CPE/CQI points for involvement is important to me	3.5	4.0	0.01
10. I believe it should generate income for the pharmacy	3.6	3.6	0.71
11. Pharmacists should be paid for participating	4.0	3.9	0.45
12. Patients participating should receive incentives other than possible improvement in health	3.6	3.6	0.86
13. It is important for research to occur within community pharmacy settings	3.6	4.1	<0.01
14. I am quite confident of being able to conduct research in my day to day practice	3.2	3.6	0.06
15. During research I would like frequent contact with researchers	3.4	3.9	0.01
16. During research I would like to contact more experienced pharmacist for monitoring	3.5	3.5	0.72
17. I would like a locum consultant pharmacist to conduct the research	3.0	2.4	<0.01
18. I would like extensive training in how to organise the research activity	3.8	3.9	0.44
19. During research I would like to be involved with other professionals	3.8	3.8	0.81
20. It would be important that there was a clear and meaningful goal to the research	4.2	4.5	0.01
21. It would be important that I felt the results were directly applicable to my pharmacy	3.9	3.9	0.63
22. It would be important that researchers informed me of the results of the study	4.2	4.4	0.03
23. Most projects seem difficult because they require pharmacy restructuring	3.5	2.7	<0.01
24. I feel that it is difficult to interest patients in research participation	3.5	3.0	0.03
25. I feel time constraints restrict me from participating	4.3	3.8	0.03
26. I feel that the lack of trained staff is a reason that conducting research is difficult in my pharmacy	3.4	2.9	0.01
27. I feel that other health care professionals do not value pharmacy based research	3.3	3.1	0.38
28. I feel I need extensive training before undertaking research	3.6	3.1	0.02

NPRP = no previous research participation, PRP= previous research participation.

Factors that influence desire to participate in research – Bivariate Correlation

Although the mean responses to each item can give us an indication of those factors that the respondents feel most strongly about and the ANOVA gives us an indication of important differences between the participants and non-participants they do not necessarily reveal which factors directly influence the desire to participate in research. In order to clarify these factors, two correlation analyses were conducted. The first was a series of bivariate correlations and is described in this section. The second was a partial least squares analysis, the results of which are presented in the following section.

For the bivariate correlations, each of the items in the questionnaire was correlated against the dependent variable (or primary statement) “***I would like the pharmacy I work in to be actively involved in research***”. The results of these bivariate correlations are presented in Table 4. The items are ranked in descending order by the strength of their correlation for the NPRP group. The strengths of the correlations were greater in the NPRP group than the PRP group, however the relationships were in roughly the same order in both groups. That is, the order of the correlations from weakest to strongest and from positive to negative was largely the same for both groups. Therefore, those factors that impede and facilitate participation are, by and large, the same for both groups of pharmacists.

Factors that are strongly positively correlated with “I would like the pharmacy I work in to be actively involved in research”, are **facilitators** of participation in research. These are:

NPRP and PRP

- Item 3: Desiring to be involved in developing new ideas for research.
- Item 14: Having confidence in ability to conduct research.
- Item 5: Perceiving that the research will benefit customers.
- Item 13: Belief that it is important for research to occur in community pharmacy.
- Item 4: Wanting to be involved in developing material and methods for research.

Table 4: Bivariate analysis results

Questionnaire Items	Pearson Correlation*	
	NPRP n=32	PRP n=76
3. I would like to be actively involved in developing new ideas for future research	0.76	0.34
14. I am quite confident of being able to conduct research in my day to day practice	0.71	0.36
5. I would like to be actively involved in research that I thought would benefit my customers	0.70	0.37
8. Advertising my involvement in research with Uni would help my business	0.68	0.02
13. It is important for research to occur within community pharmacy settings	0.68	0.37
4. I would like to be actively involved in developing methods and materials for the day to day running of research	0.68	0.34
2. I would be involved in research if I had a special interest in the specific topic	0.62	0.30
7. Being actively involved in research would improve community perception of the pharmacy	0.58	0.33
9. CPE/CQI points for involvement is important to me	0.45	-0.04
6. Being actively involved in research that would give chance to do something out of the ordinary in my pharmacy	0.41	0.38
19. During research I would like to be involved with other professionals	0.39	0.05
15. During research I would like frequent contact with researchers	0.36	0.14
16. During research I would like to contact more experienced pharmacist for monitoring	0.28	-0.03
20. It would be important that there was a clear and meaningful goal to the research	0.19	-0.11
10. I believe it should generate income for the pharmacy	0.17	-0.23
21. It would be important that I felt the results were directly applicable to my pharmacy	0.15	-0.12
23. Most projects seem difficult because they need restructuring	0.14	-0.29
22. It would be important that researchers informed me of the results of the study	0.13	0.04
11. Pharmacists should be paid for participating	0.12	-0.07
18. I would like extensive training in how to organise the research activity	0.11	0.13
12. Patients participating should receive incentives other than possible improvement in health	-0.10	-0.17
28. I feel I need extensive training before undertaking research	-0.13	-0.12
26. I feels that a lack of trained staff is a reason that conducting research is difficult in my pharmacy	-0.20	-0.38
27. I feel that other health care professionals do not value pharmacy based research	-0.26	-0.08
24. I feel that it is difficult to interest patients in research participation	-0.30	-0.35
17. I would like a locum consultant pharmacist to conduct the research	-0.37	-0.24
25. I feel time constraints restrict me from participating	-0.60	-0.44

*Figures in bold indicate a significant correlation of each item with the question "I would like the pharmacy I work in to be involved in research"

- Item 2: Having a special interest in the research topic.
- Item 7: Feeling that involvement in research improves the communities' perception of pharmacy.
- Item 6: Feeling that being actively involved in research would give a chance to do something out of the ordinary.

NPRP only

- Item 8: Belief that advertising the pharmacy's involvement in research would help business.
- Item 9: Placing importance on having CQI/CE points for research activities.
- Item 19: Desire to be involved with other professionals during research.
- Item 15: Desiring to have frequent contact with researchers during research.

Factors that are strongly negatively (inversely) correlated with "I would like the pharmacy I work in to be actively involved in research", are **barriers** to participation in research. These are:

NPRP and PRP

- Item 25: Feeling that time constraints restrict participation.
- Item 17: Wanting a locum pharmacist to conduct the research.

PRP only

- Item 10: Belief that research should generate income for the pharmacy.
- Item 23: Perceiving that research projects require restructuring.
- Item 26: Feeling that a lack of trained staff is a barrier to conducting research in their pharmacy.
- Item 24: Belief that it is difficult to interest patients in participating in research.

Factors that influence desire to participate in research – Partial Least Squares Regression

To further clarify which items in the questionnaire are the best predictors of desire to participate in research a partial least squares regression (PLS) was conducted. In the PLS the statement, "I would like the pharmacy I work to be involved in research" was analysed against each of the other items in the questionnaire. Figure 6 shows the results of the PLS. The graph represents a principal component map of the regression solution, with 51% of the variance accounted for on the first principal

component, with no other component being significant. These results indicate clustering of pharmacist' perceptions of the factors that impede or facilitate their participation in pharmacy practice research. The factors on the left hand side of the graph are those that are barriers to participation and the ones on the right are those that facilitate participation.

The barriers identified by the PLS are:

- Item 24: Belief that it is difficult to interest patients in participating in research.
- Item 25: Feeling that time constraints restrict participation.
- Item 26: Feeling that a lack of trained staff is a barrier to conducting research in their pharmacy.
- Item 23: Perceiving that research projects require pharmacy restructuring.
- Item 17: Wanting a locum pharmacist to conduct the research.

The facilitators identified by the PLS are:

- Item 2: Having a special interest in the research topic.
- Item 3: Desiring to be involved in developing new ideas for research.
- Item 5: Perceiving that the research will benefit customers.
- Item 4: Wanting to be involved in developing material and methods for research.
- Item 8: Belief that advertising the pharmacy's involvement in research would help business.
- Item 13: Belief that it is important for research to occur in community pharmacy.
- Item 6: Perceiving that being involved in research gives pharmacists a chance to do something out of the ordinary.
- Item 15: Desiring to have frequent contact with researchers during research.
- Item 14: Having confidence in ability to conduct research.
- Item 7: Feeling that involvement in research improves the communities' perception of pharmacy.

Figure 6: Results of the PLS

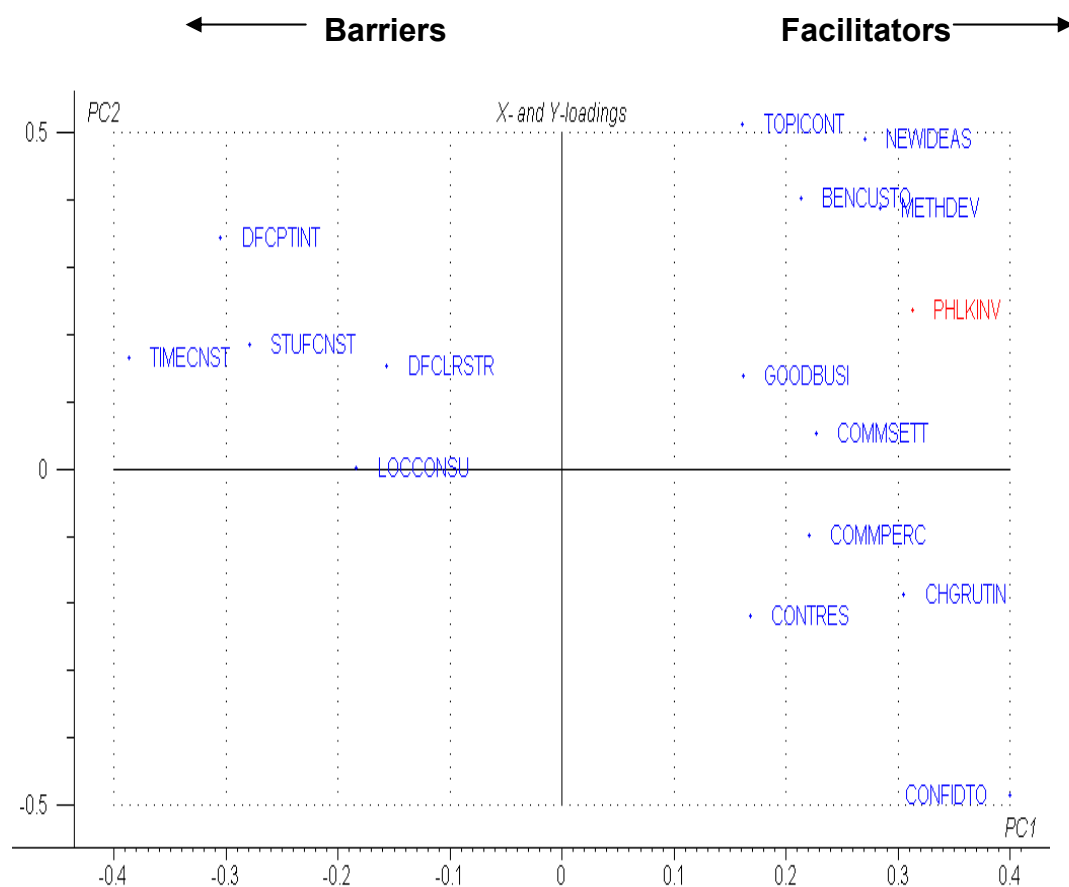


Figure legend:

Items related to barriers for participation in research

dfcptint	Item 24: I feels it is difficult to interest patients in research participation
timecnst	Item 25: I feels that time constraints restrict me from participating in research projects
stufcnst	Item 26: I feels that a lack of trained staff is a reason that conducting research is difficult in my pharmacy
dfclrstr	Item 23: Most projects seem difficult because they need pharmacy restructuring
locconsu	Item 17: If I were involved in research I would like a locum consultant pharmacist to conduct the research

Items related to facilitators for participation in research

topicont	Item 2: I would be involved in research if I had a special interest in the specific topic being investigated
newideas	Item 3: I would like to be actively involved in developing new ideas for future research
bencusto	Item 5: I would like to be actively involved in research that I thought would benefit my customers
methdev	Item 4: I would like to be actively involved in developing methods and materials for research projects
goodbusi	item 8: Advertising my involvement in research with Uni would help my business
commsett	Item 13: I think it is important for research to occur within community pharmacy settings
chgrutin	Item 6: Being actively involved in research would give me a chance to do something out of the ordinary
contres	Item 15: If I were involved in research I would like frequent contact with researchers
confidto	Item 14: I am quite confident of being able to conduct research in my day to day practice
commperc	Item 7: Being actively involved in research would improve community perceptions of the pharmacy
phlknv	THE DEPENDENT VARIABLE IE "WOULD LIKE THE PHARMACY I WORK IN TO BE ACTIVELY INVOLVED IN RESEARCH"

It is interesting to note that all of the items identified by the PLS as barriers and facilitators were also identified as such by the bivariate analysis. However, the PLS provides a much more rigorous test of the relationship between the items and the desire to participate in research.

Items that did not appear to be relevant in any of the analyses were:

- Item 12: Patients participating in research should receive incentives other than possible improvements in health.
- Item 16: During research I would like to contact a more experienced pharmacist for mentoring.
- Item 18: I would like extensive training in how to organise the research activity.
- Item 27: I feel that other health care professionals do not value pharmacy based research.

Overall the respondents agreed with these statements (with the exception of Item 27) but there were no differences between the two groups and none of these items were correlated with the desire to participate in research.

3.4 RESPONSES TO OPEN-ENDED QUESTIONS

Items Listed by Pharmacists as Affecting their Desire to Participate in Research

Pharmacists were also asked to list five items that would be most important in making them want to participate in research in the future. The results are shown in Table 5 as “top of mind” where the first response listed is taken as the most significant and tabulated across all respondents. The remaining responses are combined and reported separately in Table 6.

The five most frequently mentioned top of mind items were, that the research be of a simple format and not time consuming, that the topic be relevant to the

Table 5: Top of mind factors that would motivate pharmacist to participate in research

Top of mind factors that would make respondents willing to participate in research	% of respondents n= 108
1. Research is time efficient and simple	22.9
2. Relevant topic	21.9
3. Benefits to patient health	10.5
4. Pharmacist remuneration	10.5
5. Improving pharmacy perception in the community	8.6
6. Professional benefit: Educational enhancement, recognition, CQI points	8.6
7. Training adequate simple	2.9
8. Potential for income increase	2.9
9. Patient remuneration	1.0
10. Interaction with other professionals	1.0
11. Research with objectivity/independence from interest groups	1.0
Missing	8.6

pharmacist, that the research be beneficial to the patients' health, that pharmacists receive remuneration, and that it improves the communities' perception of pharmacy (Table 5).

The five most frequently mentioned remaining responses were similar to the top of mind responses however two additional items were frequently mentioned, that the research provide educational enhancement and that adequate training be provided (Table 6).

Important Areas for Future Pharmacy Research as Suggested by Pharmacists

Pharmacists were also asked to list three main issues (in order of importance) that in their opinion need to be a focus of future pharmacy practice research. The responses demonstrated a strong interest in a variety of research subjects. Table 7 represents a compiled list of issues mentioned by our respondents.

Table 6: Rest of the factors that would motivate pharmacists to participate in research

Remaining factors that would make respondents willing to participate in research	% of respondents n= 108
1. Research is time efficient and simple	34.7
2. Pharmacist remuneration	32.7
3. Relevant topic	25.7
4. Professional benefit: educational enhancement	24.8
5. Training adequate, simple	21.8
6. Benefits to patient health	16.8
7. Improving pharmacy perception	15.8
8. Clearly defined goals	14.9
9. Potential for income increase	13.9
10. Assistance from others involved	13.9
11. Interaction with other professionals	11.9
12. Follow up with results	9.9
13. Recognition of effort and time	8.9
14. Patient remuneration	5
15. Relevant institution	5
16. Patient awareness and co-operation	4
17. Improvement of my practice	4
18. Sense of breaking new grounds in field	3
19. Complementary medicines and equipment	2
Missing	42.6

The most frequently mentioned area was the evaluation of the delivery of specialized health services and disease management. This includes diabetes, asthma and allergies, aged care, cardiovascular diseases, depression/mental health and pain management.

Research on medication management and counselling was also frequently listed. This includes medication compliance, prudent use of CMI, OTC and even natural remedies. Interestingly, the third group of most frequently mentioned subjects for

future research were issues connected to pharmacy management and education. It appears that the new extended roles in pharmacy practice put a lot of pressure on the day-to-day practice management and raise the need for continuing education and its evaluation.

Some pharmacists mentioned health promotion issues such as smoking, obesity and immunization. A few pharmacists mentioned customer issues and economic issues. About 9% of pharmacists did not specify any area as interesting for pharmacy practice research.

Table 7: Issues that need further research in respondents' opinion

Top Issues	% of pharmacists, n = 108
1. Evaluation of the Delivery of Specialised Health Services (Disease State Management)	30.6
2. Medication Management and Counselling (HMR/QUM)	29.6
3. Pharmacy Practice- Management and Education	13
4. Health Promotion and Lifestyle Issues that Affect Health	9.3
5. Customer Issues	6.5
6. Economic Issues	1.8
7. Not Specified	9.3

Effect of research on expertise, knowledge and professionalism

Pharmacists were also asked about their opinion as to what extent they believe research increases their expertise, knowledge and professionalism. Their responses are summarized in Table 8. Most of them (52%), stated that research increases knowledge and broadens expertise due to the training related to the research topic (interestingly this was stated by a few pharmacists that had never previously been involved in research). Twenty eight percent also mentioned that research enhances the perception of professionalism of the pharmacy.

Improvement of counselling skills and increased professional confidence related to better health outcomes in patients were also mentioned by a number of pharmacists. Establishing professional connections with relevant institutions and colleagues also appears to be an important part of the enhancement of the professionalism of the pharmacy practice profession. Three percent of the pharmacists that responded to this opened ended question in our study felt that participation in research is a way of giving back or contributing to the profession.

Table 8: Opinions on the extent to which participating in research adds to the pharmacist's expertise/knowledge/professionalism

Summarized Opinions	% of pharmacists, n = 82
Increased knowledge and broadening of expertise through training related to the research topic	52
Enhances public perception of professionalism through involvement in research projects	28
Improved counselling skills and strategies for management of patients	19
Positive health outcomes from the research are very satisfying and contribute to professional confidence	14
Provides community pharmacy with links to institutions such as the university and research bodies otherwise unavailable	6
Participation in research is a way of contributing to the profession	3
Meeting of colleagues at training sessions	3

3.5 KEY BARRIERS AND FACILITATORS

Several items were relevant in all of the analyses, which is a good indication that these are key factors in determining participation in research.

Three items that elicited strong agreement from the PRP group (significantly more so than the NPRP group) (Table 3) were also identified by both the bivariate correlation (Table 4) and the PLS regression (Figure 6) as facilitators to participation in research. These items are:

- Item 2: “I would be involved in research if I had a special interest in the research topic”,
- Item 5: “I would like to be actively involved in research that I thought would directly benefit my customers”, and
- Item 13: “I think it is important for pharmacy practice research to occur within community pharmacy settings”,

The topic of the research and benefits to customers were also top of mind responses given by pharmacists as factors that would make them want to participate in future research (Table 5). Given this, it is likely that these items are key facilitators to participation in research.

Item 25: “I feel that time constraints restrict me from participating in research projects”, was strongly agreed with by the NPRP group and this agreement was significantly higher than that of the PRP group. This item was also identified as a barrier by both the bivariate analysis and the PLS regression. Time was also the most frequent top of mind response given by pharmacists as a factor influencing their participating in future research (Table 5). Lack of time is clearly a key barrier to participation in research.

3.6 SUMMARY OF KEY FINDINGS

- Amongst those pharmacists who had previously participated in a research project, 82% indicated that they would like to be involved in similar future research.
- Both previous participants and non-participants agree that if they were involved in a research project, it should have clear and meaningful goals and they would like to be informed of the results of the research.
- Previous research participants are more likely to be willing to participate in future research.
- The PRP group placed more importance on research and were more interested in participating in all aspects of research than the NPRP group. Furthermore, the PRP group agreed more strongly with items related to motivation to participate while the NPRP group agreed more strongly with negative items (potential barriers to participation).
- Lack of time, either real or perceived, is a **key barrier** to participation in research for both participants and non-participants.
- Restructuring the pharmacy, finding it difficult to interest patients in research, and a lack of trained staff are barriers to involvement for previous research participants.
- Three items were identified as **key facilitators** to participation in research for both previous participants and non participants:
 - having an interest in the research topic
 - feeling that the research will benefit the customer
 - belief that community pharmacy research is important
- Other important facilitators to participation in research for both previous participants and non participants are a desire to be involved in developing

new ideas for research, advertising a pharmacy's involvement in research and providing frequent contact with researchers during research projects.

- In the opinion of pharmacists, research protocols should be simple and not time consuming, the topic should be relevant and of interest, the research should benefit the patient, there should be remuneration for time spent and sufficient training to conduct the research.
- Pharmacists have a range of interests or special topics, researchers should design projects around these topics to ensure relevance to practice

4. DISCUSSION

The aim of this study was to examine the attitudes towards and perceptions of research amongst community pharmacists and to clarify the barriers and facilitators to pharmacists' participation in research through a review of the literature and a survey of Australian community pharmacists. A comprehensive review of the literature has revealed that there has been little published research on this topic; however, combining the available literature with literature on pharmacists' extended services has revealed issues which may impact on community pharmacists' participation in research. Our survey of Australian pharmacists has successfully identified key barriers and facilitators to research participation and has revealed important differences between those pharmacists who participate in research and those who do not.

The response rate to the survey was 40%. This rate is comparable with those of similar types of surveys conducted overseas ^{4,17,18} and is higher than the response rate to a recent Pharmacy Guild of Australia survey on current roles of pharmacy staff ⁴⁵.

4.1 DEMOGRAPHICS

The majority of the respondents to the survey were in the age range of 46-55 years, were sole proprietors and worked in pharmacies located in shopping strips. These characteristics are consistent with the demographics reported in the National Pharmacy Database ²⁷. Fifty-two percent of the respondents were male, which is somewhat lower than the proportion reported in the National Database project. This may imply that females were over-represented in our sample.

No significant differences were found between pharmacists who had previously participated in research (PRP) and those who had not (NPRP) with respect to any of the demographic variables (e.g. age, gender, years in practice, pharmacy location, number of pharmacists, number of prescriptions dispensed in a week or position in the pharmacy). This was somewhat surprising, as previous studies have found differences in participation in research or provision of extended services based on

pharmacist position and size of the pharmacy^{27,30} as well as age and gender^{27,46,47}. It is possible that the sample size of the NPRP group was too small in the present survey to pick up any such differences in demographics.

4.2 WILLINGNESS TO PARTICIPATE IN RESEARCH

Amongst those pharmacists who had previously participated in a research project, 82% indicated that they would like to be involved in similar future research and 76% agreed or strongly agreed that they would like the pharmacy they worked into be involved in research. This is a positive sign that most pharmacists who participate in research find the experience rewarding and are willing to do it again. Amongst all respondents (including those who had never participated), 64% agreed or strongly agreed that they would like the pharmacy they worked in to be actively involved in research. This is a high rate of interest compared with that found by previous studies in the UK. Only 32% of respondents to Ellerby's¹⁷ survey were willing to participate in research, as were 48% of respondents to both Liddell's survey¹⁸ and Rosenbloom's¹⁹ survey. However these studies are not directly comparable as our survey was not a random sample of all pharmacists. In this study, 44% of the surveys were purposely sent to pharmacists who were known to have previously participated in research projects, as we were interested in learning their attitudes and experiences of research as well as those of pharmacists who had not participated in research. Of the pharmacists who had not participated in research previously only 34% agreed or strongly agreed that they would like the pharmacy they work in to be involved in research.

When pharmacists were asked how research participation added to the profession of pharmacy, the respondents indicated that participation benefited the profession by increasing pharmacists' knowledge and enhancing the public's perception.

4.3 PHARMACISTS' PERCEPTIONS OF RESEARCH PARTICIPATION

The responses to the 28 items regarding perceptions of participation in research revealed some interesting findings with implications for researchers designing research projects as well as policy makers.

There was consistent agreement between previous research participants and non-participants that if they were to be involved in a research project, it would be important that it had clear and meaningful goals and that they be informed of the results of the research. Although these two items were not related to the pharmacists' overall desire to participate in research (i.e. they were not identified as barriers or facilitators), pharmacists' obviously have strong feelings about these concepts. As a consequence, when developing research projects researchers should ensure that the goals are meaningful to community pharmacists and that these goals are clearly explained to the pharmacists being recruited to the project. Furthermore, the results of the research should be provided to the participating pharmacists as soon as they become available, preferably on an ongoing basis. Pharmacists in the control (or baseline) group should not be neglected and also be informed of the results as soon as it is appropriate.

There were several important differences between the PRP group of pharmacists and the NPRP group. In general the PRP group placed more importance on research and were more interested in participating in all aspects of research than the NPRP group, including in developing new ideas for research. They also agreed more strongly with items related to motivation such as, research gives the opportunity to do something out of the ordinary, the research topic should be of interest and that CPE/COI points were important rewards for participation. The NPRP group agreed more strongly with negative items such as time constraints, lack of trained staff, difficulty interesting patients in research, and the need for pharmacy restructuring, than did the PRP group. Although these differences are perhaps to be expected they highlight the divergence in motivations and perceptions between the two groups.

Correlations between the pharmacists desire to participate in research and the various items of the survey reveal which factors are actual barriers and facilitators to participation in research.

Barriers to Participation

Time

A lack of time stands out as a key barrier to participation in research for both previous participants and non-participants. This is not surprising and as described in the introduction, a lack of time has been reported by most studies on the topic as the most important factor in limiting participation in research and extended services ^{10,17-19,22,26,27,30,32,47-52}. This issue seems to be a legitimate concern even without considering enhanced service provision. In a recent Australian pharmacists workforce survey conducted by APESMA (Association of Professional Engineers, Scientists and Managers, Australia) it was reported that the workload of community pharmacists was high ⁵³. An ideal time of 3.7 minutes per prescription has been recommended by a workload measurement study in the UK ⁵³. In our sample the median range of prescriptions dispensed per week was between 600-1000. Taking the mid point of this range, i.e. 800 prescriptions per week, and 41 hours as the average hours worked per week, the time per prescription would be approximately 3.1 minutes. However, this figure does not consider any meal/toilet breaks or any other activities besides dispensing. In addition pharmacists on duty deal with many tasks (e.g. ordering dispensary stock, compounding, handling telephone enquiries, counselling and recommending appropriate over the counter products for minor complaints). This rough approximation implies that pharmacists are indeed very busy. This is an occupational health and safety concern, as well as a barrier for pharmacists to participate in other professional activities besides dispensing prescriptions. The average annual net loss to the pharmacy work force has been calculated to be 3.1%, which in turn contributes to greater pressures on the existing pharmacist workforce ⁵³.

One pharmacist commented on their survey that "... I don't have an opinion, I am a pharmacist". Although perhaps written partly in humour this statement also signals possible burnout. Other pharmacists charted their hours to explain that they have absolutely no time left for even personal commitments, let alone filling in surveys,

and that they had filled in the survey as they were lured by the CQI point on offer as a reward for completing the survey.

To address the time pressures that pharmacists face, researchers must be sensitive to these issues when designing their research project protocols, keeping them as simple and time efficient as possible. Indeed, this was the most common response by the pharmacists when asked what things would make them want to take part in future research projects. Whenever possible, community pharmacists should be involved in developing the protocols for research projects so that the expectations of the protocol are realistic. Other pharmacy staff should be trained and given roles in the research protocol to relieve the demands on the pharmacist. If resources allow, locum pharmacists could be provided to relieve the participating pharmacist of their dispensing duties while they are conducting the research. Despite these suggestions it may be incumbent on the pharmacy owners themselves to implement changes within their pharmacy (eg delegating tasks such as answering phone calls and ordering stock) to free up time to do research. Such changes are unlikely to occur unless the research is cost neutral or profitable and/or the owner is convinced of the inherent value of the research.

Other Barriers

Other issues that have been identified as barriers to participation in our analysis are, requiring restructuring of the pharmacy, finding it difficult to interest patients in research, a lack of trained staff and use of a locum research pharmacist. Although the respondents as a whole did not necessarily agree with these statements, they were highly correlated with the desire to participate in research (i.e. those pharmacists who did agree with these statements were less likely to indicate an interest in participating in research). Therefore addressing these issues is important to ensure that as many pharmacists as possible can participate in research.

Restructuring the Pharmacy - A private counselling area is often required for research studies and a lack thereof has been identified as a barrier to provision of extended services ^{26,31,48,49,51,54}. As the focus of pharmacy practice is shifting to a more patient centred approach it is likely that over time this issue will diminish as

more and more pharmacies implement private counselling areas. In the meantime researchers can include funds for small changes in pharmacy structure as an incentive for pharmacist participation.

Recruiting Patients for Research - Difficulty in interesting patients in research has not been previously identified as a major barrier to participation in research, possibly because the issue has not been addressed in previous surveys. Strategies that may allay pharmacists' concerns about patient recruitment include provision of training on how to recruit patients into the research project, utilising research project staff to aid in recruitment, offering incentives to patients, and providing advertising in the community about the research project in question. Recruitment of patients into research projects remains a significant challenge not only for the pharmacists but for researchers as well.

Lack of Trained Staff - A lack of trained staff was identified by this study as a barrier to participation in research. This may be interpreted to mean that pharmacists perceive that pharmacy staff require training in the research topic. If so, this could be addressed by researchers providing training on the research topic to all pharmacy staff. Training should involve as many staff as are interested and should be flexible to accommodate work schedules. A lack of trained staff could also be interpreted to mean a lack of staff in general, for example pharmacy assistants and administrative staff, which would make it difficult for the pharmacist to find time to be involved in research activities.

Use of Locum Pharmacist – A desire to have a locum pharmacist conduct the research was identified as a barrier to participation. This makes sense as pharmacists who perceive that they themselves do not have the time or the desire to do research would rather that an external consultant do the research for them. This item is not a real barrier in and of itself but rather serves as a reflection of the attitudes of the pharmacists.

Facilitating Participation

Three issues were identified as key facilitators to participation in research, a belief in the importance of community pharmacy research, having an interest in the research topic and the research having benefit to the customer.

Importance of Community Pharmacy Research

Pharmacists who feel that community pharmacy research is important are more likely to want to participate in research. This is not surprising and as noted in the introduction, pharmacists' attitudes are important factors influencing their participation in research and extended services^{4,25,28}. Clearly then, a way to increase the pool of pharmacists who are willing to take part in research is to try to change their attitudes toward the importance of community pharmacy research. We can begin to accomplish this by creating an environment of research awareness, perhaps by having research forums in professional meetings and conferences (most of which are presently geared to enhance clinical knowledge only). Practitioners rather than researchers should conduct the presentations in these forums, so that attendees can see that their peers, rather than academic researchers, value research. These peers can then serve as role models for other pharmacists.

An Interest in the Research Topic

Having an interest in the research topic arose as a clear facilitator to participation in research and was mentioned specifically by the respondents as a something that would make them want to participate in future research. Previous research supports this finding^{17,20}. In order to utilise this facilitator, researchers should determine what areas are of most concern and interest to pharmacists and develop research projects that address these. Ellerby et al¹⁷ used this approach successfully by asking pharmacists to rank several projects by perceived priority and then developing a research protocol which incorporated the most common responses. The pharmacists were then invited to participate in the project and a sufficient number agreed to do so. In the present survey, pharmacists were asked to list the three most important areas they felt needed investigation. The most frequent responses fell into the categories of evaluating the delivery of specialised health services (eg disease state management) and medications management/counselling (eg Home Medicines Review and Quality Use of Medicines) (Table 7).

Benefit to the Customer

If a research project has a direct benefit to the customer it will be more likely to attract pharmacists to conduct the research. As health care professionals, improving the health of patients is an important motivator for pharmacists. Anecdotally, pharmacists who have been involved in research report great personal satisfaction when their efforts result in improved patient health and in fact this was mentioned by several pharmacists when asked how research adds to their profession.

Researchers should bear this in mind when recruiting pharmacists to research projects. Many pharmacy practice research projects have improved patient health as a goal and this should be emphasised to the pharmacist. How the research will (or is intended to) benefit the pharmacy customer should be clearly explained.

Other Facilitators

Other items that were identified as facilitators include, involvement in new ideas for research, involvement in developing materials and methods for research, advertising a pharmacy's involvement in research, believing that involvement in research improves community perception of pharmacy, provision of frequent contact with researchers during research projects, belief that being involved in research gives opportunity to do something out of the ordinary, and having confidence in ability to conduct research.

Involvement in New Ideas and Materials and Methods for Research – Pharmacists who want to be involved in developing new ideas for research and materials and methods for research are more likely to want to participate in research. Researchers might take advantage of this by seeking out these forward-looking pharmacists and involving them in developing research proposals. This type of attitude should be fostered amongst community pharmacists by having such leaders present their ideas and experiences at professional meetings and conferences.

Advertising Involvement in Research and the Community Perception – Pharmacists who believed that advertising their pharmacy's involvement in university research would help their business were more likely to want to participate in research, as were pharmacists who believed that being involved in research improves the

communities' perception of pharmacy. Researchers can utilise these beliefs to aid recruitment of pharmacists into research projects by offering signage that advertises a pharmacy's involvement in university research. Also offering to provide advertising in local newspapers may help recruitment of pharmacists into research projects as well as aid in patient recruitment.

Frequent Contact with Researchers – Pharmacists who would like to be involved in research also want frequent contact with the researchers who are conducting the study. Study coordinators should provide adequate support to the pharmacists participating in their research projects, be in regular contact and be easily accessible. In seeking to recruit pharmacists into research projects the fact that this support will be provided should be emphasised.

Opportunity to do Something out of the Ordinary – The perception that being involved in research gives an opportunity to do something out of the ordinary is a facilitator to participation in research. Similarly, other studies have found that a desire to expand their role and learn new skills are important motivators for pharmacists to become involved in research or extended services^{23,24}. This benefit of research participation should be promoted when creating research awareness.

Confidence - Confidence in service provision has been found to be a significant facilitator for the provision of pharmaceutical care^{28,54} as it was in the present study. The respondents to this survey were somewhat confident in their ability to conduct research, those with experience a little more so. Confidence has been shown to be related to training and experience²¹, therefore provision of adequate training for research projects should facilitate pharmacists involvement. As well consideration should be given to involving inexperienced pharmacists in smaller, simpler projects allowing them to build confidence before participating in larger projects.

Other Considerations

It was somewhat surprising that financial incentives did not emerge as a clear barrier to participation in research. Both groups of pharmacists had high agreement with the statement that pharmacists should be paid for participating in research (the NPRP group in particular) but this was unrelated to their desire to participate in

research. A belief that research should generate income for the pharmacy did emerge as a barrier but only for the NPRP group. Lack of remuneration has been reported as a barrier to research participation and enhanced service provision in many studies ^{10,18,19,27,48,50,52,55,56}. However, there is some evidence that remuneration does not significantly affect provision of pharmaceutical care ²⁸ and it has also been shown that offering incentive payments to pharmacists does not affect their recruitment of patients to studies ^{20,57}. For this sample of pharmacists, money alone would not convince them to participate in research. It is important to pharmacists that financial incentives be provided but it may not be the key motivator to research participation.

A lack of training has been previously identified as a barrier to participation in research ^{17,18} and in the implementation of enhanced services ^{30,54,58}. However training did not emerge as a barrier in this study. The PRP pharmacists in our sample did not feel that they required extensive training before undertaking a research project, probably because most had recently participated in research. The NPRP group had somewhat higher agreement that they required training. In Australia, the recent National Pharmacy Database project reported that the time spent by Australian community pharmacists in CPE activities per month was twice that in the UK ²⁷. This may perhaps be another explanation why the pharmacists in our sample did not strongly perceive the need for training. Interestingly, the pharmacists in both groups indicated a much higher need for training in how to *organise the research* in the pharmacy than for training in general. While this item was not related to their desire to participate in research, it is perhaps an indication of the difficulty pharmacists face trying to fit research into the everyday running of the pharmacy.

Physician resistance has been identified by previous research as a barrier to involvement in new services ^{22,26}. However in the present survey the respondents did not have strong feelings about the value other health professionals place on pharmacy based research. Although this item did not specifically address physicians, it appears likely that physicians' attitudes are not an issue for this sample of pharmacists. Other studies have noted that the attitude of other health

care professionals does not necessarily influence the provision of pharmaceutical care ²⁸.

4.4 THE FUTURE OF PHARMACY PRACTICE RESEARCH

In Australia, various schools of pharmacy are attempting to ensure that research documents the value of pharmacists' role in the Australian health care system. This study and further in-depth studies focusing on research activities need to inform researchers, educationists, practitioners, and pharmacy leaders about future possibilities in pharmacy practice. In fact, in the recent National Database project ²⁷, a groundbreaking survey which provides a baseline reference for the level of pharmacist activities in Australia, it was surprising to note that no direct reference was made to "research" as being a pertinent activity for a pharmacy practitioner. This survey documented activities classified as "Enhanced Pharmacy Services", and included quite a comprehensive list of activities. For these services to be widely adopted, remunerable and accepted by the public and other health care professionals, a significant amount of research needs to be done to validate pharmacists efforts. Indeed, pharmacy practice researchers in Australia have collected data on the effectiveness of a range of services e.g. asthma ⁵⁹, diabetes ⁶⁰, screening for cardiovascular risk factors ⁶¹ medication management ⁶² to name a few.

Pharmacy practice research presents quite a few challenges, as ethical reasons and the risk of contamination imply that the gold standard randomized clinical trials are often not possible in practice settings. In addition adequate sample sizes are dependent on the recruitment rates of patients into the study. The rate limiting step to these is often the recruitment and retention of interested and motivated pharmacy practitioners who not only agree to participate, but attend intensive training, make some infrastructure changes, recruit patients, conduct the given intervention/test strictly according to protocols, document activities, liaise with other health care professionals and attend project debrief meetings. Hence the importance of research that investigates factors that influence practitioner uptake of research projects cannot be over emphasized.

Despite the positive findings of this survey (82% of research participants are willing to do it again) our research team has anecdotally noticed a decline in the willingness to participate in University based pharmacy practice research projects. It seems that conducting such projects is becoming an increasingly uphill task and it may be the case that the number of pharmacists volunteering to try new models of service delivery will soon be exhausted.

Some researcher academics also note that whilst many pharmacists agree to participate and attend training, their actual commitment to on-going participation in research is quite low. Many of these “non doers” never actually declare that they would like to withdraw from the study. Cocolas et al ⁶³, attribute a preoccupation with popularity and acceptance by the public as a pharmacist trait in their study. This may partly be responsible for pharmacists’ apparent willingness to take on activities that they perceive as professionally or socially desirable. However this makes conducting research projects difficult.

Suggestions for Future Directions of Research

Whilst a large body of pharmacy practice research in Australia has been dedicated to validating the role of pharmacists in various services, closer attention needs to be paid to the factors that facilitate or impede the conduct of this research. This has become an even greater imperative given the negative impact that environmental pressures have recently exerted upon the profession; the pharmacy profession needs to ensure that there is sufficient evidence of the pivotal role played by the pharmacists in the Australian health care system who may otherwise face fierce competition and even threat of obsolescence by large retail chains and supermarkets.

The findings of this project have provided important and illuminating data regarding the issues surrounding Australian community pharmacists’ willingness to participate in research. These findings primarily centre upon the facilitators and barriers to participation in projects. However, it is suggested that to help the profession adopt strategies to re energise its practitioners and encourage participation in research projects attention also be paid to the *processes underlying pharmacist behaviour*.

These processes commonly involve attributes such as professional beliefs and attitudes, emotional responses, confidence and behaviours.

Organisational, behavioural and sociological factors affect how professionals practice. Some research investigating behaviour change has been undertaken using these perspectives, although this research has focused on changing practice models rather than the notion of being involved in altruistic activities such as research. Review of the organisational and sociological literature indicates a range of models that could be used to explore pharmacists' motivation to participate in research and thus provide a further means of developing programs that target pharmacists' motivation to participate in research. These include:

- Continuous Quality Improvement Model (Pharmacy Guild of Australia)
- Pharmacists Implementation of Pharmaceutical Care (PIPC) Model ⁶⁴
- Stages of Change Model ⁶⁵
- Krathwohl's Taxonomy of Learning ⁶⁶

Examples of how these models could be adapted are outlined below.

Example 1: Continuous Quality Improvement

In 1997, The Pharmacy Guild of Australia saw a need to protect and expand their members' front-of-shop business to ensure their future viability in an environment of ever increasing competition ⁶⁷. The Guild subsequently developed a business model that covered standards for all retail services as well as standards relating to business practices. The aim was to create a quality assurance program dedicated to raising the standards of service provided to the public as well as improving profitability. This led to the development of the Quality Care Pharmacy Program (QCPP). This is a program that raises the standard of customer service in individual pharmacies across Australia, providing an industry wide guarantee of retail service quality and professional practice. With the professions' concerns about quality, it could be argued that enhanced practice models are on the highest rung in the quality ladder. For individual professionals to achieve this change from provision of low level to high level services and to maintain it may be not be possible in a single leap.

One of the precepts of continuous quality improvement is that improvement in quality can be brought about and maintained through subtle improvements or changes that gradually and cumulatively raise the level of performance without interruption ⁶⁸. The continuous quality improvement concept may be applicable to pharmacy practice and to the 'research active' model as well, that is, pharmacists conducting research in their day to day practice. For this to be achieved, projects that require less intensive research should be introduced, and then the level of intensity stepped up gradually through seeking participation in sequentially more difficult research projects. This may also help practitioners at a particular stage of behaviour change to be more amenable to further research, and allow experience and satisfaction with a smaller project, for example, clinical audit. Ultimately, the practitioner may be motivated to attempt large scale projects, for example, testing the efficiency of disease state management by community pharmacists.

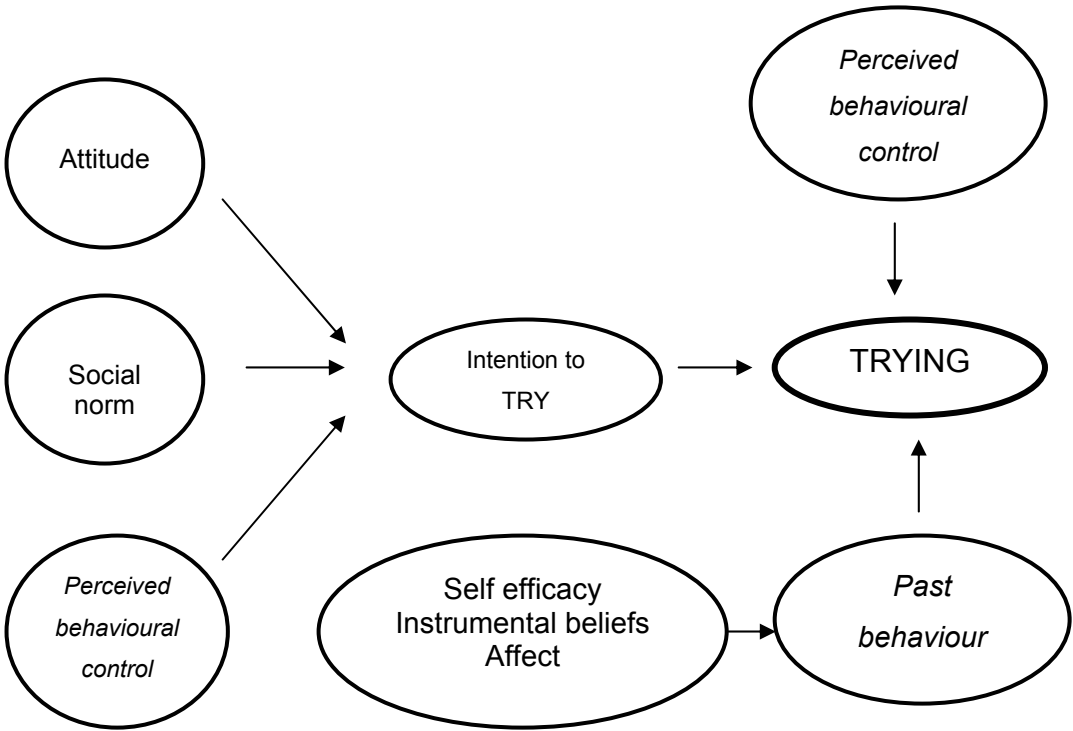
Example 2: Pharmacists Implementation of Pharmaceutical Care (PIPC) Model

The PIPC model ⁶⁴ proposes that pharmacists trying to provide a new service are directly influenced by recent past behaviours related to the service, their level of intention to try the behaviour and their perceptions about the level of control they have over patient care. These factors are in turn influenced by attitudes, social norms, self-efficacy, instrumental beliefs and emotional responses ⁶⁴. The efficacy of this model has been supported by another study, where it was shown that behavioural control exerted an effect on behaviour in many ways, and that self-efficacy was a direct predictor of behaviour ⁶⁹. Hence the level of control pharmacists perceive over their patient care behaviours in their practice environment was critical.

Using the PIPC model with our sample, willingness to participate in future research projects would be influenced by past behaviour recency, in that pharmacists who had recently finished a project would be more likely to do another one. In our study, 82% of those who said they had participated in research (sample selection had been based on recent participation/non participation), were willing to participate in future projects.

Pharmacists’ perceptions regarding the degree of ease or difficulty of performing required behaviours is also important. For example, in our sample, previous participants indicated that the need to restructure the pharmacy and the difficulty in interesting patients in participating were barriers. As this perception may affect future participation, researchers should make an effort to address these issues so that the level of interest in research is maintained in those pharmacists who have had the experience of working in a research project and experienced difficulties. On the other hand, it may also be suggested that strategies such as inviting previous research participants to discuss their experience about how the research had not been as hard as they had imagined to their non participant pharmacist peers would help to reassure those concerned about these matters.

Figure 7: The PIPC model⁶⁴



Self-efficacy issues may be addressed by training programs that target organizational behaviour. For example, the practice of pharmacy as a profession, the strategies being used to enhance professionalism, the role of the grass roots practitioners in shaping the profession, and leaving a legacy for future generations of pharmacists to follow and maintain are all factors which contribute to an increased sense of professional efficacy. Training along those lines may inspire practitioners and instil confidence. Whilst the pharmacists in our sample indicated that they were reasonably confident about conducting research in their pharmacy, this may stem from the fact that many of them had recently participated in a research project. What they did express interest in was training specifically to organise the research activities in their pharmacy, rather than general training.

Another strategy could be inviting previous participants to disseminate information about the results of their research efforts, for example, the feedback they received from their patients and how they felt they had made a difference in their patients' disease management. Pharmacists' perceptions of the likelihood of success of a research project (their instrumental beliefs) can be supported by researchers' dissemination of research results.

'Affect towards means' measures the emotional significance or the desirability of the means necessary to achieve the goals. It has already been shown in studies of personalities of pharmacists/pharmacy students that pharmacists are vulnerable to social desirability. Hence training programs such as those suggested above, messages from opinion leaders in the profession and the sharing of experiences of past participants can be used in the armamentarium of behaviour influencing strategies. It has been suggested that these issues should be explored especially with reference to pharmacists' work environments, as the behaviour changes are reliant on working in an environment conducive to change ⁶⁹.

Example 3: Stages of Change Model

The transtheoretical model ⁶⁵ proposes that behaviour changes or the transition from old to new behaviours is not a single step process but involves passing through graduating stages of behaviour change leading from an old to a new behaviour.

These stages are proposed to be 1) pre-contemplation (not desiring to change yet), 2) contemplation (beginning to think about the change, and think about trying to change), 3) preparation (setting the scene for changing the behaviour, gathering necessary tools and materials), 4) action (actually changing the behaviour) and 5) maintenance (maintaining the behaviour without relapse). This model implies that strategies need to be aimed at the particular stage the individual is in. Using a self administered survey, Berger and Grimley ⁷⁰ showed that in a sample of pharmacists attending an annual professional conference, there were 46% of pre contemplators, 38% contemplators, 10% in the preparation stage, 1% in the action stage and 5% in the maintenance stage.

Using this model to look at pharmacists' willingness to participate in research, it may be the case that pharmacists cannot be grouped simply as willing / not willing to or doing/not doing research. There may be pharmacists in between these extremes of behaviour, in that they may be contemplating doing research or preparing for doing it. In light of workload issues, it may be pertinent to address strategies aimed at positioning pharmacists in the action stage from pre contemplative/contemplative stages rather than "preaching to the converted" and over burdening those in the action/maintenance stages, as they are already providing an enhanced level of service.

Example 4: Krathwohl's Taxonomy of Learning

Further study about the adoption of newer models by community pharmacists has been conducted by Nimmo and Holland ⁶⁶. They propose that the key to motivating pharmacists to commit to practice change lies in fostering a change in intrinsically held professional attitudes and values and not in emphasizing a structured extrinsic reward system eg financial incentives. This model does have pertinence with our sample of pharmacists for whom financial incentives did not drive the desire to work in a "research active" pharmacy, but who did value research and feel it was important. Nimmo and Holland used Krathwohl's taxonomy of learning which is somewhat analogous to the stages of change model ⁷¹, to develop strategies.

According to Krathwohl, affective learning is viewed as a five step process ⁷¹. In the first step, practitioners 'receive' information about a new practice model. Secondly,

they will 'respond' to this information received, and thirdly, through learning will start 'valuing' it as desirable. In the fourth step some practitioners will embrace this new model and will 'organize' to practice it. Finally their belief and commitment to this new model will 'characterize' these pioneers. Holland and Nimmo recommend that change managers (in pharmacies or for the profession as a whole) motivate their staff to adopt newer models by understanding the level of affective learning they are at and helping them engage and commit to the new model ¹.

This involves looking at the values and attitudes that already exist, because trying to change these without understanding what they were may be futile. Furthermore, they recommend that congruence between personality types and the new model be explored ¹. Following this the work environment will need to be adapted to change, and resource provision will need to be addressed. Once the above steps have been carried out, practitioners are ready to learn.

At this stage, the first level of Krathwohls taxonomy needs to be implemented. Providing information about the model in a positive manner by having discussion groups, presenting simplified information, ensuring interactive communication, addressing the philosophical foundations for change and allowing time for reception would facilitate reception of the proposed model. Practitioners' responses may range from acquiescence, willingness and satisfaction about the possibility of trying new ideas. This may be smoother when strategies such as trying a pilot, contact with others trying the same idea, forming networks, teaming up with more motivated peers, allowing time for competence to develop, offering external rewards, offering positive feedback, and having open discussions are implemented. The next step is to allow time for reflection, so that belief in the new model can turn to conviction.

Finally, the re-organisation of existing practices should be done to allow for maintenance of the new model and this can again be helped by constant contact with others in a similar situation. By reaching this level and through experience and practice, this new model will be entrenched in day to day practice and those who adopted it will be 'characterized' by their belief in this model ¹.

The conclusion from our study and the examination of the literature is that a large number of pharmacists are ready to adopt new models of practice, including practice research, and they indicate many barriers and facilitators to this process. Researchers and professional leaders should investigate issues not just relating to the efficiency of new models, or stick to current behaviours, but should also direct a body of research looking at the process of new model adoption. The bottom line to all these suggestions again implies further research to see whether strategies based on behavioural theory are effective in changing the willingness to participate in research.

The policy makers and organizations responsible for ensuring that pharmacy remains a profession rather than be relegated to being an 'occupation' may need to explore the overall professional and organisational cultures existing in individual pharmacies and see to what extent these foster research and learning.

4.5 CONCLUSIONS

Due to the limited pool of community pharmacies in Australia available to participate in research projects and the increasing number of research projects being conducted, it is becoming increasingly difficult to recruit enough pharmacies that are willing to participate in current research projects. Therefore, the purpose of this study was to investigate strategies to promote the recruitment and retention of pharmacists in research.

The continuing involvement of pharmacists in research will be influenced by their previous research experiences. It seems reasonable to suggest that to retain pharmacists in research their previous positive experiences must outweigh their negative experiences. In order to ensure that pharmacists' research experiences end on a very positive note, strategies such as professional recognition, acknowledgment of their contribution and being kept informed of the results of the research should be employed.

The main barriers and facilitators to recruitment and retention of community pharmacists in Australia have been highlighted in this study. Removing or reducing

barriers and promoting facilitators will improve the future participation of pharmacists in research in Australia. A number of models for behavioural change have been outlined as future directions for research.

5. RECOMMENDATIONS

1) Organisational and policy level recommendations

- Create an environment of research awareness. This can be achieved through a number of avenues:
 - Develop research networks ¹⁹. These may consist of a group of practitioners who meet on a regular basis to discuss research opportunities. This strategy has been shown to be quite successful ⁷². Academics should be part of this network but need not necessarily be its leaders. They can take the responsibility for documenting new ideas, areas of research interest, issues in research being conducted and resource requirements. They can act as the lynchpins between ground force practitioners and researchers.
 - Establish research forums in professional meetings and conferences (most of which are geared to enhance clinical knowledge only). Practitioners rather than researchers should conduct the presentations in these forums, so that attendees can perceive that their peers have been actively involved in the research. These peers can be the role models for other pharmacists.
 - Promote the concept of 'Research-Led Teaching' in Pharmacy Schools at Australian Universities. This is a recognised approach to education and facilitates student understanding of the value of research to learning and clinical practice. This concept can also be reinforced at the clinical placement/externship level. A symbiotic learning relationship may be fostered with pharmacy preceptors learning the value of research and students learning from the preceptors' experience.

- Identify and acknowledge practitioners and staff from community pharmacies who have contributed significantly to the research within the profession (eg have an “Australian Pharmacist Researcher of the Year” award or a “Research Friendly Pharmacy of the Year” award).
- Research and related activities be accredited for CE points (not just the attendant training about the project, but the actual activity itself).
- Emphasise the value of community pharmacy-based research to Government by pharmacy profession representatives.
- Increase public awareness at a national level of the role of pharmacists in health care research, so that the public image of pharmacists of being merely dispensers of drugs is altered. Such messages will also reinforce this role for pharmacists themselves.
- Address workload issues. Apart from descriptive research looking at hours worked, prescriptions dispensed, little research has focused on issues of stress, burnout and disillusionment. There is a need to investigate the negative effect of these on research activity.
- Research organizational behaviour. To-date, this issue has not been addressed, but is sorely required. This type of research needs to explore the existing organizational culture in individual pharmacies and how ‘research cultures’ can be fostered. The behavioural, organizational and sociological aspects of the process of change from non research active pharmacies to being research active pharmacies needs to be examined. The current study should be conducted in further depth and larger sample sizes.

2) Recommendations for individual researchers or research teams

- More projects should use the participatory action research methodology, so that community pharmacy practitioners are active designers and doers of research, and have more ownership of research projects. This may also help project design to be more 'practice friendly'.
- Pharmacists who have not done research before be offered smaller more 'doable' projects such as clinical audits/drug audits. The confidence and skill developed through these smaller projects will increase their confidence in their ability to undertake larger scale projects. This will also help some 'contemplators' move to action and maintain the change by participating in increasingly more difficult projects.
- Project protocols should pay attention to barriers and facilitators outlined in this study. For example, having clear and simple protocols that are not time consuming, the goals of which are clear and meaningful to practitioners. Issues of lack of staff training, practical help for reorganizing the pharmacy, and recruitment of patients should also be addressed.
- Marketing experts should be consulted to understand the approach to be used to recruit patients (community) and pharmacists into a research study.
- Pharmacists who responded to the survey listed a range of topics they find interesting (Table 7). As these topics were specifically identified as important to community pharmacists they should be put forward as potential research projects.

6. REFERENCE LIST

- 1 Holland R and Nimmo CM. (1999) Transitions in pharmacy practice, part 1: Beyond pharmaceutical care. *Am J Health Syst Pharm* 56, 1758-1764
- 2 Hepler CD and Strand LM. (1990) Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy* 47 (533-543)
- 3 Anderson S. (2000) Profile of the professions: the state of the world's pharmacy: a portrait of the pharmacy profession. *Journal of Interprofessional Care* 16, 391-404
- 4 Pendergast JF et al. (1995) Role orientation and community pharmacists' participation in a project to improve patient care. *Social Science and Medicine* 40, 557-565
- 5 Fincham JE and Smith MC. (1988) Pharmacists' views about health promotion practices. *Journal of Community Health* 13, 115-123
- 6 Martin S. (1990) Traditional values, innovative practices: pharmacists who provide cognitive services. *American Pharmacy* NS30, 22-27
- 7 Furmanga EM. (1993) Pharmacist management of a hyperlipidemia clinic. *American Journal of Hospital Pharmacy* 50, 91-95
- 8 McKenney JM. (1993) An evaluation of cholesterol screening in community pharmacies. *American Pharmacy* NS33, 34-40
- 9 Paluk EC et al. (1994) Community pharmacists' participation in health education and disease prevention activities. *Canadian Journal of Public Health* 85, 389-392
- 10 Mottram DR et al. (1995) The community pharmacists' attitudes toward the extended role. *Journal of Social and Administrative Pharmacy*. 12, 12-17.
- 11 Mays N. (1994) *Health services research in pharmacy: a critical personal review*. Pharmacy Practice Research Resource Centre
- 12 Cotter SM and Mays N. (1996) Pharmacy practice research in the United Kingdom: which issues should shape future developments? *International Journal of Pharmacy Practice* 4, 1-5
- 13 King H et al. (1998) Global burden of diabetes, 1995-2025: prevalence, numerical estimates, and projections. *Diabetes Care* 21 (9), 1414-1431

- 14 WHO. (1998) *Obesity - preventing and managing the global epidemic: report of a WHO consultation on obesity*. WHO
- 15 The International Diabetes Institute. (2001) *Diabetes and Associated Disorders in Australia 2000. The Final Report of the Australian Diabetes, Obesity and Lifestyle Study* International Diabetes Institute
- 16 Johnson JA and JL, B. (1997) Drug-related morbidity and mortality and the economic impact of pharmaceutical care. *Am J Health Syst Pharm* 54, 554-558.
- 17 Ellerby DA et al. (1993) The level of interest in pharmacy practice research among community pharmacists. *The Pharmaceutical Journal* 251, 321-322
- 18 Liddell H. (1996) Attitudes of community pharmacists regarding involvement in practice research. *The Pharmaceutical Journal* 256, 905-907
- 19 Rosenbloom K and K, T. (2000) Community pharmacists' attitudes towards research. *The International Journal of Pharmacy Practice* 8, 103-110
- 20 Krska J et al. (1998) Pharmacists' opinions on their involvement in a community pharmacy based practice research study. *The Pharmaceutical Journal* 261, b54
- 21 Huyghebaert T et al. (1999a) Implementing pharmaceutical care: Insights from Alberta community pharmacists. *Canadian Pharmaceutical Journal* 132 (1), 41-45
- 22 Huyghebaert T et al. (1999b) Barriers to pharmaceutical care: Perceptions of Alberta community pharmacists. *Canadian Pharmaceutical Journal* 132 (2), 36-42
- 23 Simpson SH et al. (2001) Practice-based research: lessons from community pharmacist participants. *Pharmacotherapy* 21, 731-739
- 24 Garrett DG and Martin L. (2003) The Asheville Project: Participant's perceptions of factors contributing to the success of a patient self-management diabetes program. *Journal of the American Pharmaceutical Association*. 43, 185-190
- 25 Hansen RW and Ranelli PL. (1994) Omnibus budget reconciliation act of 1990 and voluntarism: logistic regression analysis of pharmacist responsibility. *The Annals of Pharmacotherapy* 28, 1020-1024

- 26 Amsler MR et al. (2001) Pharmaceutical care in chain pharmacies: beliefs and attitudes of pharmacists and patients. *Journal of the American Pharmaceutical Association*. 41, 850-855
- 27 Berbatis CG et al. (2003) *National Pharmacy Database Project*.
- 28 Venkataraman K et al. (1997) Barriers and facilitators to pharmaceutical care in rural community practice. *Journal of Social and Administrative Pharmacy*. 14, 208-219
- 29 Taylor J et al. (2000) Pharmacists' readiness to assess consumers' over-the-counter product selections. *Journal of the American Pharmaceutical Association*. 40, 487-494
- 30 O'Loughlin J et al. (1999) The role of community pharmacists in health education and disease prevention: a survey of their interests and needs in relation to cardiovascular disease. *Preventive Medicine* 28, 324-331
- 31 Badger F et al. (2002) The pharmacist's role in the medicinal management of depression. *Nursing Standard* 16 (47), 33-40
- 32 Smith SR et al. (2004) Influence of time stress and other variables on counseling by pharmacists about antiretroviral medications. *Am J health Syst Pharm* 61, 1120-1129
- 33 Neuhauser MM et al. (2004) Involvement of immunization-certified pharmacists with immunization activities. *Annals of Pharmacotherapy* 38, 226-231
- 34 Bauer G. (1999) A hard day's night. *Pharmacy Practice* 15, 25-35
- 35 Weinberger M et al. (2002) Issues in conducting randomized controlled trials of health services research interventions in nonacademic practice settings: the case of retail pharmacies. *Health Services Research* 37, 1067-1077
- 36 Sinclair H et al. (1997) An evaluation of a training workshop for pharmacists based on the Stages of Change model of smoking cessation. *Health Education Journal* 56, 296-312
- 37 Cranor CW et al. (2003) The Asheville Project: Long-term clinical and economic outcomes of a community pharmacy diabetes care program. *Journal of the American Pharmaceutical Association*. 43, 173-184
- 38 Cranor CW and Christensen DB. (2003) The Asheville Project: Short-term outcomes of a community pharmacy diabetes care program. *Journal of the American Pharmaceutical Association* 43, 149-159

- 39 Biriell and Edwards RI. (1997) Reasons for reporting adverse drug reactions. Some thoughts based on an international review. *Pharmacoepidemiology & Drug Safety* 6, 21-26
- 40 van de Waterbeemd H et al. (1997) Glossary of terms used in computational drug design (IUPAC Recommendations 1997). *Pure & Appl. Chem* 69, 1137-1152
- 41 Efron B. (1982) *The Jackknife, the Bootstrap and Other Resampling Plans*, Society for Industrial and Applied Mathematics
- 42 Martens H and Martens M. (1999) *Validation of PLS Regression models in sensory science by extended cross-validation. PLS'99*
- 43 Martens H and Martens M. (2000) Modified Jack-knife Estimation of Parameter Uncertainty in Bilinear Modelling (PLSR). *Food Quality and Preference* 11, 5-16
- 44 Westad F et al. (1999) *Modified jack-knifing in multivariate regression for variable selection and model stability. NIR-99*
- 45 Pharmacy Guild of Australia. (2004) *Workforce and Career Options for Pharmacy assistants* Pharmacy Guild of Australia
- 46 Morrissey EFR and Martin C. (2003) Opinions of community pharmacists on their role in the prevention of cancer. *Int J Pharm Prac* 11 (R40)
- 47 MacRae F et al. (2001) Factors influencing community pharmacist participation in clinical audit: a qualitative study of barriers and drivers of change. *Int J Pharm Prac* 9Suppl (R13)
- 48 Anderson C. (1998) Health Promotion by Community Pharmacists: Perceptions, realities and constraints. *J Soc Admn Pharm* 15 (1), 10-21
- 49 McDonough RP et al. (1998) Obstacles to the implementation of pharmaceutical care in the community setting. *J Am Pharm Assoc* 38, 87-95
- 50 Tully MP et al. (2000) Motivators and barriers to the implementation of pharmacist run prescription monitoring and review services in two settings. *Int J Pharm Prac* 8, 188-197
- 51 Dinnie E et al. (2004) Community pharmacists attitudes to medicines management: a qualitative study. *Int J Pharm Prac* 12, 217-222
- 52 Bateson C et al. (2003) Evidence based practice: barriers to undertaking research in practice. In *Health Services Res Pharm Prac Conference*

- 53 Gysslink P. (2002) Pharmacists Workloads frustrating. *Aus Pharm* 21 (2), 80
- 54 Odedina FT et al. (1995) Providing pharmaceutical care in community practice. Differences between providers and non-providers of pharmaceutical care. *J Soc Admn Pharm* 12 (4), 17-180
- 55 Rossing C et al. (2001) Barriers and facilitators in pharmaceutical care: perceptions and experience among Danish Community Pharmacists. *J Soc Admn Pharm* 19 (2), 55-65
- 56 van Mil JWF et al. (2001) European barriers to the implementation of pharmaceutical care. *Int J Pharm Prac* 9, 163-168
- 57 Kennedy E et al. (1999) Effect of incentives on recruitment and response rate in a community based pharmacy practice study. *Int J Pharm Prac* 7, 8-85
- 58 Bell H et al. (1998) A qualitative investigation of the percetion and opinions of community pharmacists to pharmaceutical care. *J Soc Admn Pharm* 15, 294-295.
- 59 Saini B et al. (2004) Development, implementation, and evaluation of a community pharmacy-based asthma care model. *Ann Pharmacother* 38 (11), 1954-1960
- 60 Krass I et al. (2003) *An integrated model for disease state management (DSM) in diabetes: Collaboration of the community pharmacist an GP in continuity of care*. University of Sydney
- 61 Krass I et al. (2001) *Development, implementation and evaluation of a health promotion and screening service in community pharmacy*. University of Sydney
- 62 Gilbert AL et al. (2002) Collaborative medication management service: improving patient care. *MJA* 177, 189-192
- 63 Cocolas GH et al. (1997) Use of the Gordon Personal Profile-Inventory of pharmacists and pharmacy students. *American Journal of Pharmaceutical Education* 61 (3), 257-265
- 64 Odedina FT et al. (1997) The pharmacists implementation of pharmaceutical care model. *Pharm Res* 14 (2), 135-144
- 65 Prochaska JO and DiClemente CC. (1984) *The transtheoretical approach:crossing traditional boundaries of therapy.*, Dow- Jones Irwin
- 66 Nimmo CM and Holland RW. (2000) Transitions in pharmacy practice- walking the tightrope of change. *Am J Health Sys Pharm* 57 (1), 64-72

- 67 Pharmacy Guild of Australia.
http://www.guild.org.au/public/currentissues/media_location_report_160505.pdf. (Vol. 2005)
- 68 Imai M. (1986) *Kaizen: The key to Japanese Competitive Success.*, Random House
- 69 Farris KB and Schopflocher DP. (1999) Between intention and behaviour: an application of community pharmacists assessment of pharmaceutical care. *Soc Sci Med* 49 (1), 55-66
- 70 Berger BA and Grimley DA. (1997) Pharmacists readiness for rendering pharmaceutical care. *J Am Pharm Assoc* NS37, 535-542
- 71 Krathwohl DR et al. (1964) *Taxonomy of educational objectives, the classification of educational goals Handbook11:Affective domain*, White Plains, NY
- 72 Seston E et al. (2003) Experiences of establishing and maintaining a community pharmacy research network. *Primary Health Care Res and Dev* 4 (3), 245-255

Appendix 1: Search terms and strategy for electronic literature search

1	pharmacy practice research →	9
2	pharmacists →	6984
3	1 and 2 →	5
4	research →	2206069
5	2 and 4 →	1659
6	services research →	13175
7	2 and 6 →	81
8	role of pharmacists →	82
9	research studies →	4935
10	2 and 9 →	8
11	practice based research →	244
12	2 and 11 →	4
13	((learning organisations and pharmacies) or pharmacists) →	6984
14	learning organizations →	17
15	pharmacies →	2994
16	14 and 15 →	0
17	2 and 14 →	0
18	organisational culture →	78
19	community pharmacy →	806
20	18 and 19 →	0

Continued on next page

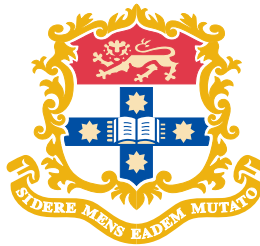
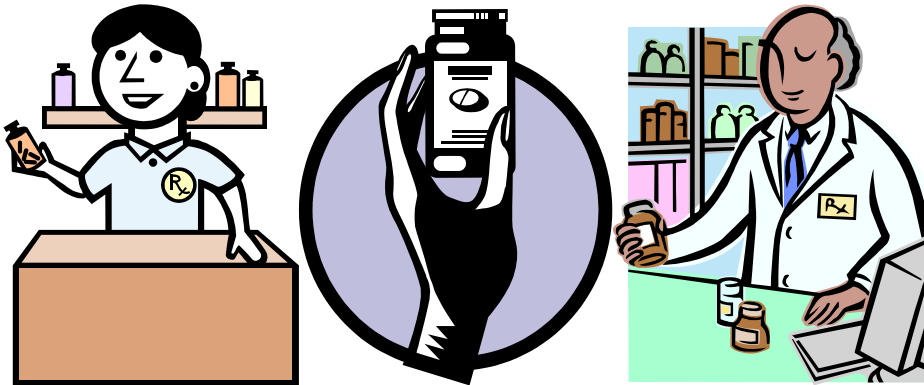
Appendix 1 continued: Search terms and strategy for electronic literature search

21	motivation →	30584
22	2 and 21 →	43
23	job satisfaction →	11339
24	2 and 23 →	66
25	continuing education →	8358
26	2 and 25 →	80
27	1 or 3 or 7 or 8 or 10 or 12 or 22 or 24 or 26 →	344
28	remove duplicates from 27 →	303
29	from 28 keep 1-303 →	303

CODE:

Appendix 2: Survey Instrument

PHARMACISTS AND PHARMACY PRACTICE RESEARCH



PHARMACY PRACTICE RESEARCH FACULTY OF PHARMACY UNIVERSITY OF SYDNEY

RESEARCHERS

Contact: Dr Bandana Saini Phone: 02 93516471

Dr Bernadette Mitchell
Dr Grenville Rose
Dr Linda Gelgor
Dr Lorraine Smith
Dr Martha Brilliant

PLEASE RETURN COMPLETED SURVEY IN THE REPLY PAID ENVELOPE
For your participation in a Pharmacy Guild of Australia's Third Agreement Research and Development Project you will receive one (1) QCPP CQI credit point for the completion of this survey.

As outlined in the subject information sheet enclosed, we are conducting a survey to obtain information from practicing pharmacists regarding participation in pharmacy practice based research projects. The survey will take approximately 10 minutes to complete. We value your responses and will provide you with a copy of the report which will summarise the outcomes of this study.

SECTION A: GENERAL PHARMACY DEMOGRAPHICS

First, some questions about yourself:

1. Gender: ☐ Male ☐ Female

2. Age in years:

- ☐ 18-25
- ☐ 26-35
- ☐ 36-45
- ☐ 46-55
- ☐ 56-65
- ☐ >65

3. Years in practice:

- ☐ 1-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-35
- ☐ 36-45
- ☐ > 45

4. Please indicate your main and second job (if applicable) as a pharmacist.

	Main Job	Second Job
Community	<input type="checkbox"/>	<input type="checkbox"/>
Hospital/clinic	<input type="checkbox"/>	<input type="checkbox"/>
Industrial pharmacist	<input type="checkbox"/>	<input type="checkbox"/>
Administration	<input type="checkbox"/>	<input type="checkbox"/>
Teacher/education	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify)	_____	_____

5. In your community pharmacy are you: (Please tick appropriate box)

- ☐ Sole Proprietor ☐ Partner / Proprietor ☐ Salaried Pharmacist

6. Is your pharmacy location

- ☐ Rural ☐ Metropolitan

7. How many hours do you usually work in your main pharmacy each week?

Hours_____

8. Please indicate the type of pharmacy business you usually work in:

- ☐ Stand alone or non mall shopping centre
☐ Shopping mall complex
☐ Private hospital/nursing home
☐ Medical Centre
☐ Other

9. How many pharmacists are usually on duty in the pharmacy?

No of Pharmacists_____

10. On average, how many prescriptions were dispensed from your pharmacy in the previous week?

- ☐ Less than 150
☐ Between 150 and 299
☐ Between 300 and 599
☐ Between 600 and 1000
☐ More than 1000

SECTION B: PARTICIPATION IN RESEARCH

11. Have you previously been involved in research in a pharmacy?

☐ Yes

☐ No

If no go to SECTION C

12. What sort of research were you involved in? Please tick those that apply.

- ☐ Surveys
- ☐ Recruiting patients for research with no specialised service provided
- ☐ Recruiting patients for research and providing a specialised service
- ☐ Health promotion in schools/other community settings
- ☐ Patient education provision
- ☐ Drug use audit
- ☐ Other _____

**13. For the research above, which sort of organisation was mainly responsible?
Please tick those that apply.**

- ☐ University
- ☐ Pharmaceutical Company
- ☐ Hospital
- ☐ State Health Department
- ☐ Local Area Health Service
- ☐ National Pharmaceutical Service
- ☐ Pharmacy Guild of Australia
- ☐ Pharmaceutical Society of Australia
- ☐ Not sure who conducted the research, but remember participating
- ☐ Other _____

14. Would you like to be involved in SIMILAR research projects in the future?

☐ Yes

☐ No

15. If you answered no, please indicate your reasons below.

SECTION C: PERCEPTIONS ABOUT PARTICIPATION IN RESEARCH

For the next set of questions, please indicate your response on a scale of 1-5, where 1 indicates **STRONGLY DISAGREE** and 5 indicates **STRONGLY AGREE** as shown.

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

PLEASE CIRCLE THE APPROPRIATE RESPONSE

1. I would like the pharmacy I work in to be actively involved in research.
1 2 3 4 5
2. I would be involved in research if I had a special interest in the specific topic being investigated.
1 2 3 4 5
3. I would like to be actively involved in developing new ideas for future research.
1 2 3 4 5
4. I would like to be actively involved in developing methods and materials for the day to day running of research projects in pharmacies.
1 2 3 4 5
5. I would like to be actively involved in research that I thought would directly benefit my customers.
1 2 3 4 5
6. Being actively involved in research would give me a chance to do something out of the ordinary in my pharmacy.
1 2 3 4 5
7. Being actively involved in research would improve community perceptions of the pharmacy.
1 2 3 4 5

8. Advertising to the local community that I am involved in research with the University would help my business.
- 1 2 3 4 5
9. Receiving CPE/CQI points for being involved in research is important to me.
- 1 2 3 4 5
10. I believe that participation in research projects should generate income for the pharmacy.
- 1 2 3 4 5
11. Pharmacists should be paid for participating in research projects.
- 1 2 3 4 5
12. Patients/Customers who participate in pharmacy practice research projects should receive incentives other than possible improvement in health .
- 1 2 3 4 5
13. I think that it is important for pharmacy practice research to occur within community pharmacy settings.
- 1 2 3 4 5
14. I am quite confident of being able to conduct research in my day to day practice.
- 1 2 3 4 5
15. If I was involved in research I would like frequent contact with the researchers.
- 1 2 3 4 5
16. If I was involved in research I would like to be able to contact a more experienced practicing pharmacist for mentoring with the research process.
- 1 2 3 4 5
17. If I was involved in research I would like a locum consultant pharmacist to conduct the research.
- 1 2 3 4 5
18. If I was involved in research I would like extensive training in how to organise the research activity in the pharmacy.
- 1 2 3 4 5

19. If I was involved in research I would like to be involved with other health professionals such as GP's and Nurses.
- 1 2 3 4 5
20. If I was involved in research it would be important to me that there was a clear and meaningful goal to the research.
- 1 2 3 4 5
21. If I was involved in research it would be important to me that I felt the results were directly applicable to my pharmacy.
- 1 2 3 4 5
22. If I was involved in research it would be important to me that the researchers informed me of the results of the study once they became available.
- 1 2 3 4 5
23. Most research projects seem difficult because they need pharmacy restructuring.
- 1 2 3 4 5
24. I feel that it is difficult to interest patients in research participation.
- 1 2 3 4 5
25. I feel that time constraints restrict me from participating in research projects.
- 1 2 3 4 5
26. I feel that a lack of trained staff is a reason that conducting research projects is difficult in my pharmacy.
- 1 2 3 4 5
27. I feel that other health care professionals do not value pharmacy based research projects.
- 1 2 3 4 5
28. I feel I need extensive training before undertaking research projects.
- 1 2 3 4 5

29. In your opinion, what are the three most important areas that should be investigated by pharmacists and pharmacy practice researchers. Please list in order of importance.

i) _____

ii) _____

iii) _____

If you have more than 3 areas you think are important please list them here:

30. The following 5 items are the things that would be most important in making me want to take part in future research projects.

a. _____

b. _____

c. _____

d. _____

e. _____

31. In your opinion to what extent does participating in research add to a pharmacist's expertise/knowledge/professionalism? Please elaborate.

Thank you for participating in this project. We value your responses highly and appreciate the time you have given us. Please contact us if you have any questions or have comments relevant to the role of community pharmacists in research.

Appendix 3: Invitation Letter to Pharmacists



Faculty of Pharmacy, University of Sydney
Tel: (02) 93515818, Fax: (02) 93514391

Dear Pharmacist

For many years pharmacists have provided a wide range of useful services to the community, however most of us have not documented these activities. Hence there is paucity of data providing evidence of the benefits of pharmacy and pharmacist delivered services. With the volatile health care environment and the push from conglomerates to de regulate pharmacy, the onus is on our profession to document and provide evidence of health care dollar savings. It has become more and more important that pharmacists participate in pharmacy practice research.

Our research team is interested in understanding the reasons why pharmacy practitioners do or do not participate in research projects. This understanding will help researchers take the issues to professional bodies such as the Pharmacy Guild of Australia, so that professional incentives to participate in research by pharmacists can be endorsed while dis-incentives are addressed. Your input into this survey will be appreciated. If you would like to participate, please read the information sheet, sign the consent form, complete the survey and mail it back to the research team in the stamped envelope.

The survey is quite brief, confidential and completion entitles you to 1 CQI point for the QCPP review.

We greatly appreciate your interest and would value your response to the survey. If you have any questions, please ring the project contact Bandana Saini (02 93516471, or email bandana@pharm.usyd.edu.au).

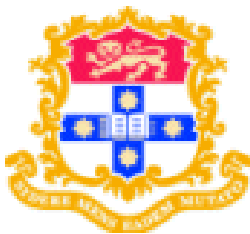
Thanking you

On behalf of The Pharmacy Practice Research Team

Dr. Bandana Saini,
Faculty of Pharmacy
University of Sydney

Appendix 4: Participant Information and Consent Sheets

PARTICIPANT INFORMATION AND CONSENT SHEETS



Faculty of Pharmacy, University of Sydney
Tel: (02) 93515818, Fax: (02) 93514391

I,^{Please print your name here}....., hereby voluntarily consent to participate in the study entitled **“Pharmacists and Pharmacy Practice Research.”** This study is being conducted by a team of researchers – Dr Bandana Saini, Dr Bernadette Mitchell, Dr Grenville Rose, Dr Linda Gelgor, Dr Martha Brilliant and Dr Lorraine Smith, all from the Faculty of Pharmacy, University of Sydney.

I understand my participation will involve answering a survey. I understand that any data collected for the purposes of this study will remain strictly confidential and will not be used to identify pharmacist or pharmacy. I have been informed that information obtained from this research may be used in future research or published.

I am aware of the purpose of this project and what my involvement entails. My participation is entirely voluntary. I have read the subject information sheet attached and I have been informed of my right to question any part of the procedure or withdraw from the project at any time (by calling the contact listed below).

Name: _____

Signature _____ Date ____/____/2005

Witness Name _____

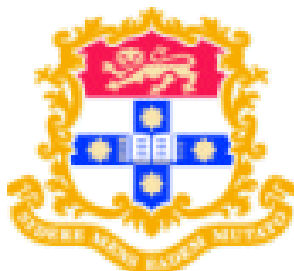
Signature _____ Date ____/____/2005

Any person with complaints about the conduct of a research study can contact the secretary of the Human Ethics Committee, University of Sydney @ 02 93514811.

Faculty of Pharmacy, University of Sydney Contact:

Dr Bandana Saini, Tel: 02 93516471, Fax 02 93514391 email: bandana@pharm.usyd.edu.au

PARTICIPANT INFORMATION AND CONSENT SHEETS



Faculty of Pharmacy, University of Sydney
Tel: (02) 93515818, Fax: (02) 93514391

Re: Pharmacists and Pharmacy Practice Research

The practice of pharmacy has seen a shift from product focus to service focus in the last decade or so. It has been recognised that there is a need for more research into the services that pharmacies currently provide and the feasibility of newer services such as disease state management and health promotion and screening services.

This study will investigate the uptake of pharmacy practice research by pharmacists, by investigating what motivates pharmacists to participate and what factors influence their decision to participate or not participate in pharmacy practice research.

A brief survey which has been developed by the research team will be sent out to you. You will be requested to complete the survey within three weeks and send it back in the reply paid envelope. If you prefer to conduct the survey over the telephone, one of the researchers will ring you at a time appointed by you. The survey instrument will investigate issues that may hinder or facilitate pharmacy practice research.

The results of the survey will be combined with an extensive literature review on the topic and a report compiled. This report will be sent to the Pharmacy Guild of Australia. It is hoped that the results will help develop possible strategies at the individual, organisational or policy levels that may encourage pharmacy practitioners to participate in practice based research projects, thus providing evidence for novel services that may be provided by pharmacists.

Participation in this study is entirely voluntary and participants may withdraw at any time without any short or long term consequences. For further information, please contact Dr Bandana Saini at the Faculty of Pharmacy, University of Sydney on (02) 93516471 or at bandana@pharm.usyd.edu.au.

Any person with complaints about the conduct of a research study can contact the secretary of the Human Ethics Committee, University of Sydney @02 93514811.