

Continuing Professional Development (CPD) for pharmacists: Implications for professional practice

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Abstract

There is increasing pressure across the professions to ensure that the educational approaches used for Continuing Professional Development (CPD) will improve practice. Improved pharmacy practice in this study was taken to be increased engagement in proactive extended patient care activities. An online questionnaire was emailed to all registered pharmacists in Northern Ireland (N=2201). After two follow-ups there were 419 responses (19%). Data were analysed using SPSS version 21. Geometric coding (an algebraic method) was used to convert the multiple response data collected into categorical variables that were amenable to statistical analysis. An association was found between the CPD activities that pharmacists had undertaken and the professional activities they engaged in. Structured forms of CPD incorporating workplace learning activities improved professional practice, compared to the baseline (unstructured learning only). Pharmacists' attitudes towards CPD and pharmacy practice also had an impact on both the CPD activities and professional practices they engaged in.

Keywords: *Geometric Coding, Pharmacy Education, Professional Development, Professional Practice*

Introduction

Continuing Professional Development (CPD) policies have been implemented by all United Kingdom (UK) healthcare professions in response to the Bristol Royal Infirmary Inquiry (Kennedy, 2001), and CPD is now mandatory for UK pharmacists (General Pharmaceutical Council, 2011; Pharmaceutical Society of Northern Ireland, 2014). CPD can encompass any kind of learning resources, and pharmacists can choose what they learn and how they learn it (Cantillon & Jones, 1999; Norman, 1999; Cole, 2000; Power *et al.*, 2011; Mathers *et al.*, 2012; Neimeyer *et al.*, 2012). This fits with the view that a flexible educational approach is the most appropriate for professional learning (Watkins & Marsick, 1992; Chivers, 2010). However, choosing what to learn can be problematic in practice, and a more structured approach to professional learning has been recommended (Cross, 1981; Norman, 1999).

Interestingly, although the Bristol Royal Infirmary Inquiry recommended that "Continuing Professional Development (CPD), being fundamental to the quality of care provided to patients, should be compulsory for all healthcare professionals" (Kennedy, 2001: p.447), the stated purpose of CPD in UK healthcare professions' CPD policies is not to improve the quality of patient care; rather, it is to improve professional practice, which is then assumed to improve patient outcomes (Cole,

2000; Cleary *et al.*, 2011; Donyai *et al.*, 2011; Power *et al.*, 2011). Nevertheless, there is little evidence in the literature to demonstrate that CPD has a positive effect on either patient outcomes or professionals' practice, possibly because they are both complex and multi-factorial and thus difficult to measure (Mathers *et al.*, 2012; Neimeyer *et al.*, 2012). Despite this lack of evidence, however, there is increasing pressure across the professions to ensure that the educational approaches used for CPD will improve practice (Webster-Wright, 2009; Carraccio *et al.*, 2016).

In this study, CPD was classified into three main educational approaches (Sadler-Smith *et al.*, 2000): self-directed learning; traditional continuing education (CE) courses and workshops; and work-based learning (WBL) activities. Improved professional practice for pharmacists was taken to be increased engagement in (proactive) extended patient care activities such as reviewing, optimising and prescribing medicines, and health promotion, as recommended in recent healthcare policies implemented in Northern Ireland, where the study was conducted (Compton, 2011; Department of Health, 2013; Donaldson *et al.*, 2014; Department of Health, Social Services and Public Safety 2015; Bengoa *et al.*, 2016). Previous studies have suggested that an individual's attitudes towards CPD, professional practice and their working environment could have an impact on the

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professional practices that they engage in (Bryson *et al.*, 2006; Power *et al.*, 2011; Braund *et al.*, 2012), therefore these factors were also considered in this study.

Methods

A cross-sectional study of pharmacists in Northern Ireland was undertaken using an online survey. A structured questionnaire was developed employing questions adapted from those used by other researchers where possible. No identifying information was collected and all responses were anonymous. Ethical approval for the study was granted by Queen's University Belfast School of Education's Research Ethics Committee.

The questionnaire was divided into three sections:

Section A asked for demographic details (gender, age and work sector). Participants were also asked about their attitudes towards their working environment, and whether they considered it to be 'expansive' or 'restrictive' in its approach to workforce development (Fuller & Unwin, 2004).

Section B asked about any of the following CPD activities that participants had undertaken since they registered as a pharmacist:

- unstructured - self-directed learning (incorporating a combination of informal on-the-job learning, workshops and distance learning courses).
- semi-structured - short accredited continuing education (CE) courses (that are a pre-requisite to the delivery of specific patient care services commissioned by the Department of Health).
- structured - degree-credit postgraduate courses (traditional CE courses incorporating written assignments and a final examination; structured work-based learning (WBL) programmes incorporating practice-based portfolio assessments; the non-medical prescribing (NMP) course incorporating a combination of written assignments and practice-based portfolio assessments; and doctorate programmes which largely entail self-directed learning).

To speed up completion of the questionnaire, any courses where bursaries were available to pharmacists in Northern Ireland were listed as options for the participant to select. The facility to type in details of any other courses undertaken was also included. Participants were also asked about their attitudes towards CPD. Questions considered their motivation to learn (Fairchild *et al.*, 2005; Vallerand *et al.*, 1992; Guay *et al.*, 2000; Archer, 1994), and their preferences regarding learning activities (Houle, 1980; Cross, 1981; Donyai *et al.*, 2011).

Section C asked about any of the following professional activities that participants routinely engaged in every week:

- Semi-professional – preparing/dispensing and purchasing medicines/products (can be done by all pharmacy staff).
- Professional-technician - accuracy checking and medication history taking (can be done by trained and accredited pharmacy technicians).
- Professional-essential - clinically checking prescriptions and providing medicines information/pharmaceutical advice (reactive professional activities).
- Professional-extended - optimising patients' medicines, health promotion, and pharmacist prescribing (proactive patient care activities).
- Advanced - education, leadership and research (not pharmacy-specific).

The facility to type in details of any additional activities that were not listed was also included. Participants were also asked about their attitudes towards professional practice. Questions were based on themes identified in a previous study regarding the potential future roles of pharmacy staff (Braund *et al.*, 2012).

A pilot study was carried out with five pharmacists to ascertain the suitability of the questionnaire. The online questionnaire was emailed to all registered pharmacists in Northern Ireland on 22 May 2015 (N=2201). Responses from all completed questionnaires submitted were included in the study.

Results

After two follow-ups, there were 419 respondents, giving a response rate of 19%. This is towards the lower end of the range routinely observed in online surveys (Bourque & Fielder, 2003). There were 116 (27.7%) male and 303 (72.3%) female respondents, and the mean age was 39.88 years (SD=10.52 years). Only 374 of the 419 respondents specified their main sector of work, with 182 (48.66%), 136 (36.36%), 20 (5.35%), 17 (4.55%), 2 (0.53%) and 17 (4.55%) working in community, hospital, primary care, academia, industry and other sectors of pharmacy respectively. Respondents' demographics reflected data available for registrants of the Pharmaceutical Society of Northern Ireland at that time. SPSS version 21 was used to analyse the data.

A total of 2010 CPD activities had been undertaken by 381 pharmacists. Geometric coding (an algebraic method) was used to convert this multiple response data into categorical variables that were amenable to statistical analysis (Acton *et al.*, 2009). This entailed calculating the 'type of learning' geocode for each respondent based on the combination of CPD activities that they had undertaken. The results are summarised in Table I. No association was found between a pharmacist's 'type of learning' geocode and their gender. However, an association was found with their age ($p < 0.001$, *chi square*=105.105, *df*=36), and their main sector of work ($p < 0.001$, *chi square*=323.463, *df*=30).

Table I: Summary of respondents by 'type of learning' geocode (N = 381)

'Type of learning' geocode	No. & % of respondents
Geo-Unstructured Unstructured learning only	37 (9.7%)
Geo-Semi-structured Semi-structured +/- unstructured learning	137 (36.0%)
Geo-CE CE +/- semi-structured +/- unstructured learning	74 (19.4%)
Geo-NMP NMP +/- CE +/- semi-structured +/- unstructured learning	56 (14.7%)
Geo-WBL WBL +/- NMP +/- CE +/- semi-structured +/- unstructured learning	36 (9.4%)
Geo-Doctorate Doctorate +/- any other type of learning	41 (10.8%)
Total	381 (100%)

Table II: Summary of respondents by 'type of professional activity' geocode and 'professional practice' geocode cluster (N=242)

'Type of professional activity' geocode	No. & % of respondents	'Professional practice' geocode cluster	No. & % of respondents
Geo-Semi-professional Semi-professional activities only	10 (4.1%)	No extended practice	147 (60.7%)
Geo-Professional-technician Professional-technician +/- semi-professional activities	23 (9.5%)		
Geo-Professional-pharmacist Essential (reactive) services +/- professional-technician +/- semi-professional activities	56 (23.1%)		
Geo-Advanced-service Advanced services +/- essential (reactive) services +/- professional-technician +/- semi-professional activities	58 (24.0%)		
Geo-Extended-professional-pharmacist Extended (proactive) services +/- essential (reactive) services +/- professional-technician +/- semi-professional activities	68 (28.1%)	Some extended practice	95 (39.3%)
Geo-Advanced-Extended Advanced services + extended (proactive) services +/- essential (reactive) services +/- professional-technician +/- semi-professional activities	27 (11.2%)		
Total	242 (100%)	Total	242 (100%)

Pharmacists of all ages had done all types of learning apart from Geo-WBL, which had been undertaken by pharmacists up to the age of 54 years only. This may be because structured WBL programmes were only introduced in Northern Ireland in 2008. Almost two thirds of community pharmacists (65%) had done semi-structured learning (Geo-Semi-structured), whilst pharmacists in hospital, primary care and 'other' sectors had done a greater spread of CPD activities. The majority of pharmacists in academia had done a doctorate (Geo-Doctorate).

A total of 749 professional activities had been undertaken by 249 pharmacists. Geometric coding was used again to calculate the 'type of professional activity' geocode for each respondent, based on the combination of professional activities that they said they engaged in. Seven of the 249 respondents had a geocode of 0 because they said they did 'other' (non-professional) activities only, leaving 242 respondents. The results are summarised in Table II. No association was found between a pharmacist's 'type of professional activity' geocode and their gender or age; however, an association was found with their main sector of work ($p < 0.001$, *chi square*=92.072, *df*=25). The 'type of professional activity' geocodes were further amalgamated into two 'professional practice' geocode clusters: 'some extended practice', or 'no extended practice'. Almost 40% of the 242 respondents (N=95) engaged in some extended patient care activities, meaning that just over 60% (N=147) engaged in no extended patient care activities at all. Again, no association was found between whether a pharmacist undertook some extended practice and their gender or age, although an association was found with their main sector of work ($p=0.015$, *chi square*=14.128, *df*=5). Of the 95 respondents engaged in some extended patient care activities, 94 specified their main sector of work; 48 worked in community (=45% of community pharmacist respondents), 37 in hospital (38%), eight in primary care (61.5%) and one in academia (8%). The majority of the pharmacists in academia undertook advanced activities such as research and education, and were thus unlikely to provide direct patient care services.

The 'type of learning' and 'type of professional activity' geocodes were then used to consider whether the CPD activities that a pharmacist had undertaken influenced the professional practices they engaged in. An association was found between a pharmacist's 'type of learning' geocode and their 'type of professional activity' geocode ($p < 0.001$, *chi square*=75.756, *df*=25). Some of the pharmacists who had undertaken Geo-unstructured, Geo-Semi-structured, Geo-CE or Geo-Doctorate engaged in semi-professional activities only (Geo-Semi-professional). Conversely, none of the pharmacists who had done either Geo-NMP or Geo-WBL engaged solely in semi-professional activities. An association was also found between a pharmacist's 'type of learning' geocode and whether or not they had done some extended practice ('professional practice' geocode cluster: 'some extended practice' and 'no extended practice') ($p=0.002$, *chi square*=18.516, *df*=5). Of the 22 pharmacists who had done unstructured learning only (Geo-Unstructured),

seven (31.82%) engaged in some extended practice. As unstructured learning is the baseline CPD requirement stipulated by the UK pharmacy regulators, this was taken to be the baseline figure. Improved professional practice was taken to be increased engagement in extended patient care activities compared to the baseline. Table III summarises the impact of a pharmacist's 'type of learning' geocode on their engagement in extended practice. Pharmacists who had undertaken semi-structured learning (Geo-Semi-structured), the NMP course (Geo-NMP), or a structured WBL programme (Geo-WBL) were found to have improved professional practice in this study, with 41.10%, 60.47% and 48.00% respectively engaging in some extended practice. The figure for pharmacists who had done a traditional CE postgraduate degree course (Geo-CE) was the same as the baseline figure (32%); whilst that for pharmacists who had done a doctorate programme (Geo-Doctorate) was considerably lower (13.79%).

Factor analysis was used to identify any themes arising from responses to questions about pharmacists' attitudes towards CPD, pharmacy practice and their working environment (Pallant, 2013), and to select the smallest number of factors that would adequately describe the data (Bryman & Cramer, 2011). Data was subjected to a Principal Components Analysis (PCA) following confirmation that it was suitable for factor analysis. Only factors with an eigenvalue of 1 or more were

considered for extraction (Pallant, 2013). Cronbach's alpha was then used to check the reliability of these factors; values above 0.7 were considered to be acceptable (Pallant, 2013). A total of five new variables describing pharmacists' attitudes towards CPD, pharmacy practice and their working environment were created, as defined in Table IV.

Table III: Summary of the impact of 'type of learning' geocode on engagement in extended practice (N = 242)

'Type of learning' geocode	No. & % doing some extended practice
Geo-Unstructured (N = 22)	7 (31.82%)
Geo-Semi-structured (N = 73)	30 (41.10%)
Geo-CE (N = 50)	16 (32.00%)
Geo-NMP (N = 43)	26 (60.47%)
Geo-WBL (N = 25)	12 (48.00%)
Geo-Doctorate (N = 29)	4 (13.79%)
Total = 242	Total = 95

Table IV: Summary of the five new variables describing pharmacists' attitudes towards CPD, pharmacy practice and their working environment

Variable	Pharmacists' attitudes	Cronbach alpha
Mastery Preference for hard tasks to develop competence (CPD)	I like to participate in real life tasks in the workplace I like to discuss issues and scenarios with fellow professionals I like to learn about changes or new situations I have encountered in my practice I like difficult activities that challenge me to learn new things I like to have a goal to work towards	0.746
Performance Preoccupation with demonstrating competence to others (CPD)	I like to do well and get high marks I don't like getting things wrong and try not to make mistakes when I'm learning I like to get a certificate or credits when I complete a learning activity I like to have a goal to work towards	0.718
Improve skill mix (Pharmacy practice)	Pharmacy technicians should take on some additional roles that were traditionally done by pharmacists Some of the roles that pharmacists currently do should be done by appropriately trained pharmacy technicians Some of the roles that pharmacy technicians currently do should be done by appropriately trained pharmacy assistants Pharmacy technicians should not take on any additional roles - <i>reverse coded</i>	0.784
Maintain current roles (Pharmacy practice)	Pharmacists should maintain their current roles Pharmacy technicians should maintain their current roles	0.760
Expansive environment (Working environment)	A high value is placed on developing all staff Staff development focuses on helping individuals to progress in their career Staff have access to a broad range of experiences relating to the service as a whole	0.786

The impact of the new variables on the ‘type of learning’ and ‘type of professional activity’ geocodes was explored using multinomial logistic regression; and binary logistic regression was used to determine their impact on the ‘professional practice’ geocode clusters (‘some extended practice’ and ‘no extended practice’) (Pallant, 2013; Acton *et al.*, 2009). The results which were found to be significant ($p < 0.05$) are summarised in Table V. The larger the Wald value, the more significant the variable (Acton *et al.*, 2009). Only three of the five new variables (‘Mastery’, ‘Improve skill mix’ and ‘Maintain current roles’) were found to have a significant impact on the CPD activities and professional practices that pharmacists engaged in. Having a ‘Mastery’ approach to CPD was found to reduce the likelihood of a pharmacist doing both unstructured learning only (Geo-unstructured), and semi-professional activities only (Geo-Semi-professional). The likelihood of a pharmacist doing some extended practice was increased by having an ‘Improve skill mix’ view of pharmacy practice, but reduced by having a ‘Maintain current roles’ view. In addition, having a ‘Maintain current roles’ view of pharmacy practice made it more likely for a pharmacist to do unstructured learning only (Geo-unstructured) and structured CE learning (Geo-CE), and also to engage in essential (reactive) services (Geo-Professional-pharmacist).

Table V. Summary of the impact of pharmacists’ attitudes on the CPD activities and professional practices they engaged in

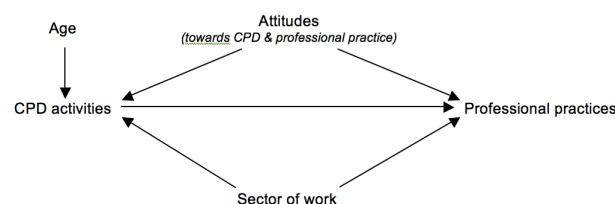
Attitudes	Impact on CPD activities (CPD) and pharmacy practice (PP)	Wald	Sig level
Mastery (CPD)	↓ Geo-Semi-professional (PP)	7.770	0.005
	↓ Geo-unstructured (CPD)	6.123	0.013
Improve skill mix (Pharmacy practice)	↑ Some extended practice (PP)	5.599	0.018
Maintain current roles (Pharmacy practice)	↑ Geo-unstructured (CPD)	13.155	0.000
	↑ Geo-Professional-pharmacist (PP)	8.614	0.003
	↑ Geo-CE (CPD)	4.901	0.027
	↓ Some extended practice (PP)	4.480	0.034

Discussion

The factors that were found to influence pharmacists’ professional practices in this study have been summarised in Figure 1. An association was found between the CPD activities that pharmacists had undertaken and the professional practices they engaged in, as depicted by an arrow in Figure 1. As shown in Table III, the proportion of pharmacists that had undertaken unstructured learning only (Geo-Unstructured) engaging in some extended practice was 31.82%, and this was taken to be the baseline figure. Improved professional practice in this study was defined as increased engagement in (proactive) extended patient care activities compared to the baseline. Pharmacists who

had undertaken semi-structured learning (Geo-Semi-structured), the NMP course (Geo-NMP), or a structured WBL programme (Geo-WBL) were found to have improved professional practice in this study, with 41.10%, 60.47% and 48.00% respectively engaging in some extended practice.

Figure 1. Summary of the factors influencing professional practices



Undertaking semi-structured learning enables pharmacists to provide specific patient care services commissioned by the Department of Health. Therefore it might be expected that the figure for Geo-Semi-structured would have been higher than 41.10%. A higher proportion of pharmacists (60.47%) who had done the NMP course (Geo-NMP) did some extended practice. Undertaking the NMP course enables pharmacists to carry out the specific extended patient care activity of non-medical prescribing. This course uses a hybrid educational approach which includes workplace practice activities in addition to classroom-based elements; whereas Geo-Semi-structured uses a traditional CE approach only. It is possible that semi-structured learning is being applied in the workplace to a lesser extent than Geo-NMP because it is “divorced from actual practice”, as suggested by Boud and Hager (2012). Although Geo-NMP had the highest proportion of pharmacists engaging in some extended practice, this was lower than the quoted figure of approximately 85% of qualified pharmacist prescribers in the UK who were routinely prescribing (Bourne *et al.*, 2016). The reasons why almost 40% of qualified pharmacist prescribers in this study were not routinely prescribing were not explored, but could include a lack of opportunity or support in the workplace, or pharmacists electing not to engage in the work practice (Billett, 2002; 2004). The proportion of pharmacists who had undertaken a structured WBL programme (Geo-WBL) engaging in some extended practice (48%) was higher than the baseline figure and also the figure for Geo-Semi-structured, but lower than the figure for Geo-NMP. Interestingly, none of the pharmacists who had undertaken either Geo-NMP or Geo-WBL engaged solely in semi-professional activities that can be performed by any member of the pharmacy team (Geo-Semi-professional). This was not the case for pharmacists who had undertaken CPD activities that were not located in workplace practices (Geo-unstructured, Geo-Semi-structured, Geo-CE and Geo-

Doctorate). Only 32% of pharmacists who had done a traditional CE postgraduate degree course (Geo-CE) did some extended practice, which was the same as the baseline figure. Therefore, Geo-CE did not improve professional practice in this study. This would seem to support the suggestion by Boud and Hager (2012) that learning should be developed in the same context in which it is to be used, rather than in the classroom. Only 13.79% of pharmacists who had done a doctorate programme (Geo-Doctorate) engaged in some extended practice, which was lower than the baseline figure. However, the majority of these pharmacists worked in academia and engaged in activities such as research and education rather than patient care activities.

Age had an impact on CPD activities, but not directly on professional practices, as depicted in Figure 1. Younger pharmacists did a higher proportion of WBL courses, which have only been available in Northern Ireland since 2008. A pharmacist's sector of work was found to influence both the CPD activities they undertook and the professional practices they engaged in. The majority of pharmacists in the community undertook semi-structured learning and in academia did a doctorate programme, whereas pharmacists in hospital and primary care had a wider spread of CPD activities. The proportions of pharmacists engaging in some extended patient care services in community, hospital, primary care and academia were 45%, 38%, 61.5% and 8% respectively. As discussed earlier, pharmacists working in academia were unlikely to be providing direct patient care services.

Pharmacists' attitudes towards CPD and pharmacy practice, but not their working environment, were found to have an impact on both the CPD activities they undertook and the professional practices they engaged in. Pharmacists with an 'Improve skill mix' view of pharmacy practice were more likely to engage in extended practice, whilst those with a 'Maintain current roles' view were less likely. This could support Billett's (2002) suggestion that individuals can elect to engage in workplace practices. It is possible that pharmacists were electing not to engage in extended practice because they were reluctant to delegate traditional roles to pharmacy technicians (Napier *et al.*, 2016). Alternatively, they could have been satisfied doing traditional roles with little interest in extending their practice (Braund *et al.*, 2012). Indeed, Rosenthal *et al.* (2010: p.37) have identified the reluctance of pharmacists to take on extended patient care roles as "the ultimate barrier to pharmacy practice change". Having a 'Maintain current roles' view also increased the likelihood of a pharmacist doing both unstructured learning only (Geo-unstructured), and a traditional CE course (Geo-CE). Interestingly, as discussed earlier, the latter did not increase engagement in extended practice compared to the former (baseline). Conversely, the likelihood of doing unstructured learning only, and also engaging in semi-professional activities only, was reduced by having a 'Mastery' approach towards CPD. Pharmacists with this approach appeared to be "proactive

individuals" (Bryson *et al.*, 2006) with a preference for doing challenging learning and professional activities.

Some authors have recommended using a self-directed, unstructured approach for professional learning (Watkins & Marsick, 1992; Chivers, 2010); this is not supported by the findings of this study. Others have recommended using more structured forms of learning for CPD (Norman, 1999; Cross, 1981). This study found that structured CE learning did not improve professional practice, supporting the suggestion that professional learning should be located in workplace practices rather than divorced from them (Boud & Hager, 2012). Professional practice in this study was improved by more structured forms of CPD incorporating workplace learning activities, particularly those focused on specific extended patient care activities. However, not all of the pharmacists who had undertaken this type of CPD were applying their learning in practice. The reasons for this were not explored in this quantitative study. Further qualitative study is recommended to identify barriers to implementing extended patient care practice. Nevertheless, identifying and removing barriers does not always result in the desired practice change; resistance to change could involve the personality traits of pharmacists and the culture of the pharmacy profession as a whole (Rosenthal *et al.*, 2010). Indeed, pharmacists' attitudes in this study were found to have an impact on the professional activities they engaged in, suggesting that some pharmacists were electing not to engage in extended practices in the workplace.

It is acknowledged that pharmacists' responses in this study could only reflect their interpretation of their reality (Mercer, 2007; Costley *et al.*, 2010; Hartas, 2010; Hammersley, 2012). A limitation of using quantitative methods was that it was not possible to explore the reasons why some learning was not being applied in practice, and further qualitative study is recommended. Another limitation of the study was the low response rate; although the demographic data for respondents' did reflect data available for registrants of the Pharmaceutical Society of Northern Ireland at the time the study was conducted. Despite its limitations, however, the use of geometric coding contributed to the distinctiveness of this study, and enabled the relationship between the CPD activities that a pharmacist had undertaken and the professional practices they engaged in to be analysed statistically.

Conclusions

The professional practices that pharmacists engaged in were influenced by the CPD activities they had undertaken. Professional practice was improved by more structured forms of CPD incorporating workplace learning activities, particularly those focused on specific extended patient care activities. Pharmacists' attitudes towards CPD and pharmacy practice (but not their working environment) had an impact on both the professional practices and the CPD activities they

engaged in. Pharmacists with an 'Improve skill mix' view of pharmacy practice were more likely to engage in extended practice, whilst those with a 'Maintain current roles' view were less likely. Pharmacists with a 'Mastery' approach towards CPD appeared to be proactive individuals with a preference for doing challenging learning and professional activities.

References

- Acton, C., Miller, R., Maltby, J. & Fullerton, D. (2009). SPSS for Social Scientists, 2nd ed., Palgrave Macmillan, England
- Archer, J. (1994). Achievement Goals as a Measure of Motivation in University Students. *Contemporary Educational Psychology*, **19**, 430-446
- Bengoa, R., Stout, A., Scott, B., McAlinden, M. & Taylor, M.A. (2016). Systems, Not Structures: Changing Health & Social Care, Department of Health, Social Services and Public Safety (online). Available at: www.health-ni.gov.uk/publications/systems-not-structures-changing-health-and-social-care-full-report. Accessed 8th, December, 2017
- Billett, S. (2002). Workplace Pedagogic Practices: Co-Participation and Learning. *British Journal of Educational Studies*, **50**(4), 457-481
- Billett, S. (2004). Learning through work: workplace participatory practices. In *Workplace Learning in Context*. (Eds. H. Rainbird, A. Fuller, & A. Munro). Routledge, London, pp. 109-125
- Boud, D. & Hager, P. (2012). Re-thinking continuing professional development through changing metaphors and location in professional practices. *Studies in Continuing Education*, **34**(1), 17-30
- Bourne, R.S., Baqir, W. & Onatade, R. (2016). Pharmacist independent prescribing in secondary care: opportunities and challenges. *International Journal of Clinical Pharmacy*, **38**, 1-6
- Bourque, L.B. & Fielder, E.P. (2003). How to Conduct Self-Administered and Mail Surveys. 2nd ed, Sage Publications, Thousand Oaks, California
- Braund, R., Chesney, K.M., Keast, E.P., Ng, L.J., Qi, S., Samaranyaka, S. & Wang, E. (2012). Are all pharmacy staff interested in potential future roles? *International Journal of Pharmacy Practice*, **20**, 417-421
- Bryman, A. & Cramer, D. (2011) Quantitative Data Analysis with IBM SPSS 17, 18 & 19. Routledge, England
- Bryson, J., Pajo, K., Ward, R. & Mallon, M. (2006). Learning at work: Organisational affordances and individual engagement. *Journal of Workplace Learning*, **18**(5), 279-297
- Cantillon, P. & Jones, R. (1999). Does continuing medical education in general practice make a difference? *British Medical Journal*, **318**, 1276-1279
- Carraccio, C., Englander, R., Van Melle, E., ten Cate, O., Lockyer, J., Chan, M-K., Frank, J.R. & Snell, L.S. (2016) Advancing Competency-Based Medical Education: A Charter for Clinician-Educators. *Academic Medicine*, **91**(5), 645-649
- Chivers, G. (2010). Informal learning by professionals in the United Kingdom. In *Beyond Reflective Practice*. (Eds. H. Bradbury, N. Frost, S. Kilminster, & M. Zukas, Routledge, London, pp. 120-129
- Cleary, M., Horsfall, J., O'Hara-Aarons, M., Jackson, D. & Hunt, G.E. (2011). The views of mental health nurses on continuing professional development. *Journal of Clinical Nursing*, **20**, 3561-3566
- Cole, M. (2000). Learning through reflective practice: a professional approach to effective continuing professional development among healthcare professionals. *Research in Post-Compulsory Education*, **5**(1), 23-38
- Compton, J. (2011). Transforming Your Care: A Review of Health and Social Care in Northern Ireland, Department of Health, Social Services and Public Safety, Northern Ireland (online). Available at: www.health-ni.gov.uk/topics/health-policy/transforming-your-care. Accessed 8th December, 2017
- Costley, C., Elliott, G. & Gibbs, P. (2010). Doing Work Based Research: Approaches to Enquiry for Insider-Researchers. Sage, London, England.
- Cross, K.P. (1981). Adults as Learners, Jossey-Bass, San Francisco, CA.
- Department of Health, Social Services and Public Safety. (2015). Medicines Optimisation Quality Framework, Department of Health, Social Services and Public Safety (online). Available at: www.health-ni.gov.uk/consultations/medicines-optimisation-quality-framework. Accessed 8th December, 2017
- Donaldson, L., Rutter, P. & Henderson, M. (2014). The Right Time, The Right Place, Department of Health, Social Services and Public Safety (online). Available at: www.health-ni.gov.uk/topics/health-policy/donaldson-report. Accessed 8th December, 2017
- Donyai, P., Herbert, R.Z., Denicolo, P.M. & Alexander, A.M. (2011). British pharmacy professionals' beliefs and participation in continuing professional development: a review of the literature. *International Journal of Pharmacy Practice*, **19**, 290-317
- Fairchild, A.J., Horst, S.J., Finney, S.J. & Barron, K.E. (2005). Evaluating existing and new validity evidence for the Academic Motivation Scale. *Contemporary Educational Psychology*, **30**, 331-358
- Fuller, A. & Unwin, L. (2004). Expansive learning environments: Integrating organizational and personal development. In *Workplace Learning in Context*. (Eds. H. Rainbird, A. Fuller & A. Munro). Routledge, London, pp. 126-144
- General Pharmaceutical Council. (2011). Framework for continuing professional development, General Pharmaceutical Council, London (online). Available at: www.pharmacyregulation.org/education/continuing-professional-development/cpd-framework. Accessed 8th December, 2017
- Guay, F., Vallerand, R.J. & Blanchard, C. (2000). On the Assessment of Situational Intrinsic and Extrinsic Motivation: The Situational Motivation Scale (SIMS). *Motivation and Emotion*, **24**(3), 175-210

- Hammersley, M. (2012). Methodological Paradigms in Educational Research, British Educational Research Association (on-line). Available at: www.bera.ac.uk/researchers-resources/publications/methodological-paradigms-in-educational-research. Accessed 8th December, 2017
- Hartas, D. (2010). The Epistemological Context of Quantitative and Qualitative Research. In *Educational Research and Inquiry: Qualitative and Quantitative Approaches*. (Ed. D. Hartas). 1st ed, Continuum, London, pp. 33-53
- Houle, C.O. (1980). Continuing Learning in the Professions. Jossey-Bass Publishers, San Francisco, CA.
- Kennedy, I. (2001). The report of the public inquiry into children's heart surgery at the Bristol Royal Infirmary 1984-1995: Learning from Bristol. The Stationery Office Ltd., London
- Mathers, N., Mitchell, C. & Hunn, A. (2012). A study to assess the impact of continuing professional development (CPD) on doctors' performance and patient/service outcomes for the GMC, The Academic Unit of Primary Medical Care, University of Sheffield (online). Available at: www.gmc-uk.org/A_study_to_assess_the_impact_of_continuing_professional_development_CPD_on_doctors_performance_and_patient_service_outcomes_for_the_GMC_51707533.pdf. Accessed 8th December, 2017
- Mercer, J. (2007). The challenges of insider research in educational institutions: Wielding a double-edged sword and resolving delicate dilemmas. *Oxford Review of Education*, **33**(1), 1-17
- Napier, P., Norris, P., Green, J. & Braund, R. (2016). Can they do it? Comparing the view of pharmacists and technicians to the introduction of an advanced technician role. *International Journal of Pharmacy Practice*, **24**, 97-103
- Neimeyer, G.J., Taylor, J.M. & Cox, D.R. (2012). On Hope and Possibility: Does Continuing Professional Development Contribute to Ongoing Professional Competence? *Professional Psychology: Research and Practice*, **43**(5), 476-486
- Norman, G.R. (1999). The Adult Learner: A Mythical Species. *Academic Medicine*, **74**, 886-889
- Pallant, J. (2013). SPSS Survival Manual. 5th ed, Open University Press, England
- Pharmaceutical Society of Northern Ireland. (2014). CPD Standards and Framework, Pharmaceutical Society of Northern Ireland, Northern Ireland (online). Available at: <http://www.psni.org.uk/wp-content/uploads/2012/09/CPD-Framework-and-Standards-2014-COMPOSITE-revised10-Feb-2016.pdf>. Accessed 8th December, 2017
- Power, A., Grammatiki, A., Bates, I., McKellar, S., Johnson, B.J, Diack, H.L., Stewart, D. & Hudson, S.A. (2011). Factors affecting the views and attitudes of Scottish pharmacists to continuing professional development. *International Journal of Pharmacy Practice*, **19**, 424-430
- Rosenthal, M., Austin, Z. & Tsuyuki, R.T. (2010). Are pharmacists the ultimate barrier to pharmacy practice change? *Canadian Pharmacist Journal*, **143**(1), 37-42
- Sadler-Smith, E., Allinson, C.W. & Hayes, J. (2000). Learning preferences and cognitive style: some implications for continuing professional development. *Management Learning*, **31**(2), 239-256
- Scullin, C., Hogg, A., Luo, R., Scott, M.G. & McElnay, J.C. (2012). Integrated medicines management – can routine implementation improve quality? *Journal of Evaluation in Clinical Practice*, **18**, 807-815
- Shah, C. & Barnett, N. (2015). Medicines reconciliation: a patient safety priority. *Prescriber*, **26**(22), 23-26
- Vallerand, R.J., Pelletier, L.G., Blais, M.R, Briere, N.M., Senecal, C. & Vallieres, E.F. (1992). Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, **52**, 1003-1017
- Watkins, K.E. & Marsick, V.J. (1992). Towards a theory of informal and incidental learning in organizations. *International Journal of Lifelong Education*, **11**(4), 287-300
- Webster-Wright, A. (2009). Reframing Professional Development through Understanding Authentic Professional Learning. *Review of Educational Research*, **79**(2), 702-739