Doctors' attitudes to maintenance of professional competence: A scoping review

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Abstract
Context: Recent decades have seen the international implementation of programmes aimed at assuring the continuing competence of doctors. Maintenance of Professional Competence (MPC) programmes aim to encourage doctors' lifelong learning and ensure high-quality, safe patient care; however, programme requirements can be perceived as bureaucratic and irrelevant to practice, leading to disengagement. Doctors' attitudes and beliefs about MPC are critical to translating regulatory requirements into committed and effective lifelong learning. We aimed to summarise knowledge about doctors' attitudes to MPC to inform the development of MPC programmes and identify under-researched areas.

Methods: We undertook a scoping review following Arksey and O'Malley, including sources of evidence about doctors' attitudes to MPC in the United States, the United Kingdom, Canada, Australia, New Zealand and Ireland, and using the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) as a guide.

Results: One hundred and twenty-five sources of evidence were included in the review. One hundred and two were peer-reviewed publications, and 23 were reports. Most were from the United Kingdom or the United States and used quantitative or mixed methods. There was agreement across jurisdictions that MPC is a good idea in theory but doubt that it achieves its objectives in practice. Attitudes to the processes of MPC, and their impact on learning and practice were mixed. The lack of connection between MPC and practice was a recurrent theme. Barriers to participation were lack of time and resources, complexity of the requirements and a lack of flexibility in addressing doctors' personal and professional circumstances.

Conclusions: Overall, the picture that emerged is that doctors are supportive of the concept of MPC but have mixed views on its processes. We highlight implications for research and practice arising from these findings.
1 | INTRODUCTION

The principle that doctors should engage with lifelong learning throughout their working lives is one that few would challenge. Consensus on how to ensure that this happens has been more elusive. The once accepted view that ‘keeping up to date’ was a personal matter for doctors to attend to without the need for external review had been rejected in recent decades.1,2 Growing emphasis on patient safety and quality of care, challenges to professional self-regulation3,4 and high-profile cases of malpractice5 have led to the implementation of programmes to assure the continuing competence of doctors.6,7 Various terms are used to describe these programmes: revalidation, recertification, relicensing, maintenance of competence, maintenance of certification and maintenance of licensure.8,9 In this paper, we will use the term Maintenance of Professional Competence (MPC).

MPC programmes vary internationally but, in general, involve educational and/or assessment elements such as participation in knowledge self-assessments, examinations, quality improvement projects, appraisal, peer and patient feedback and continuing professional development (CPD).9-12 The intended outcomes of these activities are manifold. Their overarching objective is to improve the quality of patient care. Other objectives include building public trust, encouraging commitment to lifelong learning and enhancing professional development.5,13 Some MPC activities, such as interactive CPD, appraisal, review of patient complaints and multisource feedback, have been shown to impact doctors’ knowledge, skills, attitudes and behaviours.10 Participation in MPC increases engagement with clinical governance and quality improvement14 and is associated with better processes and outcomes of patient care.15-17 Nonetheless, questions remain as to whether MPC achieves its intended outcomes.10,18 This has led to much debate about whether and how MPC programmes should be implemented. In many jurisdictions, participation is a legal requirement for all doctors10; in others, for example, the United States, it is linked to specialty certification rather than medical licensure and is therefore technically voluntary, although the requirements of US insurers and employers render participation effectively mandatory. An emphasis on learning through CPD and practice-based activities is common to most programmes, but there are clear differences in relation to assessment. The United States is unique in using knowledge testing for summative purposes, with significant focus on identifying under-performance, whereas other programmes use only formative assessment and focus on development.10,19

Ideally, learning for the benefit of patients should be at the heart of MPC, and as committed lifelong learners, doctors should feel motivated and engaged to participate. Yet apparent compliance with the requirements of MPC has been reported as masking deep-rooted cynicism about the process.20 There is evidence that participation in MPC can lead to feelings of anger and frustration and consequent disengagement.1,21 Theories concerned with motivation, learning and behaviour22,23 suggest that negative emotions, experiences and beliefs directly affect motivation and engagement with learning. Recent research has shown that doctors’ beliefs about the benefits of MPC mediated the nature of their engagement with the process.24

There is evidence that many doctors engage with MPC as a tick-box exercise,20 creating an impression of compliance without learning or behaviour change.25,26 MPC can also have unintended consequences. For example, the introduction of MPC in the United Kingdom increased the risk of hospital consultants leaving practice without any evidence that these doctors were underperforming.27

Governments, regulatory bodies and other health care organisations have invested heavily in creating MPC programmes on the assumption that they will ensure that doctors engage with career-long learning and leading to better patient care. But although rules and regulations create a framework for MPC, only learners can produce a practice of lifelong learning. Doctors’ attitudes and beliefs about MPC are thus critical to translating regulatory requirements to a committed practice of lifelong learning for the benefit of patients.

We undertook a scoping review of the literature looking at doctors’ attitudes to MPC. Our aim was to summarise current knowledge with a view to informing the development of MPC programmes and identifying under-researched aspects of the topic for further inquiry. Our research team included representation from a range of stakeholders in MPC within our own jurisdiction: the regulator, the postgraduate training bodies who administer the programme, the health service and patients.

2 | METHODS

We chose a scoping review methodology28,29 because our research questions were exploratory, and early searches revealed the breadth and heterogeneity of the literature.30,31 Scoping methodology affords the inclusion of various types of literature and methodological approaches, making it useful for reporting on the depth and breadth of literature on a topic.28,29,32 The Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)33 was used, and the checklist is provided in Appendix S1.

2.1 | Protocol and registration

The protocol for this scoping review was published in 2019.34

2.2 | Eligibility criteria

Included sources of evidence had to relate to MPC in doctors. All specialties and scopes of practice were included. Following initial searches, we limited our review to doctors in the United Kingdom, the United States, Canada, Australia, New Zealand and Ireland, based on a lack of published information relating to MPC programmes in other countries.

We included sources that provided empirical data about doctors’ attitudes to MPC as a whole, pilots of MPC or elements of the MPC process (eg, quality improvement, multisource feedback and
sources focusing on specific elements were only included if an explicit link was made between the element and MPC. There were no limits in respect of the date of publication or research methods used. Peer-reviewed original research papers, commentaries and letters containing empirical data, and governmental or organisational reports and consultation documents containing empirical data relevant to the focus of the review were included. We excluded non-peer-reviewed commentaries, reviews and letters and grey literature other than the reports and consultation documents referred to earlier. We limited the included studies to those in the English language.

2.3 | Information sources

2.3.1 | Literature search strategy

We employed a three-step approach to identify relevant studies. We searched seven electronic databases: Academic Search Complete, Business Source Complete, CINAHL, PsycINFO, PubMed, Social Sciences Full Text and SocINDEX. Combinations of the following search terms were used: Medic*, Doctor, Revalidation, Appraisal, Maintenance and ‘Medical Licensure’, Maintenance and Certification, ‘Medical Registration’, Maintenance and ‘Professional Competence’ (Appendix S2). We searched the websites of the included countries’ regulatory and medical specialty bodies for relevant documents. A Google search was also conducted for each country using the relevant terms. The final step involved backward and forward citation tracking of selected studies. Sources identified by these searches were imported to Endnote X8, and duplicates removed. Updated electronic database and website searches were completed in December 2020.

2.3.2 | Selection of sources of evidence

Endnote X8 and Microsoft Excel were used to organise and manage the data. The core review team members (AW, EG, IK and DB) individually screened the titles and abstracts of all publications identified by the search strategy. Papers were included based on the abovementioned eligibility criteria. Next, a full-text review of selected articles was conducted, again with reference to the criteria. Each full text was reviewed independently by two researchers. The review team regularly met to discuss and resolve any disagreements about publication inclusion.

2.4 | Data charting process and data items

A data extraction tool was developed in Microsoft Excel, including author(s), title, publication, year, country, study design, population description, sample size and findings. All researchers used the tool to retrieve relevant information; we met to assess whether our approach to data extraction was consistent with the research questions and purpose and refined the data extraction tool accordingly. Cross-checking was undertaken to identify any inaccuracies or oversights. Discrepancies were resolved amongst the core team with the involvement of the broader research team when necessary.

2.5 | Critical appraisal of individual sources of evidence

We did not formally appraise the quality of individual sources of evidence, consistent with established scoping review methods.28,33

2.6 | Synthesis of results

The synthesis of results involved a descriptive numerical summary analysis and a qualitative thematic analysis of the findings presented in included sources of evidence. Thematic analysis similar to approaches used in qualitative research37 is recommended by Levac et al.28 and involved identifying themes and gaps in the literature. Qualitative analysis software (NVivo) was used to facilitate this process.38 The results are reported through a combination of tables, figures and thematic summaries.

3 | RESULTS

3.1 | Description of studies

The PRISMA flow diagram in Figure 1 outlines the process that led to the selection of 125 sources of evidence for inclusion in the review. One hundred and two were published in peer-reviewed journals, and 23 were reports from professional organisations, regulatory bodies and research groups. Forty-seven were quantitative studies, 46 were mixed methods and 32 were qualitative studies. Most mixed-methods studies involved surveys with quantitative and qualitative components. Seventeen studies integrated theory in the design and/or analysis of the research.26,39–54 Theories applied included those focused on process change, societal control and regulation and individual behaviour change23,55–57 (Table 1). Most of the publications reported research conducted in the United Kingdom (n = 69) and the United States (n = 48), with the remainder of the studies sourced from Canada (n = 5), Ireland (n = 2) and New Zealand (n = 1). One third (42/125) of the papers had participants from multiple specialties, 35 papers involved General Practice only, and the remainder covered various individual specialties. Publication dates ranged from 2001 to 2020, with most articles (n = 95) published from 2010 onwards. The table in Appendix S3 summarises the first author and title, country, research aims and design, population and the main findings of the studies included for review.
3.2 Description of themes

3.2.1 Purpose of MPC

Doctors believed that MPC was a reasonable professional duty that could be of value to the medical profession. Nonetheless, several sources of evidence across multiple jurisdictions reported concerns about how MPC has been implemented and views that the process was not effectively designed to meet its intended goals or provide value. A feature of the UK literature was the seemingly inconsistent beliefs held by doctors about the purpose of MPC. On the one hand, believing that MPC was developmental and designed to support the maintenance and improvement of knowledge and skills and, on the other hand, that it had a regulatory purpose that aimed to identify under-performing doctors. Sources suggested that over time, as processes have become more established, there has been some resolution of this issue. Nonetheless, the lack of consensus and holistic understanding about the purpose of MPC had weakened opinions on its value in the United Kingdom. Literature focusing on varying understandings of the purpose of MPC was absent in other jurisdictions.
motivators for participation in the process. A few studies’ participants did think that MPC was important to their patients. Doctors also identified several intrinsic drivers for engagement with MPC, such as the desire to keep knowledge up to date, identify gaps in practice, meet learning needs, implement change and collaborate with others. Literature pertaining to motivation came from multiple jurisdictions but was mainly from the United States, perhaps reflecting the optional nature of participation in MPC there.

3.2.3 Attitudes to the processes of MPC

Doctors had mixed attitudes towards the processes of MPC. Although some were positive, several sources of evidence reported significant anger, frustration and negativity. Attitudes of dissatisfaction were present across multiple specialties, scopes of practice and jurisdictions, with doctors describing MPC as a bureaucratic tick-box exercise, serving little practical purpose. Doctors with a role in implementing MPC were more likely to have a favourable view about the process than the doctors on whom the process was imposed. Time and experience with the process also appeared to impact doctors’ attitudes positively, and resistance to MPC gradually reduced over time.

Having support from colleagues and the workplace to participate in MPC also influenced doctors’ attitudes positively. A few studies reported that doctors felt that participating in MPC diminished their professional status and returned them to a student/testing mindset. Authorities’ ineffective resolution of systemic difficulties identified by the doctor in the course of MPC was another reason for the lack of trust in the integrity of the process. Views were mixed on the actual or potential impact of MPC on practice. For example, that doctors would leave their practice and careers or retire early, and that participation in MPC activities could or did result in unintended consequences; for example, that doctors would leave their practice and careers or retire early.

3.2.4 Impact on learning and practice

Doctors observed that participation in MPC activities helped to achieve lifelong learning goals, professional development, reflection on practice and that it formalised and consolidated the learning process. Although the impact on learning was frequently recognised, doctors often criticised MPC for having little or no relevance to what they do in their daily work. Views were mixed on the actual or potential impact of MPC on practice. In multiple studies, doctors reported a lack of impact on practice as a result of participation in MPC. Conversely, in several other studies, doctors felt that they gained knowledge relevant to their practice and that participation in MPC activities could or did result in improved patient care.

3.2.2 Motivation for participation in MPC

Requirements imposed by regulatory authorities, employers and health care associations were the dominant extrinsic motivator for engagement with MPC. Conversely, patient and colleague expectations and perceptions were not strong extrinsic

| Publication | Theory | Purpose |
|-------------|--------|---------|
| Agius et al. (2011) | Modified grounded theory | Methodology underpinning the study design and analysis |
| Archer et al. (2017) | Ritzer's thesis on McDonaldization | Used as a framework for the analysis |
| Archer et al. (2015) | Critical discourse analysis | Methodology underpinning the study design and analysis |
| Archer et al. (2013) | Cultural historical activity theory | Used as a framework for the study design and analysis |
| Arnold et al. (2013) | Transtheoretical model | Used as a framework for the analysis |
| Baines et al. (2019) | Activity theory | Used as a framework for the analysis |
| Bryce et al. (2018) | Foucault’s concept of governmentality | Used as a framework for the analysis |
| Chamberlain et al. (2010) | Foucault’s concept of governmentality | Used as a framework for the analysis |
| Chesluk et al. (2019) | Social practice theory | Used as a framework for the analysis |
| Cook et al. (2015) | Grounded theory | Methodology underpinning the study design and analysis |
| Galvin et al. (2019) and Galvin et al. (2020) | Theory of planned behaviour | Used to inform the design of the survey tool and analysis |
| Guillemin et al. (2014) | Critical visual methodology | Methodology underpinning the study design and analysis |
| Sehlbach et al. (2018) | Constructivist grounded theory | Methodology underpinning the study design and analysis |
| Tazzyman et al. (2019) | Normalisation process theory | Used as a framework for the analysis |
| Tazzyman et al. (2017) | Normalisation process theory | Used as a framework for the analysis |
| UMbRELLA (2018) | Cultural historical activity theory | Used as a framework for the analysis |
3.2.5 | Preference for formative elements of MPC

Doctors valued some aspects of the process more than others, in particular those that were formative and developmental. They reported positive experiences with and a preference for activities such as self-assessment, formative feedback, formative feedback, portfolios, and self-directed learning activities. Some thought MPC was complex, desired simplification of the process and lacked a proper understanding of MPC requirements, logistics of evidence collection and the standard of evidence required.

3.2.6 | Barriers to participation in MPC

Time, cost, lack of resources, the difficulty for specific groups of doctors and the complexity of the process were the main barriers to meeting the requirements of MPC. MPC was often described as time consuming, and multiple doctors felt that they did not have the time to complete the process. The cost involved in MPC were considered prohibitive. The paperwork involved was a burden. Limited resources such as funding, administrative support, library access, coverage for patient care during absence and high-speed internet also limited doctors’ capability for effective participation in MPC. Doctors who were near the end of their career who had limited access to clinical practice, locum doctors, doctors who frequently moved between health care organisations, working part-time or were working in a different jurisdiction, because of their individual circumstances, required additional support in meeting the requirements of MPC.

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4 | DISCUSSION

4.1 | Principal findings

This scoping review has shown that doctors' attitudes to MPC were similar across jurisdictions, despite significant differences between the programmes in place. Although there was widespread agreement that MPC is a good idea, in theory, many were unconvinced that it improves patient care in practice and described it as a bureaucratic and burdensome process. Attitudes to the processes and activities of MPC and their impact on learning and practice were mixed. The lack of connection between MPC and doctors' day-to-day practice was a recurrent theme. Activities that provided formative feedback on practice, for example, feedback, were amongst the more popular activities, but paradoxically reflection and quality improvement, which would also seem to relate directly to practice, were generally unpopular. Barriers to participation were lack of time and resources, complexity of the requirements and a lack of flexibility in addressing individual doctors' personal and professional circumstances. Overall, the picture that emerged from our review is that doctors' commitment to and engagement with lifelong learning is often undermined by doubts and frustrations about the effectiveness, relevance, rigidity and bureaucracy of the very processes designed to support it.

The vast majority of sources identified in our review originated in the United Kingdom and the United States. Most used quantitative and mixed-methods surveys to describe doctors' perceptions of aspects of MPC. A range of specialties has been covered in these studies. A very small proportion of sources integrated theory into their research, and multicentre international research in this area was lacking.

4.2 | Implications for practice

Patients are the primary consideration in requiring doctors to maintain their professional competence. Doctors are stakeholders in MPC, but their dissatisfaction with its processes do not override the need to ensure safe, high-quality patient care. Nonetheless, attending to issues raised by doctors does offer an opportunity to improve MPC programmes, so that they engage and motivate doctors while yielding the desired outcomes for regulators and patients.
their operational detail. There has been a trend towards implementation of mandatory MPC programmes in developed countries.\textsuperscript{10,19} Amongst the jurisdictions included in our review, four of five have implemented mandatory MPC in the past decade. In the United States, participation is mandatory for those who hold time-limited specialty certification and wish to maintain it. There is evidence that voluntary participation amongst US doctors with unlimited certification is lower than amongst those for whom it is mandated.\textsuperscript{164} Similarly, participation in annual appraisal increased in the United Kingdom when it became part of the mandatory revalidation process.\textsuperscript{54} Our finding that participation was driven predominantly by regulatory requirements means it is unlikely that voluntary programmes could meet the objective of providing accountability to patients and the public for the profession as a whole.

There is growing evidence the participation in MPC is associated with better processes and outcomes for patient care.\textsuperscript{15–17,165–169} The perception, held by many doctors, of a lack of impact on practice as reported in our review must be interpreted in the light that learners are not always the best judges of what has been learned.\textsuperscript{170–172} Further research into the impact of MPC, moving beyond association to causation, would help to convince doctors of its value as well as reassuring regulators and the public that MPC is achieving its goals. The dissatisfaction felt by many doctors in relation to the bureaucracy of the processes involved in MPC is, nonetheless, very real and should be addressed. In both the United States and the United Kingdom, plans for the future of MPC have acknowledged some of the attitudes we have reported here.\textsuperscript{62,104} Operational improvements, such as making participation less burdensome, avoiding duplication, better communication of standards and ensuring transparent and equitable processes are common to future strategies across jurisdictions. Our findings suggest that such changes would be welcome.

Many studies in this review pointed to a gap between programme requirements and what doctors identify as relevant in practice, meaning that MPC programmes often fail to connect with doctors’ desire to do the best for their patients. This is a well-recognised issue that represents a missed opportunity to tailor MPC to the needs of patients at a local level and motivate doctors to learn through MPC.\textsuperscript{173} Our findings re-emphasise the need to reconsider how MPC might be better designed and implemented to create and strengthen the connection to practice, leveraging the practical wisdom of doctors for the benefit of their patients. Drawing on the field of implementation science, recognising MPC as a complex intervention\textsuperscript{174} and prioritising co-production of learning activities with doctors in the context of their practice may offer a way forward in this regard.

An MPC programme can be understood as a complex intervention, one with multiple interacting elements set in a dynamic environment.\textsuperscript{175} Such interventions have essential core components alongside more peripheral adaptable elements.\textsuperscript{176} A possible explanation for the mixed views reported in relation to elements of MPC programmes is that they work well in some contexts but not in others, meaning that there is no single ‘best’ model.\textsuperscript{10} Implementing a complex intervention requires tailoring the intervention to local contexts while maintaining the essential core required to generate the outcomes.\textsuperscript{176}

In health, co-production is described as a way of working with patients to improve health and creating user-led, people-centred health care services.\textsuperscript{177} In the context of MPC, co-production would require regulators to work closely with doctors in the local contexts in which they deliver care to design meaningful learning activities to maximise benefit to their patients.\textsuperscript{178,179} In the interest of fairness and equity, there must be consistency in broad terms in programme requirements; however, this does not equate to the ‘sameness’ of a one-size-fits-all approach. The advantages of co-production are greater ownership of MPC processes by doctors, greater relevance to their practice and thus greater benefit to their patients, early and ongoing identification of barriers or problems with the processes, responsive changes to address these and greater motivation for doctors to engage in MPC effectively. Co-production offers a way to ensure that MPC is meaningful and effective\textsuperscript{179} that promises benefits for patients. There are also significant challenges associated with co-production. It requires resources and time, and the new forms of knowledge it generates may not align well with the evidence demanded by regulators.\textsuperscript{177}

A key point of difference between programmes is the emphasis they place on engaging doctors in learning activities versus assessing their knowledge and competence.\textsuperscript{10} The forms of evidence used to make summative decisions are shaped by these philosophical differences. Many European programmes require participation in learning and practice improvement activities without testing knowledge or competence.\textsuperscript{10,19} Collection of evidence relating to performance in practice may be required to support reflective learning, but the evidence itself is not used for summative purposes. In such systems, it is failure to participate satisfactorily over a period of time that can lead to penalties. Our suggestion for co-production sits more comfortably within this sort of development focused approach. By contrast, the US system stands out for its strong focus on summative assessment. Having developed from a high-stakes knowledge test taken every 10 years, with the addition of more formative elements latterly, it retains a greater focus on identifying poor performance through testing than is seen in other programmes.\textsuperscript{10,180}

This tension between the formative and summative objectives of MPC programmes is prominent in the UK literature. When annual appraisal, a formative process, was subsumed into the summative process of revalidation, doctors perceived a tension between what had been a supportive and development focused activity and the possibility of punitive action for poor performance.\textsuperscript{52,76–78} In practice, fitness-to-practice concerns arising in the context of appraisal are addressed outside the revalidation process. It is non-engagement rather than poor performance that results in a loss of licence to practice within the revalidation process.\textsuperscript{181} The number of doctors referred to the General Medical Council for fitness to practice issues has not increased since revalidation was implemented,\textsuperscript{182} and, perhaps relatedly, concerns about the formative/summative tension have lessened over time.\textsuperscript{11,52,53,62,79}

Whether programmes lean more towards development or assessment, they are constructed on assumptions that participation in formative activities will translate into better, safer patient care and/or that testing knowledge and competence in all doctors is the best way
to identify a small proportion who underperform. Both assumptions require stronger evidence to fully justify the cost and scale of the programmes they underpin.

4.3 | Implications for research

Most of the sources of evidence included in this review relied on survey data. Although some have thousands of respondents, the depth of their findings has been limited by the methodologies employed. Many have focused on evaluating operational aspects of MPC. They have provided a snapshot of attitudes but have not elucidated the reasoning behind them. This lack of depth in the field is compounded by a lack of theoretical underpinning, with less than 10% of sources of evidence referring to a specific theory.

Use of appropriate theory can greatly enhance the quality of research, sharpening research questions, shaping the data collected and adding depth, meaning and transferability to findings. Although researchers have applied sociological theories concerned with regulation and the processes of change to MPC, the lack of use of theories of learning to understand doctors’ attitudes to MPC is a striking gap in the literature. MPC is about engagement with lifelong learning, and there is a range of theories of learning that might shed light on the area: theories of reflection-in and on-action, theories of workplace learning and theories of professional identity, to name a few.

The research produced by the UK Medical Revalidation Evaluation Collaboration’s (UMbRELLA) project stands out in our review for its theoretical conceptualisation of MPC and in-depth exploration using qualitative methodology. UMbRELLA was a major evaluative research study into the regulatory impacts of medical revalidation, commissioned by the General Medical Council. It demonstrates the value of well-funded, high-quality research and exemplifies the principle that implementation of complex interventions should be researched as they are happening.

There is scope for further well-funded, high-quality research in this area, specifically research that uses theory, links MPC to engagement with learning and uses implementation sciences approaches. Research in jurisdictions beyond the United Kingdom and the United States would also add to the field. The varied programmes in place internationally create an opportunity for greater exploration of the influence of context on attitudes and engagement as well as efficacy.

4.4 | Strengths and limitations

This review is part of a programme of research undertaken by researchers, knowledge users and other stakeholders in MPC in Ireland, including patient representation. The focus of the review and our discussion of its findings was influenced by this group, bolstering its direct relevance to those who design, deliver, participate in and benefit from MPC. We have followed a recognised methodology and reported our findings using the PRISMA-ScR framework.

By limiting our review to the United Kingdom, the United States, Canada, Australia, New Zealand and Ireland and to English-language papers, we may have excluded useful data from elsewhere. We deviated from our published protocol by not including the final and optional step of expert consultation, which might have identified some additional sources of evidence. This decision was made in the context of the SARS CO-V pandemic and the desire to publish the research without undue delay.

5 | CONCLUSION

Participation in MPC is associated with better processes and outcomes of patient care. Doctors are supportive of the concept of MPC but have mixed views on its processes. Moves to reduce bureaucracy currently afoot will be welcome. Implementation science offers a way to motivate doctors and optimise the benefits to patients through local adaptation of learning activities in partnership with doctors. There remain substantial philosophical and operational differences between MPC programmes internationally, with a need for more evidence to support the assumptions underpinning these extensive and expensive programmes. There is scope for well-funded, high-quality research utilising theory to move the field forward.

ACKNOWLEDGEMENTS

We would like to acknowledge the support of the Health Research Board, Ireland, and the contribution of our research partners: Professor Hilary Hoey, Director of Professional Competence, Royal College of Physicians of Ireland, Dublin, Ireland; Dr Philip Crowley, National Director for Quality, Health Service Executive, Dublin, Ireland; Mrs Margaret Murphy, External Lead Advisor, World Health Organisation Patients for Patient Safety Ireland; Professor Dubhfeasa Slattery, formerly Head of Clinical Risk at the State Claims Agency, Dublin, Ireland, currently Professor of Professionalism, Royal College of Surgeons of Ireland, Dublin, Ireland; Professor Mary Horgan, President of the Royal College of Physicians of Ireland, Dublin, Ireland; and Dr Graham McMahon, President and Chief Executive Officer, Accreditation Council for Continuing Medical Education, United States. This research was funded by the Health Research Board, Ireland. The funding body was not involved in the design of the review, analysis or interpretation nor in drafting the manuscript.

CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

AW carried out the search, data screening and extraction; drafted the manuscript and approved the final version for publication. EG carried out the search, data screening and extraction; revised the manuscript and approved the final version for publication. IK carried out the search and data screening; revised the manuscript and approved the final version for publication. DB conceptualised the
study, carried out the data screening, drafted the manuscript, provided feedback on revisions and approved the final version for publication. All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ETHICS STATEMENT
No ethical approval, as no human subjects were involved in this scoping review.

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Additional supporting information may be found in the online version of the article at the publisher’s website.

**How to cite this article:** Wiese A, Galvin E, Korotchikova I, Bennett D. Doctors’ attitudes to maintenance of professional competence: A scoping review. *Med Educ*. 2022;56(4):374-386. doi:10.1111/medu.14678