Author's response to reviews

Title: Preparing pharmacists to deliver a targeted service in hypertension management: evaluation of an interprofessional training program

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Author's response to reviews: see over
Dear Editorial Team (BMC Medical Education),

RE: MS: 1885749539147522 (Research article)

“Preparing pharmacists to deliver a targeted service in hypertension management: evaluation of an interprofessional training program” by Beata Bajorek, Kate LeMay, Parker Magin, Christopher Roberts, Ines Krass and Carol Armour

Thank you for the reviewers comments regarding our manuscript submission. We have carefully considered the feedback and have responded to each point below. The revisions are described below and highlighted on the modified manuscript.

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REVIEWER COMMENTS: Scot Simpson

Major Essential Revisions:

#1) representativeness of study sample: authors report in the methods that purposive sampling was used and that participants were selected because they had participated in previous pharmacy intervention studies. This group may be more highly motivated to participate in training programs and may also have a higher baseline level of awareness and acceptance of current clinical practice guidelines (noted in second paragraph of page 20) relative to the general population of community pharmacists in Australia. Authors should report on the characteristics of the study participants - would the observations be generalizable if the training program were to be scaled up to a wider audience?

Author response: The reviewer raises a valid point. We have addressed the issue of the representativeness of the study sample in the DISCUSSION section of the manuscript (revised manuscript attached):

In considering the findings of this study, it is important to acknowledge the limitations. First, the inclusion criteria may have selected out highly motivated pharmacists with a higher baseline level of knowledge and skill in service delivery, and may therefore not be entirely representative of all community pharmacists. In this regard, the training needs of the wider pharmacist population may vary to those reported here. However, the pharmacies themselves were typical of those encountered in the Australian community setting. Second, evaluation of the training (particularly the qualitative evaluation post-service delivery) was undertaken by members of the study team who also delivered components of the training, and therefore it is possible that the pharmacists’ responses were biased toward more positive comments (i.e., social desirability bias). Third, whilst the training was not considered to be resource-intensive in this context, it may be more difficult to scale-up the training to larger, less experienced groups of pharmacists, with reduced access to experienced trainers. Nevertheless, the findings provide some useful insights into the training requirements for the delivery of pharmacist-led services.

NB/ We did not collect specific details on the characteristics of the participating pharmacists as part of our data collection; we only screened the pharmacies against our study inclusion criteria.
2) potential for biased observations: the recruitment / selection process could create volunteer bias (as noted above).

Author response: Noted. Please refer to previous revision for related point (#1).

In addition, it is not clear if the people collecting data to evaluate the education program (the "team members experienced in qualitative research methods" - second paragraph, page 12) were also involved in delivery of the program. There is concern for a conflict of interest, or possibly introducing social desirability bias if the participants are being interviewed for their opinions on a program by the same people who provided program. These limitations need to be acknowledged and the potential impact on observations need to be discussed.

Author response: We have revised the manuscript as follows.

Under METHODS we have clarified the role of the study team members:

Immediate feedback on the training was sought via a questionnaire (quantitative data), which was administered by the project pharmacist (not the trainers) at the conclusion of the full-day training session.

and

One-on-one interviews were conducted several months after the training program, once the pharmacists were delivering the service (intervention) and were able to reflect on the training received. Interviews were conducted by those researchers (pharmacy academics) on the study team who were experienced in qualitative methods.

In the DISCUSSION we have discussed the limitations of the approach used:

Second, evaluation of the training (particularly the qualitative evaluation post-service delivery) was undertaken by members of the study team who had also delivered components of the training, and therefore it is possible that social desirability bias influenced the pharmacists' responses.

Specific Comments:

3) spelling / undefined acronyms: e.g. "PBS" claim records (second paragraph of background) was not defined; "work-shopping" (second point on page 14) seems to be misspelled; "clood" pressure in reference 4."

Author response: Thankyou for pointing out the typographical error in the imported reference. This has now been corrected as follows:


In regard to the acronym "PBS" – this has now been deleted from the text, as part of the broader revisions (per Reviewer 2). "Workshopping" is spelt without the hyphen; this has now been corrected in the revised manuscript.
4) Sequence somewhat confusing in the methods: description of the main trial (which appears to be an outcomes-based assessment of the intervention program) appears in between descriptions of the training component and its assessment. Description of the main trial should perhaps appear in the introduction, or first paragraph of the methods. Details of the intervention should be reduced, or integrated into the description of the training program.

**Author response:** We have considered the feedback from both reviewers in this regard, and have modified the METHODS as requested (refer to revised manuscript). All details relating to the intervention trial (and service) have been presented within Figures 1 and 2, which will be available as Supplementary Material.

5) Omron device should be described: since pharmacists were assessed on their BP measurement skills, more information about the device is required. For example, an automated BP machine that only requires proper cuff sizing and placement and device setting would need a different level of skills than BP measurement with a stethoscope and sphygmomanometer.

**Author response:** We have revised the manuscript as follows under METHODS:

- a portable Omron™ BP monitor (with a range of cuff sizes); i.e., an automated BP testing machine which only requires the selection of appropriate cuff sizes and placement for each patient, as well as periodic calibration by the manufacturer.

#6) Quantitative assessment of survey responses is not clear (first paragraph on page 12). The authors flip from a description of the Likert-type scale, to assessment of open-ended questions, then back to descriptive statistical analysis of survey items (median & IQR). The order should be re-arranged for clarity.

**Author response:** The sections differ in regard to whether the evaluation was immediately after the training versus post-service delivery. We have added further clarity under METHODS to distinguish these:

**Immediate feedback on day of training**
Immediate feedback on the training was sought via a questionnaire (quantitative data), which was administered by the project pharmacist (not the trainers) at the conclusion of the full-day training session. The questionnaire was developed through consensus by the research team, and modelled on others used to evaluate training in similar intervention trials (Table 3). A Likert type scale was used to measure how the training met the pharmacists’ expectations (1 “very well” to 7 “poor”), how different aspects of the training were received (relevance of content to their practice, format of the manual, amount of information provided, workshop activities, duration of the workshop) and how confident pharmacists were to apply the training in practice (1 “extremely confident” to 7 “not at all confident”). The questionnaire also asked several open-ended questions about the factors that enhanced the participants’ learning, and what would help improve their skills, knowledge and ability to apply the skills in the workplace. The item scores were analyzed (medians, interquartile ranges) using SPSS version 21. The questionnaire also asked several open-ended questions about the factors that enhanced the participants’ learning, and what would help improve their skills, knowledge and ability to apply the skills in the workplace (Table 3).

**Feedback collated post-service delivery**
One-on-one interviews were conducted several months after the training program, once the pharmacists were delivering the service (intervention) and were able to reflect
on the training received. Interviews were conducted by those researchers (pharmacy academics) on the study team who were experienced in qualitative methods. The interviews were facilitated using a semi-structured interview guide (Supplementary material), which was principally developed to explore the pharmacists’ experience of delivering the service and their perspectives on chronic disease management, including barriers, challenges, and support needs. The interviews were, digitally recorded, and then transcribed verbatim by a professional transcription company. Quotes relevant to the training session were extracted from the transcripts and thematically analysed.

7) Additional negative experiences impacting recruitment? - the comments by "Pharm 3" on pages 17 & 19 suggest there may be other experiences with clinicians (e.g., a recommendation that was highly criticized?) beyond the reported "unusual readings" that "put negativity in my mind". Are there other data to support or refute poor responses by other clinicians influencing successful recruitment in the project? Preparing study pharmacists for these challenges should be part of a training program.

**Author response:** Under RESULTS, we have revised the manuscript to provide further clarity around this point:

"... was quite motivated and thought how easy will this be. We did need [patients] to have a blood pressure test to qualify. I got a few unusual (low) readings from people and that put negativity in my mind (about the ability to recruit enough patients)." (Pharm 3)

None of the pharmacists specifically mentioned any difficulties in recruiting patients due to barriers presented by the GP.

8) Impact of training on adherence assessment? - given the comment from "Pharm 6" on page 19 - that the patient seemed to be on all the right medications, did the pharmacist indicate that he/she followed the study protocol (figure 2) and their training to identify potential adherence issues? Following/not following the protocol would have implications on how well / poorly the training program helped prepare pharmacists for these situations.

**Author response:** In the RESULTS, we have revised the manuscript to address this query:

Only one respondent specifically expressed that they did not feel entirely confident "self-managing", i.e., making independent recommendations, because "some of them [patients] were on all the recommended medications and I still didn’t know why their blood pressure was high" and despite following the service protocol, including an adherence assessment (Pharm 6). This respondent commented that anything beyond recommending a review of the patient’s health was beyond the scope of their University level training.

9) Resource intensity (last paragraph, page 19) - I would argue that a full-day workshop, run by 6 clinicians for 17 pharmacists is resource-intensive. Especially if one were to consider up-scaling this program to cover a wider audience of pharmacists. Of particular concern is the ratio of 2 academic GPs to 17 trainees. This element of the training program was considered a major asset (second paragraph, page
21) but is it realistic if the authors were to up-scale? Authors need to provide evidence to support their claim this educational intervention is "not resource-intensive".

Author response: This is a valid point. We have addressed this issue in our revised DISCUSSION:

The delivery of an educational intervention that was not resource-intensive (relative to the ≥ 2 day training provided in many intervention trials, as experienced across the study team), and which aligned with the time constraints of these pharmacists (busy practitioners and service providers), contributed to its success. The favorable ratio of study participants to trainers was enabled by the engagement of all research team members (who helped develop the training), however, in future the training could be delivered with fewer trainers if resources were limited.

and

Third, whilst the training was not considered to be resource-intensive in this context, it may be more difficult to scale-up the training to larger, less experienced groups of pharmacists, with reduced access to experienced trainers (including inter-disciplinary experts).

REVIEWER COMMENTS: Lars Småbrekke

Major compulsory revisions

1. There is a lack of focus and an abundance of text in the introduction. Lines 123-7, 135-9, 160-80 are not particularly relevant considering the stated purpose of the study, and should be collated to maintain relevance.

Author response: We have revised the manuscript as suggested to create a more relevant and succinct INTRODUCTION:

Introduction

Hypertension represents a large disease burden in Australia [1] and cardiovascular disease (CVD) is one of the Australian government’s health priority areas [2]. Although hypertension responds well to drug therapy, only 40-60% of diagnosed hypertensive patients in Australia have their blood pressure (BP) well controlled [3, 4]. This is due to a combination of suboptimal adherence to medications on the part of patients and therapeutic inertia (suboptimal adherence to guidelines) on the part of prescribers [5-7]. In hypertension, the most common non-adherent behaviour of patients is discontinuation of therapy [8]. In a review of prescription claim records of nearly 50,000 randomly selected concession card-holders for the 3 years 2004 to 2006, 19% of patients who had newly prescribed antihypertensive medications did not collect a second prescription [8]. Compared to non-adherent patients, those who are adherent are significantly less likely to develop a cardiovascular event [9].

Community pharmacists are well positioned to address gaps in care of hypertensive patients. Targeted interventions by pharmacists have been shown to improve medicines use [10], the appropriateness of prescribing [11], and BP control in the
management of hypertension [12]. Furthermore, pharmacist-led medicines review services significantly contribute to the prescribing of evidence-based therapies in cardiovascular health [13]. Australian pilot studies have also demonstrated the potential for pharmacist prescribing in hypertension management, suggesting that credentialed pharmacists are able to make appropriate therapeutic decisions [14].

However, until such services are fully realised in the Australian health care setting, the pharmacist's expertise is best utilised currently through collaborative decision-making with clinicians via models of 'shared care'. The Health Collaboration Model provides an important framework for this, optimising the respective roles of health professionals whilst providing patient-centred care [15]. A study (funded by the National Heart Foundation of Australia) is underway to explore this within a targeted pharmacist-led service for hypertension management. To fulfill such a role, pharmacists need training in hypertension guidelines and delivery of adherence support strategies. Specially trained community pharmacists can add value to the primary health care management team in terms of medication management. Specifically, therapeutic adjustment recommendations, adherence support and monitoring can all occur in-line with regular visits to the pharmacy.

The purpose of this study was to evaluate a training program designed to enable pharmacists to implement and deliver a targeted service in hypertension management. Specifically, the evaluation canvassed pharmacists' perspectives on the format of the training program (in terms of structure, duration, quality, content) and how this related to their subsequent preparedness for service provision.

The authors state that the evaluation especially 1) canvassed the pharmacists perspectives on the format of the training program, and 2) how this related to their subsequent provision of the targeted service. To me it is unclear what is included under the term "format". Some readers may ask whether this also includes the content of the program?

**Author response:** We have clarified our definition of the term “format” as follows:

The purpose of this study was to evaluate a training program designed to enable pharmacists to implement and deliver a targeted service in hypertension management. Specifically, the evaluation canvassed pharmacists’ perspectives on the format of the training program (in terms of structure, duration, quality, content) and how this related to their subsequent preparedness for service provision.

2. Methods – The trial. The text in lines 209-14 is irrelevant considering the purpose of the study.

**Author response:** We have deleted lines 209-14 in the METHODS section.
Furthermore, the process of recruiting the participants suggests a highly selected sample (participants of previous intervention studies, minimum number of pharmacists on duty, and premises allowing a private area for counselling). Possible consequences of this selection are not addressed in the discussion.

**Author response:** We have revised the DISCUSSION to address this point:

In considering the findings of this study, it is important to acknowledge the limitations. First, the inclusion criteria may have selected out highly motivated pharmacists with a higher baseline level of knowledge and skill in service delivery, and may therefore not be entirely representative of all community pharmacists. In this regard, the training needs of the wider pharmacist population may vary to those reported here. However, the pharmacies themselves were typical of those encountered in the Australian community setting. Second, evaluation of the training (the qualitative evaluation post-service delivery) was undertaken by members of the study team who also delivered components of the training, and therefore it is possible that the pharmacists’ responses were biased toward more positive comments (i.e., social desirability bias). Third, whilst the training was not considered to be resource-intensive in this context, it may be more difficult to scale-up the training to larger, less experienced groups of pharmacists, with reduced access to experienced trainers. Nevertheless, the findings provide some useful insights into the training requirements for the delivery of pharmacist-led services.

**Methods – The intervention.** Not particularly relevant considering the purpose of the study. Neither Fig. 1 nor Fig. 2 is relevant for the evaluation of the training program. I suggest adding as supplementary information.

**Author response:** We have considered the feedback from both reviewers in this regard, and have modified the METHODS as requested (refer to revised manuscript). All details relating to the intervention trial (and service) have been presented within Figures 1 and 2, which will be available as Supplementary Material.

**Methods – Training protocol.** I would appreciate some complementary information on scope of pre-work, recommended time frame and actual time spent on pre-work, and time spent on the different topics during the training day. The learning objectives seem pretty ambitious, and some hints on prioritization of topics would be valuable.

**Author response:** We have revised the manuscript as follows: the original TABLE 1 has been split into two separate tables. The new TABLE 1 provides the learning objectives; TABLE 2 now provides the detail requested regarding the training protocol (including time allocations). Please refer to revised manuscript file.

**Methods – Interview guide.** This should be available as supplementary information.

**Author response:** We have now included the interview guide as part of the Supplementary Material. Please see accompanying document.
3. Results. There is a discrepancy in resolution between topics covered in the training program (Table 1), and pharmacist evaluation of training (Table 2). This may bias the results towards lower (=better) scores. Lack of comments on adherence content and lack of training in managing unexpected challenges suggests that the participants at that time were unable to identify important aspects on the contents of the program. Surprisingly, under the section dealing with unexpected challenges, all the challenges mentioned are related to structural conditions in the pharmacy, and not towards the management of patients struggling to reach their therapeutic goal for blood pressure. To me this raise concerns about how the question was formulated, and whether the question(s) were validated during planning of the evaluation.

**Author response:** To address these points, we have provided further clarity by:

- including additional detail about the training protocol and specific topics (Table 2)
- including more detail about the questions asked as part of the evaluation of training (Table 3)
- including the interview guide as Supplementary Material.

These documents align with the stated methods and study objectives, and results presented.

4. Discussion. The participating pharmacists seem to be a highly selected group, and this limits the generalizability of the results. This issue needs further attention from the authors.

**Author response:** We have revised the DISCUSSION to address this point:

In considering the finds of this study, it is important to acknowledge the limitations. First, the inclusion criteria may have selected out highly motivated pharmacists with a higher baseline level of knowledge and skill in service delivery, and may therefore not be entirely representative of all community pharmacists. In this regard, the training needs of the wider pharmacist population may vary to those reported here. However, the pharmacies themselves were typical of those encountered in the Australian community setting.

Starting in line 468, the authors claim that the intervention was not resource-intensive, and that the time burden was not onerous. However, the reader is not informed on this topic, and assessing the validity of these claims is difficult.

**Author response:** This is a valid point. We have addressed this issue in our revised DISCUSSION:

The delivery of an educational intervention that was not resource-intensive (relative to the ≥ 2 day training provided in many intervention trials, as experienced across the study team), and which aligned with the time constraints of these pharmacists (busy practitioners and service providers), contributed to its success.

and

Third, whilst the training was not considered to be resource-intensive in this context, it may be more difficult to scale-up the training to larger, less experienced groups of pharmacists, with reduced access to experienced trainers (including inter-disciplinary experts).
Line 516. The participants are a highly selected group working within management of hypertension. The statement “Our study……” suggests an extrapolation to professional development within other fields of pharmacy practice. These data hardly justifies this generalization.

Author response: We have revised the DISCUSSION to clarify this point:

Our study highlights identifies the potential for adopting IPE in the professional development of pharmacists, not only to reflect multidisciplinary practice, but in readiness for advanced practice. Furthermore, IPE is important for other health disciplines in clarifying their understanding of the pharmacist’s role, including their specific expertise and training.

Line 529-34. There is some inconsistency in the information in this section and previous statements. E.g., in line 350 it is stated: “none of the participants commented on the adherence addressed throughout the training”, while in line 531 it is stated: “the pharmacists expressed a need for simulated training in this area……”:

Author response: To clarify, none of the participants commented on the ‘adherence’ aspects during the immediate feedback on training. However, in the post-service implementation feedback, we have the following comment:

Only one respondent specifically expressed that they did not feel entirely confident “self-managing”, i.e., making independent recommendations, because “some of them [patients] were on all the recommended medications and I still didn't know why their blood pressure was high” and despite following the service protocol, including an adherence assessment (Pharm 6). This respondent commented that anything beyond recommending a review of the patient’s health was beyond the scope of their university level training.

So, the comment in the DISCUSSION regarding additional training is based on this feedback. We had added a little more clarity under the RESULTS:

At this stage of the evaluation, none of the participants specifically commented on the adherence content presented throughout the training, with the exception of one participant who thought that the “more detailed approach on confronting adherence” enhanced their learning. Overall, it is unclear from the participant feedback how most participants perceived this particular aspect of the training, given the emphasis placed on the BP measurement and management in their feedback.

We had added a little more clarity in the DISCUSSION:

For example, in the present study, there was an assumption that pharmacists would be relatively confident in addressing patient adherence to medication, given that this is often encountered in usual care. However, post-implementation of the service, the pharmacists expressed a need for additional learning in this area to help demonstrate optimal practice and to explore various scenarios and/or strategies, as well as to help integrate all of the intervention (service) components.
5. Conclusion. This should be reformulated taking into account all possible consequences of the selection of participants, and that these data are only valid for training pharmacists for management of hypertension. As it stands, the conclusion is generic. In addition, the statement that the training was “sufficient to give pharmacists competency in BP measurement, addressing patients’ adherence is contradictory to the information given in lines 529-34.

**Author response:** We have revised the CONCLUSION as suggested:

**Conclusion**

Structured, multi-modal training involving simulated and inter-professional learning is effective in preparing selected community pharmacists for advanced practice and the implementation of new services in the context of hypertension management. This training was sufficient to give pharmacists competency in BP measurement and providing therapeutic recommendations to GPs for medication management of hypertension, but could be further enhanced in addressing adherence issues in patients through simulated learning as well as specific training to prepare pharmacists for the challenges encountered in implementing and evaluating services in practice.

6. Abstract. This should be updated accounting for the revision of the text. As it stands, the manuscript suffers under lack of focus, some inconsistencies in the text, and it needs further attention to limitations imposed by the selection of participants. It is not possible to conclude:

**Author response:** We have revised the ABSTRACT as suggested (please refer to attached document).

1. On the time spent on pre-work and on content and priority of topics in the training protocol.

**Author response:** We have revised this as suggested (please refer to earlier comments).

2. Whether these data support the authors’ generic statements on applicability of this program in the implementation of new services in community pharmacies. However, the topic is of interest, and the issues mentioned above could be addressed by a major revision of the manuscript.

**Author response:** We have revised this as suggested (please refer to earlier comments). Thankyou for the feedback.

**Minor essential revisions**

A minor point in line 429: “One participant was an intern pharmacist, who felt that the training had boosted their confidence”. What is the basis for this statement? Is this pharmacist expressing the views of other participants?

**Author response:** We have revised the statements under RESULTS for added clarity:
Two pharmacists commented on improved confidence in specific aspects of their practice, separate to confidence in delivering the service. One respondent said it boosted her confidence in dealing with hypertension in a different way, since it refreshed past knowledge:

“I was really starting to feel like I’ve drifted out of the whole hypertension, feeling confident about it... [It] was like “right, it's time for me to get back on top of all of this.” (Pharm 4)

One participant was an intern pharmacist, who felt that the training had particularly boosted their confidence as an early career pharmacist, particularly in relation to collaborating with other health professionals:

A minor point in lines 503-5: GPs were not engaged “throughout all stages of training” (from my understanding of “Methods”, GPs are not participating in pre-work).

Author response: We have revised the DISCUSSION to address this point:

One of the most highly valued aspects of this educational intervention was the ability of pharmacists to directly engage with GPs throughout all stages of workshop training (all workshops, practicals, discussions).

We trust that the modified manuscript satisfactorily addresses all of the reviewer comments. We look forward to hearing of the outcome of the reviewer in due course.

Kind regards,

Beata Bajorek, Kate LeMay, Parker Magin, Christopher Roberts, Ines Krass and Carol Armour