Post-registration interprofessional learning: a literature review and consideration of research methods

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Abstract
This review explores the literature with regards to interprofessional learning (IPL) for qualified nurses and other health care workers. Three research studies were found. These showed that IPL can promote interprofessional trust, knowledge and skills. There is as yet no evidence that patient outcomes are changed, and taken as a whole, the evidence is not strong. There is also evidence that the providers of IPL for post-registration health care workers also tend to be the researchers. This is not ideal; it raises the possibility of the inclusion of bias and, using the values of evidence based practice, weakens the evidence.

It is suggested that workers who comment on their own IPL initiatives should make explicit the measures they have taken to minimise bias. Comparison of findings from the literature is made with pre-registration IPL and a tabulated summary of much of the published evidence is included, which may be a useful source for future authors in this field.

Keywords
interprofessional learning, learning beyond registration, literature review, research methods

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Introduction

The need for improved working between health and social care professions is driven by changing health care agendas, including more complex case loads caused by an ageing population and the shift from acute to chronic care (Reeves et al., 2009). In addition, failures in patient safety due to poor team working have gained high profile notoriety, as evidenced by problems of delivery of complex surgical care to children in Bristol, UK (Bristol Inquiry, 2001) and communication, for example, the ‘Baby Peter’ case (Care Quality Commission, 2009). As a response these issues are being addressed through various national and international interprofessional education (IPE) initiatives (Anderson and Lennox, 2009).

This review will explore the research-based literature which concerns IPE for qualified health care workers. We have adopted the term ‘post-registration’ to refer to any formal learning that health professionals undertake following registration with a statutory body, which will enable them to work in specialist or advanced roles (Department of Health, 2004). This is synonymous with the term ‘Learning Beyond Registration’, which has some currency in the UK, including the main contractors of such education, the Healthcare Workforce Deaneries. Within this heading, numerically the largest group is the nurses. This paper is thus intended as a resource for providers of nurse education, within both higher education and practice. Interprofessional Learning (IPL) is synonymous with the term ‘Interprofessional Education’, defined by the UK Centre for the Advancement of Interprofessional Education (CAIPE) as occasions ‘when two or more professions learn with, from and about each other to improve collaboration and the quality of care’ (Hammick et al., 2007 p. 736).

There is a slowly growing evidence base supporting the value of IPL, particularly in pre-registration learning. However, the quality of evidence is still limited (Hammick et al., 2007). This discrepancy is highlighted by a Cochrane review (Reeves et al. 2009), which concluded that although there is a trend towards producing valid and reliable evidence of the effects of IPE, this has not been achieved, as yet. They conclude that ‘it is not possible to draw generalisable inferences about the key elements of IPE and its effectiveness’ (p. 2). However, using the Cochrane rhetoric, ‘absence of evidence’ is not necessarily the same as ‘evidence of absence’. Studies such as those of Anderson and Lennox (2009) and Curran et al. (2009) add educational research and evaluation to the topic and show that IPL can change attitudes positively.

Review objectives

The three objectives of this review are:

- To identify and summarise published papers on post registration
- To identify the characteristics of high quality post registration IPL
- To compare the identified literature on post-registration IPL with the literature on IPL in pre-registration training (using the CAIPE literature review conducted by Hammick et al., 2007 as a basis), to determine differences between pre- and post-registration models
Review methods

Bibliographic database searches were conducted on Medline, Web of Science, Scopus, ASSIA, CINAHL, BNI, Social Care Online, ERIC, Social Services Abstracts, Sociological Abstracts, BEI, and The Cochrane Database.


The searches were undertaken in May 2009 and were restricted to papers written in English. There was no restriction on date range.

Results of the literature review

A total of 131 papers were identified from the searches prior to screening. Only 10 were considered appropriate to be included in the review. The full text of these was then evaluated for this review. The remainder of the papers (n = 121) were excluded, either because they did not consider post-registration IPL, or because they did not meet the IPL definition, or were duplicate papers.

Of the 10 included papers, 5 were from the UK, and one each were from Australia, Canada, New Zealand, Netherlands and USA. Five were simple descriptions of the particular IPL programme provided, with opinion on its value rather than formal evaluation or research. Three could be defined as research papers, one was a literature review, and 1 was a perspective article. Three of the 10 included papers were published in the Journal of Interprofessional Care, two in Social Work Education, and the remainder were dispersed amongst a variety of journals.

Details of the three research papers are provided in Table 1. A meta-analysis was not possible, owing to the small number of studies and the heterogeneity of measured outcome, therefore the results are presented in a narrative format. The details of the other publication types (n = 7) are included in Table 2 and are intended as a resource to aid further study.

Discussion

Our aim was to identify and summarise published research papers on post-registration IPL. This review located 10 eligible papers. Surprisingly few research papers were identified (n = 3), and these studies were of limited methodological quality, having no control groups, and containing small sample sizes which limited their ability to provide a convincing level of generalisable evidence for the effects of the IPL interventions. Of these studies, Barnes et al. (2000) used a longitudinal survey format to explore multi-professional attitudes within community care, using a pre-validated questionnaire. Two small cohorts (n = 25 and n = 46) were included. The key findings were that values and attitudes were largely shared by different professions, that stereotypes did indeed exist, and that there was no evidence that IPL broke these down. Inspection revealed that what was taking place had elements of shared learning rather than IPL; much of the teaching was provided by an expert (e.g. lecturer). In addition to the weaknesses noted in Table 1, the mixed method element was unclear; there was no formal discussion of how different data sources were aligned. The study of Nauta et al. (2006) used two professional groups of
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<td>Barnes et al. (2000) UK</td>
<td>Questionnaires at the start of the course, and then at the end of the first and second years of study. Participant observation in 9 full-day teaching sessions</td>
<td>Two cohorts of course participants (n = 25 in cohort 1) (n = 46 in cohort 2). The participants were community psychiatric nurses, occupational therapists, social workers, and others involved in community mental health</td>
<td>A 3-year postgraduate interprofessional learning (IPL) programme in community mental health</td>
<td>Attitudes and values concerning community care for people with mental health problems were largely shared by different professions. The findings confirm the existence of interprofessional stereotypes and of perceived status differences, and there was no evidence that IPL broke these down. The findings support the view that the programme was not providing sufficient opportunities for IPL, as opposed to shared learning (merely learning in the same environment)</td>
<td>Small sample size means findings need to be treated with caution</td>
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<tr>
<td>Nauta et al. (2006) Netherlands</td>
<td>Questionnaires pre- and post-registration, and at 3-month follow-up. Interviews at 18-month follow-up</td>
<td>General practitioner (GP) trainees (n = 34) and occupational health physician (OHP) trainees (n = 20)</td>
<td>Four-day joint postgraduate IPL training programme to improve knowledge of the guidelines for exchange of information, and to enhance collaboration. An outline of the 4 days is provided</td>
<td>Both GP trainees' and OHP trainees' knowledge of the guidelines for exchange of information increased. GP trainees increased their level of trust in OHPs; however this decreased 3 months after the end of the training programme. The course helped GP trainees to overcome prejudices against OHPs</td>
<td>Small sample size means findings need to be treated with caution</td>
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Table 1. Research papers
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<td>Pullon and Fry (2005) New Zealand</td>
<td>Postal survey</td>
<td>Primary health care professionals ( n = 114 ), comprising doctors ( n = 79 ), nurses ( n = 28 ), others ( n = 7 ), who had undertaken postgraduate study between the years 1999 and 2003 at the University of Otago, New Zealand</td>
<td>All primary health care postgraduate courses had a common IPL component which is described in limited depth in this paper</td>
<td>The interprofessional nature of the education was seen as positive, and it contributed to a modest increase in collaboration between health professional groups. Respondents felt they were able to influence their workplace by introducing their own new knowledge and skills to others</td>
<td>The study was limited to retrospective responses, therefore important details may have been forgotten by respondents over the timeframe</td>
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medical doctor, namely general practice trainees \((n = 34)\) and occupational health physicians \((n = 20)\). Therefore, there is at the outset some question over the transferability of these findings to the wider international context; there is also the issue as to whether they actually were different professional groups. A four-day training programme was used to develop mechanisms for sharing knowledge and enhancing collaboration. The findings did show that there was a statistically significant increase for two attitudes, ‘trust variables’ and ‘knowledge of guidelines’. However, the authors themselves identified that transferability is an issue, and that these findings do not demonstrate a long-term effect.

Lastly, Pullon and Fry’s (2005) study used a cross-sectional postal survey \((n = 114, 75\% \text{ response rate})\) to explore reflection on a common IPL element, described in some limited depth within their paper, undertaken by various cohorts over a period of 4 years in New Zealand. Therefore there was an uncontrolled variable of varying time between teaching and investigation. They determined that the education was seen as positive and it was reported to have provided a modest increase in collaboration between health professional groups, and the participants felt that they were able to influence their workplace by introducing new skills.

However, as noted in Table 1, there are limitations, notably that the findings were retrospective and subjective, making bias in response a possibility. Taking these three papers together, although they are satisfactory in terms of providing a meaningful evaluation of the effect of their respective interventions, their ability to be generalised outside of these modest scaled projects is limited and essentially unproven. Furthermore, although the evidence may support the individual teaching strategies, they do not demonstrate any causality with outcomes of patient care.

A second aim of this review was to identify the characteristics of high-quality post registration IPL. The other published papers \((n = 7)\) were mainly simple descriptions of IPL models, or recommendations for IPL with no formal research evaluation. Due to the lack of quality research papers it was not possible to pull out evidence-based characteristics from the literature, but descriptive findings can be presented. They are summarised in Table 2.

The third aim of this review was to compare the characteristics of the literature on post-registration IPL with the literature on pre-registration IPL, using the CAIPE literature review conducted by Hammick et al. (2007) as a basis. The main difference identified was related to subject topics in IPL. Hammick et al. (2007), along with other authors (Thistlethwaite and Nisbet, 2007), found that in pre-registration learning, IPL often centred around in-house activities relating to generic skills such as communication, teamwork, ethics, professional development, and early patient contact. They reported that in the more senior years of pre-registration learning IPL often involved clinical placements in inter-professional teams, and centred around patient journey mapping, discharge planning and referrals, group discussions and patient safety. Recommended topics for IPL in post-registration courses by comparison included quality, patient safety, health systems improvement, patient management, critical incident analysis, conflict and collaboration between professions, and the sharing of knowledge and skills (Ladden et al., 2006; Thistlethwaite and Nisbet, 2007). Hammick and colleagues (Hammick, 1998, Hammick et al., 2007) stated that for IPL in pre-registration training, the interprofessional nature of the learning group is the primary aim of the IPL and learning tends to focus on interpersonal skills and attitude shaping. This is in contrast to post-registration IPL, where the interprofessional nature of the learning group is not the primary aim of the IPL, but a
Table 2. Other publication types

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<tr>
<td>Crozier (2003) UK</td>
<td>Literature review to identify models of interprofessional learning (IPL) used in POST-REGISTRATION for maternity care professionals</td>
<td>The author found no IPL programmes at POST-REGISTRATION level for midwives and doctors. She makes recommendations for the development of post-registration IPL courses that address 3 key areas: professional roles; conflict and collaboration between professions; and the sharing of knowledge and skills</td>
<td>The author’s recommendations are based on low-quality published papers (mainly descriptive and exploratory research papers, and evaluations of interprofessional pilot projects), exploring IPL in pre-registration learning</td>
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<td>Dunworth (2007) UK</td>
<td>Simple description with no formal evaluation</td>
<td>Article outlines a 6-day IPL course taught over a 15 weeks, which forms part of the post-qualifying award for social work. Social worker students work alongside trainee health workers and nursing students. The course objective is to enable students to develop a working knowledge of child protection, relevant legislation and policy. The main focus of the paper is around the challenges faced in devising a joint assessment strategy</td>
<td>No formal evaluation of the course is outlined in this paper, although it is stated that the students reported real changes in skills, knowledge and attitude as a result of the IPL experience</td>
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<td>Jarvis-Selinger et al. (2007) Canada</td>
<td>Simple description with no formal evaluation</td>
<td>The paper outlines an online IPL course which forms part of a multidisciplinary graduate course for physicians, health administrators, information technology developers, health informaticians, pharmacists and nurses. The course is called ‘Telemedicine in Action’ and focuses on innovations and best practices in 4 facets of telemedicine (administrative, educational, clinical, research). The authors state that they were challenged to create</td>
<td>The described online IPL course is not supported by research evidence of its effectiveness</td>
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<td>Hammick (1998)</td>
<td>Perspective article.</td>
<td>The author stresses the need for different approaches to IPL in pre-registration and POST-REGISTRATION courses. She makes recommendations to ensure successful IPL in POST-REGISTRATION: (i) the shared mission needs to act as a dominant influence, and IPL needs to be as much about facilitating a new way of learning as it is about learning a new way of working; (ii) the role of IPL needs to be examined in light of prior professional socialisation experiences.</td>
<td>The author's recommendations are not backed up with research evidence.</td>
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<td>Ladden et al. (2006)</td>
<td>Simple description with no formal evaluation</td>
<td>The authors describe the Achieving Competence Today (ACT) programme which was developed in 2003, as a new model for IPL for quality, safety and health systems improvement. ACT is a 4-module, self-directed, web-facilitated and action learning curriculum designed to increase post-registration level interprofessional learners' competence in quality, safety and systems improvement. A detailed description of the course is provided. The authors stress the importance of following 3 guiding principles to ensure success in IPL teaching at post-registration level: (i) focus on quality and safety as shared problems</td>
<td>The programme is not backed up with research evidence demonstrating its effectiveness.</td>
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<td>Parsell et al. (1998) UK</td>
<td>Simple description with no formal evaluation</td>
<td>Article describes 3 small group IPL teaching techniques and how to implement these: (i) Talking Walls, (ii) using an ‘active’ photograph, and (iii) the Theme Board. Learner content is focused on real-life health care issues, and strong visual images are used to stimulate lively discussion and debate. The authors state that these 3 techniques can be used for pre-registration learners, as well as in POST-REGISTRATION, and continuing professional development (CPD). They state that ‘The Theme Board’ has been successfully adapted for use in POST-REGISTRATION. However there is no guidance on how these 3 techniques would need to be modified in POST-REGISTRATION.</td>
<td>The described IPL techniques are not supported by research evidence of their effectiveness</td>
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<td>Thistlethwaite and Nisbet (2007) Australia</td>
<td>Simple description with no formal evaluation</td>
<td>The authors describe a model of IPL which they refer to as ‘the interprofessional education stream’ which runs from pre-registration, through to post-registration, and then on into CPD. At each level they give examples of specific topics to use as a basis for IPL (e.g., patient management and teamwork, critical incident analysis, patient safety at post-registration level)</td>
<td>The model described is not backed up by research evidence</td>
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‘valuable adjunct for initiatives delivered with the underlying purpose of addressing a practice development need’, which may be interpreted as implying a more managerial goal (Hammick et al., 2007, p. 745). Due to the limited nature of the 10 papers included in this review, it was not possible to determine other differences between pre-registration and post-registration IPL models.

Conclusion

This review has identified that there is a need for more and better quality research into post-registration IPL. The published evidence on this topic to date is extremely limited, and mainly consists of simple descriptions of IPL models with no formal evaluation of their effectiveness. The available research data are not rigorous and therefore are of limited use. More research is needed to demonstrate evidence of the characteristics of high quality post-registration IPL, and to determine the differences between, and similarities with, successful pre-registration models. An issue for educators and researchers wishing to develop evidence-based IPR, is the best type of investigation to use. The evidence-based movement uses primarily quantitative research and particularly randomised controlled trials to judge effectiveness. These seem unlikely to be applicable here, where the gaps in both time and uncontrollable variables – between the provision of training and the measured outcomes of increased quality of client patient care – are so large. Although less evidentially strong, cohort controlled studies may be more feasible and the use of validated quantitative questionnaires over extended periods, for example one to five years, could provide more robust evidence as to the effectiveness, or otherwise, of IPL.

One final item of methodological concern is that there is evidence that the people charged with delivering the IPL are also commonly the researchers. This appears to be the case here in the three research papers discussed (Barnes et al., 2000; Pullon and Fry, 2005; Nauta et al., 2006); there is certainly no evidence presented to the contrary. Research has been shown to be sensitive to unintentional bias, for example, in the construction of questionnaires and data analysis, hence the development of single and double blinded studies in rigorous research design (Bowling, 2009). This trend does not support the strength of the evidence. It is therefore important that researchers within the field consider the structure of their research and formally address possible bias and limitations to their studies, including, for example, payment for the delivery of IPL. Another step which could add to the authority of the research would be the recruitment of independent investigators.

Post-registration IPE does demand large resources, and so the need for a properly provisioned research study to assess its affect on patient outcomes is needed. These findings are slowly being brought to light in pre-registration provision, as illustrated in the study of Reeves et al. (2009). This is an update of an earlier Cochrane Library review from 2000, which found no studies which qualified as evidence within the heading of pre-registration IPL. Clearly some progress has been made within their remit, as six studies are now included, including four randomised controlled trials, although it is noted that ‘more rigorous IPE research is… needed to demonstrate the impact of’ (p. 9) IPE on practice and health care outcomes. By contrast, as a collateral novel finding this review has shown that the evidence for post-registration IPL lags some way behind.
Key points

- The evidence base for IPL for qualified nurses and other professional groups is not strong and its effects are largely unproven.
- Studies which do exist use small samples and have no effective control over variables.
- One methodological concern is that the teachers are often the researchers, leaving findings open to allegations of bias.
- There is a need for further prospective research, possibly using cohort controlled studies to indentify the effectiveness of IPL.

References


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