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Continuing professional development (CPD) in Radiography: a collaborative European meta-ethnography literature review

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Keywords

Continuing professional development (CPD), Radiography, professional standards, meta-ethnography, European Federation of Radiographer Societies (EFRS)

Abstract

Objectives: The aim of the study was to complete a collaborative review of Radiography continuing professional development (CPD) research material to support the production of European Federation of Radiographer Societies (EFRS) CPD recommendations. A meta-ethnography approach to literature review was applied focussing upon commonalities rather than discrepancies between research outcomes. This facilitated exploration of context across the geographical region of Europe with national variations in CPD governance. The seven phases of the meta-ethnographic approach were followed by two independent experienced researchers. A third researcher mediated the findings which were then explored collaboratively with the EFRS CPD working group for concordance.

Key Findings: Phase seven of the meta-ethnography involved interpreting an expression of the synthesis from the previous stages. Six main corroborating themes emerged in this process and following mediation were expressed as themes; knowledge, skills & competency, needs/gap analysis, multi-layered / multi-modal, barriers and drivers; regulation vs autonomy; fostering collaboration – harnessing technology.

Conclusion: The primary feature of CPD activity should be the resulting impact - to patients, the service, the profession and the individual; with all stakeholders working in partnership. CPD activity must be flexible/multi-modal to support the changing growth/dynamic workforce. All stakeholders should utilise communication and technology resources and make efforts to improve collaboration between the management, regulators and educators to support Radiographers to develop meaningful CPD. Health services across Europe are under increasing stress and a principal factor going forwards will be managing increasing demands on healthcare staff whilst supporting enhancement of the knowledge, skills and competency base.

Highlights:

- Irrespective of model, CPD activity should have demonstrable impact to patients, the service, the profession and the individual.
- CPD activity must be flexible/multi-modal to support the changing growth/dynamic of the workforce.
- Stakeholders should utilise communication and technology resources and make efforts to improve collaboration between the management, regulators and educators involved with CPD.
- The perceived 'importance' of known barriers and drivers to CPD activity is changeable.
- Meta-ethnography qualitative reviews are useful for novice researchers and/or when navigating complex, multi-national outputs.

Introduction

It is now widely accepted that the skills and knowledge attained by healthcare professionals in their undergraduate years provide a foundation for their career and that their knowledge and skills upon graduation will be insufficient to support them in future years[1]. There is a critical need for health care professionals to remain professionally updated regarding

continuous changes to the evidence base and technological advancements, particularly in Radiography, to facilitate closure of any gaps between 'actual practice' and 'best practice[2,3]. The quality of healthcare provision and patient safety of is a key concern[4]. Increasing patient awareness levels, of their own clinical management, highlights the requirement for healthcare professionals to justify their professional practice[4]. Radiography encompasses multiple imaging modalities and distinct professional roles exist for those practicing in diagnostic, therapeutic and nuclear medicine branches of the profession, as defined under Article 2 of the European Federation of Radiographer Societies (EFRS) Constitution[5] thus CPD activity needs to account for a wide spectrum of needs. Additionally, the increasing use of hybrid imaging techniques will require double and maybe triple skilled multi-modality practice.

Since the early 19th century medical practitioners had begun to engage in professional development through published medical journals and attendance of various conferences and seminars. Participation was initially voluntary, with the first mandatory medical program initiated in urology in the USA[4]. This move to equate continuing education with the notion of competence and thus ability to practice, has gained considerable momentum globally in a multitude of disciplines and industries[6, 7]. As a result, it has become commonplace for regulatory bodies to demand compliance with a predefined benchmark, typically in terms of minimum 'credits' or hours which must be dedicated to continuing educational activities. Opinion varies as to how CPD is structured for healthcare professions for example the practice of attending lectures and seminars in pursuit of credits without full consideration to their own professional needs has come under recent scrutiny, with critics highlighting the shortcomings of sporadic, non-interactive lectures concerned primarily with clinical topics[8]. Furthermore, recent evidence suggests that the more traditional didactic styles of learning have little if any benefit in terms of practice and healthcare outcomes despite being favoured by many healthcare professionals[9].

More recently there has been a move toward a so called 'lifelong learning' concept which recognises that professional development is an ongoing and continuous process. It aims to approach continuing education in a more systematic and structured manner, encouraging critical reflection and autonomy whilst also recognising the value of the more spontaneous experiential learning[10]. The notion of experiential learning is deeply rooted in the philosophical concept of constructivism whereby humans broaden and strengthen their knowledge base through their own day to day experiences. The key stakeholders responsible for this drive for change were national governments, professional bodies and consumer groups[11.]

The primary objective of regulatory bodies is to safeguard the public by ensuring that those wishing to practice in any given discipline are competent to do so, by ensuring that they have attained at least the minimum specified standards[12]. Competence can be viewed as a state of being and concerned primarily with one's ability to carry out their role adequately and safely. CPD on the other hand can be viewed as more of a holistic philosophy with a much broader focus, which acknowledges the multifaceted nature of professional practice and emphasises the importance of personal as well as professional development[13]. In this regard, CPD promotes professional excellence and can be viewed as a mechanism to achieving a state of competence by encouraging self-awareness and accountability.

CPD schemes support this continual process of skill development and maintenance[14] however, considerable variation exists in both its interpretation and its application. Terminology such as: 'continuing education' and 'lifelong learning' are often used interchangeably with CPD in the published literature. The EFRS defines CPD as 'the continuous learning process required to further develop and improve one's knowledge, skills and competences to work effectively and safely'[15].

CPD should align the goals of the individual with those of the organisation to effect positive change and enhance service provision for the patient rather than simply maintain the status quo. Research conducted by Henwood and Taket[16] however, indicates that this distinction is not always apparent, with Radiographers expressing little or no expectation of impact of clinical practice from CPD participation. The effectiveness of CPD however, should be measurable in terms of its outcomes, even if the measurement of success is more reflective than quantitative[17].

Within the European community there is a growing recognition among Radiography societies of the importance of CPD in providing an able and competent, safe workforce [18]. In a recent survey conducted by the EFRS[18], 91% of those professional bodies who responded (n=20) believed there was value in developing a European CPD framework; providing a clear mandate for the development of CPD guidance recommendations.

This review aimed to ascertain current evidence base related to the profession of Radiography. The findings will support the formulation of an EFRS CPD recommendation (2017/18)[19] for the Radiography profession to support Radiography Society activity across Europe.

Literature Search Strategy

Epistemological approach

When literature is used to inform a question, it is important to consider the approach that is used to acquire and make sense of the evidence base. Noblit and Hare[20], proposed an interpretivist based meta-ethnography as an alternative to meta-analysis by providing an alternative view for the collective use of 'cases'[21]. The emphasis is on looking for commonalities amongst, rather than discrepancies between research outcomes. Meta-ethnography that is applied in this paper defines synthesis as an activity in which separate parts are brought together to form a whole[22]. The 'whole' is essentially a comparative understanding rather than aggregated data, characterised by some degree of innovation so that the result is greater than the sum of its parts[23]. The approach that has been adopted here falls under the umbrella term of objective idealism, that there is a world of collectively shared understandings[24].

Doyle[21] emphasised many possibilities using a meta-ethnography approach including: expanding democratic practices and empowerment of 'Other' voices, facilitating praxis, weakening hierarchical roles, extending locally bound 'cases' and can be interdisciplinary. It was agreed that this approach would be beneficial to explore context across many European member states, to search for commonalities in several countries with various CPD governance, without hierarchical boundaries.

Search Process

Meta-ethnography follows a seven phased approach to reviewing the literature[20].

- Phase one: getting started
- Phase two: deciding what is relevant to the initial interest
- Phase three: reading the studies
- Phase four: determining how the studies are related
- Phase five: translating the studies into one another
- Phase six: synthesising the translation
- Phase seven: expressing the synthesis

Phase one involved a scoping process to provide an overview of the literature, key issues and subsequent development of the review question[25]. This involved an initial, non-specific internet search engine (Google™). No exclusion criteria were used in the scoping exercise; particular interest was given to previous European CPD resources. Additional searching around the methodology of literature reviewing (meta-ethnography) was also conducted.

The purpose of the scoping exercise was to refine and target for phase two. This involved a systematic selection of pertinent literature. Several online search databases relevant to the topic were used to source literature; Google™ Scholar, Science Direct, PubMed, CINAHL and the search function of the journal *Radiography* (Elsevier). Keywords[26] were used using Boolean operators to limit the number of articles (see table 1) along with other exclusion criteria such as publications not written in the English language and any publication more than ten years old.

Table 1: Summary of the search strategy filters employed.

Time constraints	**Conducted between May –November 2016**
Online search databases	Google Scholar, Science Direct, PubMed, CINAHL, Radiography (journal)
Search words and phrase combination/s	PICO search formulation used[27] all in title search/ keyword search only: • **(P) Population** = "Radiography AND CPD OR "professional development" OR ("professional") AND ("continu*") NOT America • **(I) Intervention** = Radiography AND standards OR guidelines • **(C) Comparison** = Radiography AND CPD OR professional development OR ("professional") AND ("continu*")AND (nurs*) (allied health) AND Europe • **(O) Outcome** = Radiography AND CPD OR professional development OR ("professional") AND (effective*) (experience) (impact) (implementation) (practice)
Search filter methods	• Boolean operators (AND, NOT, OR) – to apply additional filters between multiple terms simultaneously. • Truncation/ wildcard combination/root of word at terminus asterisk * - to broaden search to include various endings/spellings. • Brackets (+) = gives priority to bracketed term – insuring no unrelated terms are included. • Quotations "+" = phrases are intact – to insure no loss of meaning

Following final selection and dismissal by the researchers, taking account of the European focus on CPD, a combination of 35 publications were selected for the review following abstract relevance. For phase three of the meta-ethnography, the 35 literature publications were read and appraised by two independent researchers from different European member states. Both were experienced researchers from the EFRS CPD working group. This stage involved the careful reading of the chosen papers in order to identify the main concepts. Britten et al.[28] suggested that as well as identifying the main concepts in a meta-ethnography, details of the studies that were being considered were additionally recorded, providing context for the interpretations and explanations of each study. In stage four of the approach, each paper was appraised and synthesised using a rubric to help with sense making/trend observations (see table 2 adapted from Pound et al.[29]). Literature was considered chronologically (from most to least historic) in an attempt to highlight any trends/changes relevant to time.

Table 2: Rubric topics complied by researcher 1 and researcher 2.

Author & year	Title/ topic area	Type of data/methodology	Number of participants/geography	Findings +ive/-ve	Initial themes/codes	Term (1st, 2nd etc.?)

Translating the research articles into one another (phase five) proved more difficult to define. Previous meta-ethnography approaches used Schultz's[30] classification (table 3) to assist with this, which each appraising author attempted.

Table 3. Schultz's[30] Classification to determine interrelated thinking between literature resources.

Term	**Definition**
1st order construct	Constructs that reflect participants' understandings, as reported in the included studies (usually found in the results section of an article).
2nd order construct	Interpretations of participants' understandings made by authors of these studies (and usually found in the discussion and conclusion section of an article).
3rd order construct	The synthesis of both first and second order constructs into a new model or theory about a phenomenon

Reciprocal translation	The comparison of themes across papers and an attempt to "match" themes from one paper with themes from another, ensuring that a key theme captures similar themes from different papers
Line of argument synthesis	The development of a new model, theory or understanding by synthesising and interpreting first and second order themes found in the text.

Following the two independent literature appraisals the rubrics were synthesised in accordance with phase six of the approach into themes. This was mediated by a third researcher from the EFRS CPD working group with shared understandings and commonalities as the underlying driver as part of the meta-ethnographic understanding. The final stage of the approach required all three researchers with concordance from the entire EFRS CPD working group to express the synthesis. This is considered in the following discussion section. The wider EFRS CPD group included representation from eleven European countries – Belgium, Cyprus, Denmark, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Switzerland and the United Kingdom.

Discussion

Semantically, there is some variation in the literature regarding the terminology around CPD. For example, CPD, CME (Continuing medical education), CE (Continuing Education), LLL (lifelong learning), PPD (personal and professional development), CPC (continuous professional competence) - this is not trivial. Consensus on terminology is crucial amongst diverse 'nomenclature'[31]. There is a lack of clarity around format, name and desired outcomes of ongoing professional development[32]. Confusing terminology compounds this; Radiographer communities should attempt to standardise terminology. In Radiography publications CPD is the acronym most documented[32 - 41].

Phase seven of the meta-ethnography involved interpreting an expression of the synthesis from the previous stages. Six main corroborating themes emerged in this process and following mediation were expressed as;

- knowledge, skills & competency,
- needs/gap analysis,
- multi-layered / multi-modal,
- barriers and drivers;

- regulation vs autonomy;
- fostering collaboration – harnessing technology.

Knowledge, skills & competency

Knowledge, skills and competence[36] are stated in the literature as a 'tripartite' set of categories within the 'European qualifications framework (EQF)'. Each can be defined, yet they are often presented as an overlapping continuum and should be considered as essential components of CPD. There is some debate in the literature between knowledge and skills versus competence. Knowledge and skills in isolation are not a useful benchmark for understanding and articulation into practice[34, 36, 42, 43]. Radiographers should seek excellence and high standards which are well above requirement or threshold (not just certain amounts of credits for example[36]).

Each European member state is required to develop their own national framework for CPD education with reference to EQF in accordance with national legislation and practice[36]. Higher level learning should have a CPD pathway to completion for post registration and doctoral level; not just higher education institution (HEI) led courses/training[36]. It has been stated however that HEI and CPD pathway postgraduate options remain limited across Europe[44]. There is a real need for stakeholders to improve the development opportunities for Radiographers in both formal HEI settings and in the workplace[35, 42, 45, 46].

Credit based versus outcomes based models of CPD are evident as one of the main contestations in the literature; this is a fundamental aspect of the ways in which CPD operates almost on a global basis. At the time when the allied health professions (AHP's) (and later the Health and Care Professions Council) in the UK were systematising their approach to CPD, the two different models were subject to considerable scrutiny. The tension was between the need to evidence participation, versus the need to evidence learning. Neither system is infallible with literature supporting and highlighting the evident shortcomings of each[31, 40, 42, 43, 47, 48]. CPD quantification systems have a failing in that they only measure CPD participation not output or even better knowledge translation[43]. Austin[42] argued that the evidence on which credit based models of CPD are founded are ambiguous at best. Nevertheless, there is considerable evidence in the literature that the vast majority of countries advocate a credit based model[31, 42, 43, 48]. Proponents of this format of CPD argue its transferability and ease of benchmarking[43]. What can be derived from the discourse is that

regardless of the models, learners must attempt to articulate learning into a meaningful measure *in practice.*

There have been moves away from a more intensive technical instruction to a scope of reflection approach of learning or critical reflective practice[49] especially in modalities[47, 50]. Healthcare CPD (especially in the more socially centred occupations) has championed andragogical approaches whereby critical reflection is essential; allowing for double loop learning. For example changing thinking from 'am I doing things, right?' to double loop learning 'am I doing the right things?'[47]. The key limitation is that it requires active learners and critical involvement with learning. This has been cited in policies as "autonomous professionals equipped with sound personal judgement"[36]. Perceptions of own learning, motivation and willingness to change are also key to changing behaviours in this regard[42]. This message has also been voiced from other stakeholders, for example it has been cited that managers feel that learners must be self-motivated and willing to learn[51].

In summary, it is clear that knowledge, skills and competence are key components of CPD and each European member state must work to ensure educational pathways are well articulated to support Radiographers. There is considerable debate around models of CPD (credit vs. outcome), each with their own merit and disadvantages. Nevertheless there is a shift towards more outcomes based models probably in part due to the ease of articulation to practice. Critical reflective practice can be a useful tool to evidence various modes of learning to practice/service user outcomes.

Needs/gap analysis

There is an overall identification of poor gap/needs analysis by employers and Radiographers with regard to CPD activity[34, 40, 52, 53, 54]. There is a clear need to move forward with impact analysis in the planning, recording and implementation of CPD; taking account of all parties involved – such as the patient, the individual, the service and the profession. Problems arise here when there are competing priorities between stakeholders involved in the CPD cycle. There has been suggestion in the literature toward greater partnership and collaborative working between stakeholders to create new ways of planning CPD activity[52, 53]. Creating documentation for CPD including a needs/gap analysis could ensure that the CPD learning considers the impact for all stakeholders; thus negating unwarranted costs of CPD activity which does not fulfil the needs of a range of stakeholders. With regard to documentation, recording of CPD is still not done in a systematic way[32] despite compulsory regulation in some countries.

In summary, CPD should be ‘fit for purpose’ whereby a documented needs/gap analysis demonstrates a clear benefit to a range of stakeholders including the patient, the individual, the service and the profession[40]. Clear linking of CPD activity to career planning involving transparent discussion between the Radiographer and the manager should feedforward in career planning. Self-assessment tools have been suggested as useful in this regard but more research is needed in Radiography to assist managers in developing these tools.

Multi-layered / multi-modal

Multi-modal CPD activity is documented[34, 36, 43, 50, 52, 54, 55, 56] and cited as good practice including (this list not exhaustive); reflection, workshops, patient testimonials, service user testimonials, courses, study days, Higher Education Institution (HEI) accredited learning, research and audit. Benefits have been cited in the literature in having several modes of CPD activity running alongside one another for better learning outcomes[47, 56]. A range of learning ‘spaces’; such as workplace experiential learning (on-the-job), home and HEI arenas are evident in the discourse[41, 50, 52, 54, 57]. There is debate concerning the ideal ‘space’ for learning with no definitive answer; a standardised approach is therefore unadvised.

The demographic of the health worker population is changing with an ageing workforce[57, 58] it is likely that there are differences in CPD need. A one size fits all approach will not work. Age related differences have been identified with relation to CPD[57]. CPD activity has been identified as changeable, in both mode and space, over a career. CPD requirements must be flexible to accommodate this.

In summary, the literature suggests a need of CPD activity variety[43]. CPD should include a mixture of course accredited CPD and other forms of CPD[48] however, all stakeholders must recognise flexibility and provision of a suitable ‘space’.

Barriers and drivers

Lack of time appears to have replaced cost (funding resourcing) as the primary barrier to CPD[32, 34, 41, 54, 55]. The concept of time often had elements of ‘own time’ and ‘work time’. There has been views that ‘free time’ is even more precious to spend relaxing due to heavy workload and staffing pressures[32]. Radiographers may have to use their 'spare time' to meet CPD requirements. Departments and activities should be flexible to accommodate the 'mismatch' between expectation and reality of CPD activity, including time[41]. Other barriers highlighted as pertinent include; cost[32, 33, 38, 39], competing priorities[39, 40], accessibility of both activity and resources[33], workload[52], access to further development learning[45] access to

journals[33], and a lack of perceived benefit[59]. Barriers to CPD are not a newly discovered phenomenon, however what is a novel finding is that they are similar amongst a wide range of health professions irrespective of geography and culture[34, 39].

One of the main drivers of CPD is the requirement for a flexible workforce[44, 45, 52]. Workforce and education mobility are still an issue despite funding and opportunity[44] Other documented drivers (this list is not exhaustive) include better patient care/outcomes[39, 52], decreased waiting time for services[52], increased morale & personal gain[34, 55, 59], career development[57], technological advancements[61] and changing boundaries[32, 44, 52]. Additionally a key factor influencing CPD participation is how important a Radiographer deems a particular CPD activity[51, 59]. This is further enhanced by effective needs analysis prior to learning to ensure 'buy in' from all stakeholders. Alternatively some evidence suggests manager-Radiographer appraisal reviews as a useful forum for this activity[54].

The identification of barriers and drivers to CPD activity is well documented in the literature. Interestingly the perceived 'importance' of known barriers and drivers is changeable. Iterative review is required in order to successfully implement CPD activity in a changeable environment.

Regulation vs autonomy

Throughout the literature in healthcare concerning CPD there is an apparent 'balance' between enforcement and self-determination[31, 32, 38, 39, 41, 42, 43, 55]. A body to 'police' ensures compliance with CPD activities with health professionals[38]. However, quantifying in a systematic and fair way so that Radiographers can comply with regulatory CPD is challenging. Additionally, if there is non-compliance there is debate in the literature as to what action must/should be taken[43]. Sanctions appear on a continuum from mild to extreme for example the health professional may not be able to re-register if they do not meet CPD requirements[38]. It must be noted however that not all regulatory bodies require CPD participation for re-registration[48]. There are recognised difficulties in administration aspects of a regulatory system[33, 43, 52]. Regulatory/guidance publications are vital to the process but have been criticised for being 'confusing, woolly and reductionist'[32].

There is a real danger of Radiographers feeling that they have to 'prove' themselves[32]. Improving communication between Radiographers, employers, regulatory bodies and HEI providers is vital to the completion process[33, 41, 52, 53, 60]. Questions remain regarding the need for voluntary or mandatory CPD. More research is needed to comparatively evaluate the two schools of thought[31]. Irrespective of 'carrot or stick' motivators for CPD engagement,

Radiographers with comprehensive personal skills in autonomy; self-determination and tenacity will be required for an effective, safe workforce[47, 54, 55, 60]. Introduction of CPD as a student practitioner may also be useful to prepare students for CPD emersion[42].

Fostering collaboration - harnessing technology

Closer links fostered between HEI institutions and practice are documented as desirable in the literature[44, 52]. On a hospital inter-department level, increased interdisciplinary teamwork will be required both now and into the future. Technology is driving collaborative learning in 'everyday' life through social media which whilst in its infancy in CPD, has an untapped potential[40, 61, 62]. In the hospital environment for example, communication via PACS has created collegial networks through electronic mediums[50].

As considered in previous discussions, affordance of learning 'spaces' for CPD can be barriers or indeed drivers to collaborative CPD. There is mixed evidence but support for various 'spaces' is changing from the classroom or workplace to more e-based environments– such as eLearning[35]. There is a potential to reach remote professionals and to promote international collaboration[61, 62]. E-Learning mitigates cost and geographical complications of CPD[35, 61, 62]. Accessibility is improving with moves onto more mobile platforms[51]. Technology is however also related to a high attrition rate; it is thought that technical issues can compromise engagement[35, 49]. An area where increasing numbers of health professionals are harnessing technology is through the use of online search engines for professional purposes[58]. However there appears to be a generational skills gap which may be an issue for decades to come [58].

Further research is needed to evaluate the impact of these initiatives in practice before a large shift in delivery should be attempted[61].

Limitations

Slavish adherence to the practicalities of the meta-ethnography methodology were useful in the context of a complex qualitative research landscape concerning CPD and health professions. It is not clear if the outcomes would have varied from other methods of systematic reviews of qualitative literature. There is merit in the meta-ethnography method for novice qualitative researchers due to ease of process or whereby praxis and 'Other' voices are lessened by traditional hierarchy. This was especially the case when evaluating multiple, fundamentally different systems/models of CPD.

Despite previous literature advocating the use of Schutz[30] classification system to assist with the translation phase of meta-ethnography, this was not the case for this review. Further work in this area should build upon research previously conducted as it was noted throughout this analysis phase that literature in the area failed either wholly or in part to translate reciprocally.

There was a small possibility that mediation may have contributed to a dilution of findings. Indeed, there were differences in findings between researchers which is wholly expected in this immersive approach. This was in part mitigated by including all EFRS CPD working group members to review the final drafts for concordance.

Finally, European literature prevalent in this review, may not fully represent all European jurisdictions, particularly socioeconomically challenged regions where research activity output may be reduced however this is a matter outside the parameters of this review.

Conclusion

The primary feature of CPD activity should be the resulting impact - to patients, the service, the profession and the individual; with all stakeholders working in partnership. CPD activity must be flexible/multi-modal to support the changing growth/dynamic workforce. All stakeholders should utilise available communication and technology resources and make efforts to improve collaboration between the management, regulators and educators.

Acknowledgment of barriers is required and actions must be taken to reduce these over time; financial burden remains a concern whilst increasingly literature identified work pressure and lack of time as the main challenge for Radiographers. Health services across Europe are under increasing stress and a principal factor going forwards will be managing increasing demands on healthcare staff whilst supporting enhancement of the knowledge, skills and competency base. Further research is recommended to explore the findings of this review to support Radiographers to develop meaningful CPD.

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