IMPACT OF RESEARCH AND DEVELOPMENT (R&D) PROGRAMMES ON COMMUNITY PHARMACY PRACTISE

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ABSTRACT An vital role for community pharmacy R&D in Australia's developing practise of community pharmacy is being played. Community pharmacy has implemented a limited number of Cognitive Pharmacy Services (CPS) produced via R&D, showing a sluggish shift in practise. R&D plays a critical role in community pharmacy practise change, however little is known about the operation and its effectiveness in facilitating such transformation. The R&D programme was viewed as having a significant impact on the development of CPS. The R&D initiatives, they said, have a significant impact on policy, finance and the application of CPS into reality. In the community pharmacy sector, successful Knowledge Translation (KT) is impacted by a variety of context- and facilitation-related variables. These factors have a role in policy choices and their subsequent implementation.

Keywords: neighbourhood, pharmacies, research and development

I. Introduction

The practise of neighbourhood pharmacies is being pushed to evolve. Prescription dispensing revenues have grown constricted, profit margins have decreased, and non-pharmaceutical goods sales have decreased in recent years. Community pharmacies must transform their business model to include more than just dispensing and selling drugs. A growing body of research demonstrates that community pharmacies throughout the world are increasingly turning to offering additional health-related services as a revenue source to offset losses from traditional dispensing practises.

According to the paradigm change in pharmacy practise, research and creation (R&D) in community pharmacy is increasingly recognised as a catalyst for the development of innovative Cognitive Pharmacy Services (CPS). It has been more than five years since the Australian governments and the Pharmacy Guild of Australia joined forces to fund community pharmacy research and development (R&D) (Nouri, *et al.* 2020). Since 1990, a nationwide network of community pharmacies has been supported by almost $45 billion in funding, which includes funding assistance for the R&D programme and other initiatives (Table 1).

Table 1. Proportion of funding under the consecutive CPAs.

	1st CPA (1990–1995)	2nd CPA (1995–2000)	3rd CPA (2000–2005)	4th CPA (2005–2010)	5th CPA (2010–2015)	6th CPA (2015–2020)
Total funding[a], (% increase from previous CPA)	$3.286 billion	$5.497 billion (˝67%)	$8.804 billion (˝60%)	$12.158 billion (˝38%)	$15.610 billion (˝28%)	$18.886 billion (˝21%)
Funding for Pharmacy Remuneration[b], (% within the CPA)	**Not Available**	**Not Available**	$5.6 billion (63%)	$11.1 billion (91%)	$13.8 billion (89%)	$14.8 billion (78%)
Funding for CPS, (% within the CPA)			$114 million (1.29%)	$241 million (1.98%)	$427 million (2.77%)	$368 million[c] (1.94%)
Funding for R&D, (% within the CPA)		$5 million (0.1%)	$15 million (0.17%)	$19 million (0.16%)	$11 million (0.06%)	$50 million[d] (0.26%)

It was decided to divide research and development (RD) projects into two categories: IIG projects and commission projects. Scientists at the IIG were permitted to create initiatives that were related to their personal interests and

study areas. Prior to the projects being put out to public tender, an Expert Advisory group comprising significant pharmaceutical stakeholders had predetermined the study programme for the Commissioned projects.

Concerns have been raised concerning the R&D program's funding, operations, and efficacy in promoting practise change in community pharmacies, despite its relevance. For example, only a tiny percentage of the overall CPA funds was spent in the R&D programme, while the rest was used to pay the delivery of medications, including the allocation for dispensing fees for PBS drugs (Table 1) (Shrestha, *et al.* 2019). Since the 3rd CPA onwards, R&D funding has continuously decreased, culminating in the present CPA (the 6th). However, the Pharmacy Trial Programs offered financing for the testing of new and expanded community pharmacy services. With the recent agreements there has been an increasing tendency to support Commissioned projects, which has reduced the ability of community pharmacies to do creative research (Fig 1).

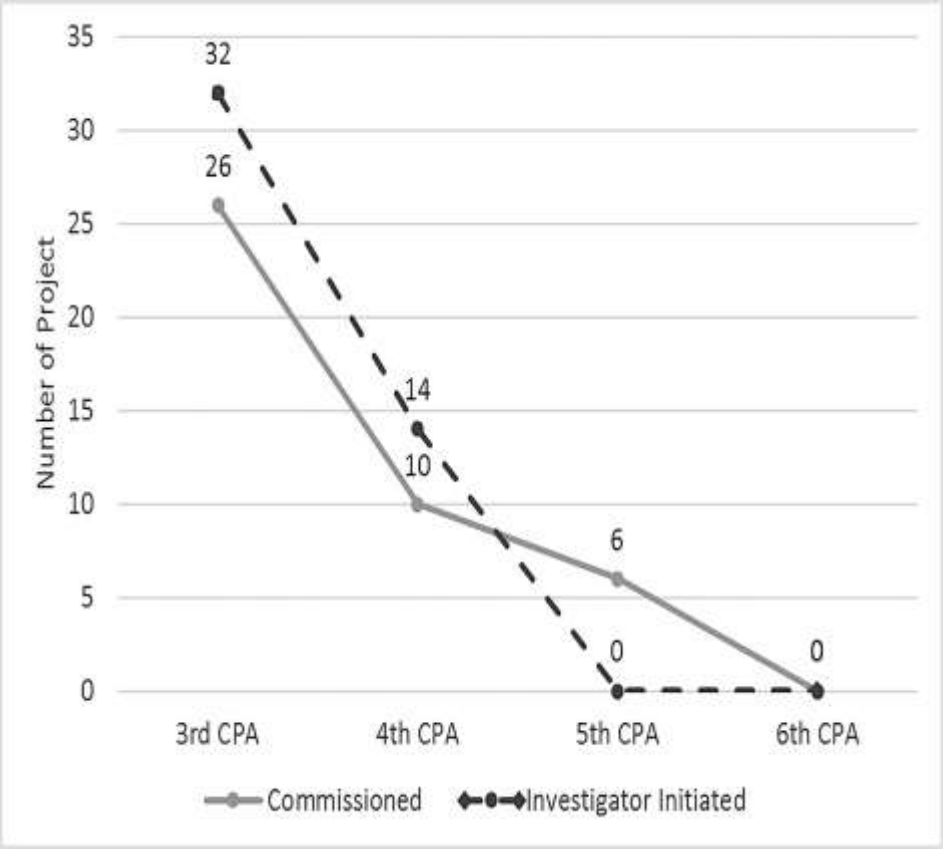

Fig 1. Distribution of R&D projects under the CPAs.

II. From research to practice: The case of DMAS, PAMS and HMR

It takes a long time and a lot of effort to put CPS into practise, starting with the conception and development of the research, to the evaluation of the impact of various CPS on clinical, humanistic, and economic outcomes, to the dissemination of research findings to stakeholders, and finally to the adoption and implementation that leads to long-term CPS delivery in community pharmacies and clinics (Taylor, *et al.* 2021). There hasn't been much focus on developing an implementation science approach for knowledge translation throughout the R&D phase of earlier CPAs.

There are three examples of R&D-funded pharmaceutical services that we will discuss in this section. DMAS, Pharmacy Asthma Medication Service (PAMS), and Home Medicines Review are all part of the Diabetes Medication Assistance Program (DMAS) (HMR). Community pharmacies may be certain that these services have been proven to be beneficial through rigorous research methods such as randomised controlled trials (Hermansyah, 2018). However, despite these benefits, the policy decision was not to proceed with the deployment of these services in community pharmacies because of the lengthy and difficult procedure involved in creating R&D in community pharmacies.

Even more well-established CPS, such as Home Medicines Review (HMRs), have had their share of difficulties in implementation. Since its implementation in 2001, HMRs in Australian community pharmacies have demonstrated their long-term viability (Saha, *et al.* 2021). Doctors and pharmacists work together to provide HMRs to patients who may benefit from a drug management strategy. HMRs have been proved to be a cost-effective and evidence-based service that avoids and treats medication-related issues. HMRs have also been shown to save money for the healthcare system.

III. Materials and methods

Key players in and outside of community pharmacies were interviewed in-depth in semi-structured interviews. GPs, consumer groups, private insurance firms, and the government were among the pharmacy and healthcare system players represented by the attendees. They also included practising pharmacists and representatives of professional peak pharmacy and medical organisations. For the first time, both genders and several states in the east of the country were represented by participants (Alomi, 2020). They also came from a variety of pharmacy backgrounds (banner pharmacy group or budget pharmacist), from metropolitan to rural regions.

Snowball sampling was employed to increase the original sample size and participants were asked at the conclusion of each interview whether they could recommend anybody else as a possible participant. The most common interview mode was face-to-face, although we also interviewed some people over the phone and over Skype video. Prior to the interviews, the participants signed a written consent form (Fruytier, *et al.* 2022). The University of Sydney's Human Research Ethics Committee authorised this research.

Research and development and implementation science literature, current pharmacy practise in Australia, and conversations among researchers were used to construct essential questions for an interview (Siu, *et al.* 2021). Researchers built the interview guide after considering the potential and challenges presented by the implementation process, which were detailed in several studies. With the help of three important stakeholders, the guided questions were piloted and refined.

IV. Theoretical approaches

The variables that influence the effectiveness of an intervention or study implementation are explored in a variety of ways by various models, theories, and frameworks, which are discussed more below. Following the PARIHS framework, it is believed that the relationship between Evidence (E), Context (C), and Facilitation (F) is crucial to the successful adoption of Evidence-Based Practice (EBP) (F) (Taylor, *et al.* 2021). In the PARIHS framework, evidence may be derived from a variety of sources, including research, clinical experience, patient experience, and local data/information. Economic, social, and historical factors all influence the context in which the research

is to be conducted, hence it is important to understand these factors. Culture, leadership, monitoring, and assessment, according to the PAR-IHS, are all important factors in defining the setting in which change may be achieved. When it comes to the PARIHS framework, facilitation refers to the procedures that make it possible to use evidence in a practical setting. Facilitators can assist other people, teams, and organisations in putting the findings of the study into practise by using their skills and expertise, as well as their obligations as facilitators in the setting in which the study is implemented. This can be done either internally or externally.

Table 2. Characteristics of participants.

Characteristics	n = 27
Male, n (%)	20 (74)
Background of profession, n (%)	
Pharmacy practitioners and managers	8 (30)
Other healthcare professionals	1 (4)
Academics and researchers	3 (11)
Policy makers and administrators	13 (47)
Consumer representatives	1 (4)
Insurance providers	1 (4
State, n (%)	
ACT	3 (11)
NSW	12 (45)
QUE	4 (15)
SA	2 (7)
VIC	6 (22)
Urban area, n (%)	24 (88)
Method of interview, n (%)	
Face to face	14 (52)
Over the phone	7 (26)
Skype® video call	6 (22)
Average duration of interview (min)	71 min (range 43–93 min)

V. Discussion

R&D under successive CPAs has played an important role in pushing some developments in Australian community pharmacy, as confirmed by this study. This study. Stakeholders have a generally good assessment of the value of R&D projects and their contribution to community pharmacy practise, thanks to the CPS generated by the R&D programme.

Without R&D initiatives, community pharmacy was thought to be unable to demonstrate the value of the CPS to CPAs, which is essential to gaining funding. Since providing PBS drugs generates a lot of money, the CPS provides an additional source of income, but so far this isn't enough for a dramatic shift in the pharmacy business model from dispensing to health services.

It is explored, using the PARIHS framework, how many elements (evidence, context, and facilitation) impact which CPS are adopted and in what manner. According to this method, evidence is essential in establishing the effectiveness of implementation, and this is a crucial component of our results. The necessity of evidence in the effective translation of research into practise was emphasised by the participants during the discussion (Shrestha, *et al.* 2019). This idea has been supported by the fact that a number of CPS have been sponsored by CPAs that stemmed from research and development programmes. According to the findings of this study, a variety of factors

impact the translation of research into practise, including feasibility, incentives for CPS delivery, patient acceptance, cost savings, and value to healthcare, as well as political support for adoption (Saha, *et al.* 2021). The PARiHS framework is an excellent tool for demonstrating how these three components interact with one another.

Evidence gathered under tightly controlled settings, such as those seen in R&D initiatives, is therefore critical in justifying changes in practise. But participants' views were significantly in favour of the idea that proof should not be limited to research or controlled trials only. Evidence of the feasibility of a study project, such as an examination and analysis of clinical and patient experiences with a certain service, is also crucial in establishing the possibility of its successful implementation (Hermansyah, 2018). DMAS and PAMS, in particular, were found to have clinical, economic, and humanistic outcomes that were reached when the setting was supportive of their implementation (Alomi, 2020). Many practical factors were possible to be eliminated in small-scale controlled trials, and the support and facilitation offered by the study team was crucial in preserving the required motivation to continue.

However, as pharmacists were required to retain their own incentive to continue, broader scale deployment resulted in more heterogeneity within the context and a dilution of the facilitation impact. Patients' lack of interest in the DMAS and the pharmacists' time and capacity restrictions were to blame for the limited acceptance of the service, not any deficiencies in the programme itself (Taylor, *et al.* 2021). PAMS research was well-received by both pharmacists and patients; nonetheless, the decision to stop funding the project had a major role in hindering knowledge translation. As a result, the PARiHS model's participants believed that context and facilitation were more important than evidence alone when it came to translating R&D-generated knowledge into practise.

All three parts of PAR-IHS model must be taken into account while trying to understand why some programmes are implemented and others aren't, according to this study. To put it another way, the PARIHS framework shows how evidence, context, and facilitation work together to bring about change (Fruytier, *et al.* 2022). It also offers an explanation for the existing condition. An environment that was already resistant to change tended to outweigh the promise for success demonstrated by the DMAS and PAMS research programmes (Nouri, *et al.* 2020). As a result of factors such as a health care system that is fragmented, policymakers who are under pressure to reduce costs and patients who have little knowledge of pharmacists' potential roles in delivering comprehensive medical services, and factors such as these and others, evidence has been overshadowed. "Complex, difficult, and demanding" is how one researcher described the process of putting research into practise.

VI. Strength and limitations

The participants in this study were key stakeholders in the community pharmacy research and development programme, each of whom had a distinct viewpoint on the programme. When a wide variety of viewpoints were solicited by the study, it demonstrated the complexity of factors influencing knowledge translation in community pharmacies, a topic that has not been substantially researched in pharmacy literature (Ganguly, *et al.* 2022). Since the conclusion of data collecting for this study, a number of legislative changes, including the establishment of the Pharmacy Trials Program and an ongoing review of pharmacy remuneration and regulation, have raised concerns about the role of R&D programmes in community pharmacy services. Therefore, these two rules were excluded from the analysis since they were adopted after July 1, 2019, which was the start date of the study

(Elbagory, 2018). These rules will have an influence on R&D-funded services in community pharmacies in the foreseeable future.

VII. Conclusion

The purpose of this study is to describe an R&D programme supported by CPAs in Australian pharmacy, as well as the relevance of this initiative in driving practise reform. When it comes to assisting in the creation and financing of CPS, research and development initiatives have been deemed essential, but their overall impact has been limited due to the fact that present practise is still predominantly a dispensing strategy (Bosnic-Anticevich, *et al.* 2019). Through the use of the PARIHS framework in this study, it was also possible to provide light on the complex interaction between evidence, context, and facilitation and CPS funding policy decisions, as well as knowledge translation into community pharmacy practise.

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