PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Doctors' Engagement with a Formal System of Continuing Professional Development in Ireland: A Qualitative Study in Perceived Benefits, Barriers and Potential Improvements
AUTHORS	Hanlon, Holly; Prihodova, Lucia; Russell, Thelma; Donegan, Deirdre; O'Shaughnessy, Ann; Hoey, Hilary

VERSION 1 – REVIEW

REVIEWER	Samuel, Anita Uniformed Services University of the Health Sciences, Center for Health Professions Education
REVIEW RETURNED	28-Jun-2021

GENERAL COMMENTS	This article highlights doctors' perceptions of mandatory CPD program in the Irish context. While findings are specific to the Irish context, they do provide valuable lessons for others who are or might consider pursuing mandatory CPD requirement models. The manuscript is well-written with no large flaws. It can be published following minor revisions. • You state that CPD activities can be effective at improving both doctor and patient outcomes. While this is true in some areas such as simulation, the larger body of CPD literature reports that findings about doctor and patient outcomes is usually self-reported. Furthermore, these studies are not well-designed. You might want to be careful when making broad statements like this given the nuances of the situation. • Your author team consists of three members. Yet, it sounds like only one researcher was involved in the thematic analysis for this study. Having only one researcher interpret the data leads to questions of reliability. If all 3 members were involved, some explanation of that would be helpful. • You note that you have 13 themes which were refined to 5 themes. Could you provide a table to show the 13 themes that then came down to 5 themes? This would provide transparency of your data analysis. • In the Results section you begin by saying that you have five themes with 'a number of sub-themes'. You only have 4 sub-themes in total. I found the phrase 'number of' a little distracting as I was expecting more. • I would recommend including a table listing the themes and sub-themes in the Results section. This will give readers a snapshot of your findings. • On page 18, paragraph 3, you state that online CPD is least effective compared to more interactive activities. This statement can only be made if you define online CPD as limited to content delivery. Interactive online CPD has been shown to be effective

	within the same Cook reference you cite. I would suggest more clarification of this statement. • In the third point under Strengths and Limitations and later on the last line of page 16, you use the phrase 'biased towards.' 'Biased against' is a more appropriate phrase. • It would be a good idea to include a section for limitations of the study and provide a conclusion for the manuscript. • There are a few typographical errors that can be corrected with a close reading of the manuscript.

REVIEWER	Mars, Maurice University of Kwazulu-Natal, TeleHealth
REVIEW RETURNED	30-Jun-2021

GENERAL COMMENTS	Thank you for the opportunity to review this paper on doctors' perceptions of the benefits of and barriers to the formal CPD process in Ireland and potential improvements to the system. The authors find themselves in the unfortunate situation of aspects of their study having been overtaken by the many changes induced by the COVID-19 pandemic. Nevertheless, the paper is an interesting read, especially for someone from a middle-income country where many of the barriers described have been addressed. It is unfortunate that only one open-ended question forms the basis of this paper. The authors should consider the following: 1. Provide possible solutions to the remaining barriers, either from their own perspective or the literature on how these are addressed in other health systems, e.g., awarding points for authoring or co-authoring published papers, presenting papers at conferences, delivering CPD activities, completing additional qualifications, etc. 2. The difference between CPD and CME should be explained in the introduction 3. In the limitations section, the authors note possible bias due to the possibility that only, or mostly, those who were unhappy with the CPD process had answered the open-ended question. The authors can resolve this, and the answer may be enlightening. As they have the quantitative data from the rest of the survey, they should be able to determine the percentages of respondents who completed the open-ended questions, who were either broadly in favour or against the current CPD scenario, and how many opposed to the current situation did not answer the open-ended question. 4. The references are dated. Apart from two papers from 2020, the most recent papers are from 2017. More current literature should be presented. For example, Discussion, page 18, para 3: the reference to the efficacy of online CPD in changing physician behaviour is from 2008. More recent literature, such as recent reviews, would suggest otherwise as technology and pedagogical approaches to online learning have advanced since then. A PubMed search on continuing medical education and continuing professional development from 2018 onwards returns over 2,500 papers. Minor comments The font size changes in several places in the paper.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Anita Samuel, Uniformed Services University of the Health Sciences
Comments to the Author:
This article highlights doctors' perceptions of mandatory CPD program in the Irish context. While findings are specific to the Irish context, they do provide valuable lessons for others who are or might consider pursuing mandatory CPD requirement models.
The manuscript is well-written with no large flaws. It can be published following minor revisions.

• You state that CPD activities can be effective at improving both doctor and patient outcomes. While this is true in some areas such as simulation, the larger body of CPD literature reports that findings about doctor and patient outcomes is usually self-reported. Furthermore, these studies are not well-designed. You might want to be careful when making broad statements like this given the nuances of the situation.
I have now altered the statement on the effectiveness of CPD activities on doctor and patient outcomes to reflect the complexity of the situation. It now reads "Multiple studies have shown CPD to be effective at improving doctor performance and patient outcomes, although this has been found to vary across different CPD activities, with more interactive CPD activities using multiple learning methods typically found to have more positive outcomes than other CPD activities, such as lectures" (page 2).

• Your author team consists of three members. Yet, it sounds like only one researcher was involved in the thematic analysis for this study. Having only one researcher interpret the data leads to questions of reliability. If all 3 members were involved, some explanation of that would be helpful.
The analysis in this study followed the procedure set out by Braun and Clarke (2006) for thematic analysis, which does not require or encourage multiple people to be involved in coding the data. The data involved in this study, and the subsequent codes and themes involve straight-forward, surface-level content. Despite this, the primary researcher did consult regularly with another author at each stage in the process of coding the data, and generating and refining themes, who agreed that the analysis appropriately reflected the dataset.

• You note that you have 13 themes which were refined to 5 themes. Could you provide a table to show the 13 themes that then came down to 5 themes? This would provide transparency of your data analysis.
I have attached a document containing the initial themes and subthemes (file name: Initial Themes and Subthemes) to clarify the process of refining the themes, which largely consisted of merging multiple specific themes into a number of broader themes. It is the preference of the author that if it is necessary that this be included in the paper, it be done as an appendix rather than within the main text, as it is repetitive and may impact the readability of the paper.

• In the Results section you begin by saying that you have five themes with 'a number of sub-themes'. You only have 4 sub-themes in total. I found the phrase 'number of' a little distracting as I was expecting more.
This sentence has now been clarified to read "The thematic analysis resulted in five main themes relating to attitudes and perceptions toward participating in CPD activities, with Themes One and Two each divided into two subthemes." (page 6).

• I would recommend including a table listing the themes and sub-themes in the Results section. This will give readers a snapshot of your findings.
I have now included a table listing the themes and subthemes. The table is included on page 7.

• On page 18, paragraph 3, you state that online CPD is least effective compared to more interactive activities. This statement can only be made if you define online CPD as limited to content delivery. Interactive online CPD has been shown to be effective within the same Cook reference you cite. I would suggest more clarification of this statement.
I have clarified this statement. It now reads “Previous research has shown online CPD to be the least effective in changing doctor behaviour or patient outcomes when compared to more interactive in-person activities, although online CPD activities which involve discussion and have higher levels of interactivity and involve practice exercises have been found to improve knowledge and skills [15].” (page 17).

• In the third point under Strengths and Limitations and later on the last line of page 16, you use the phrase ‘biased towards.’ ‘Biased against’ is a more appropriate phrase.
I agree that the phrase “biased towards” may be ambiguous. The point being made was that the responses may disproportionately represent those with more complaints; therefore “biased against” is also not clear. I have thus changed the sentences in question:
- In point three under Strengths and Limitations the sentence now reads “It may therefore be the case that responses analysed in this study disproportionately represented those with more complaints about formal CPD”
- In the strengths and limitations section in the main text, I have also replaced the phrase “biased towards” with “disproportionately represented” (Page 17).

• It would be a good idea to include a section for limitations of the study and provide a conclusion for the manuscript.
I have addressed this point above, under editorial comments.

• There are a few typographical errors that can be corrected with a close reading of the manuscript.
I have now addressed any typos that I could find in the text.

Reviewer: 2
Prof. Maurice Mars, University of Kwazulu-Natal
Comments to the Author:
Thank you for the opportunity to review this paper on doctors’ perceptions of the benefits of and barriers to the formal CPD process in Ireland and potential improvements to the system. The authors find themselves in the unfortunate situation of aspects of their study having been overtaken by the many changes induced by the COVID-19 pandemic. Nevertheless, the paper is an interesting read, especially for someone from a middle-income country where many of the barriers described have been addressed.

It is unfortunate that only one open-ended question forms the basis of this paper.

The authors should consider the following:
1. Provide possible solutions to the remaining barriers, either from their own perspective or the literature on how these are addressed in other health systems, e.g., awarding points for authoring or co-authoring published papers, presenting papers at conferences, delivering CPD activities, completing additional qualifications, etc.

Points are awarded for those activities under the PCS system, but only in specific categories (e.g., Research and Teaching). The categories themselves are perceived to be barriers by a minority of doctors. While addressing the structure of the PCS scheme is beyond the scope of the authors of this paper, the sentence “Any future revisions of the PCS system might take these requests for more flexibility both in terms of CPD categories and allowances for extenuating circumstances into account when setting CPD requirements.” was added to the discussion section to address this perceived barrier (Page 16, Lines 5-7).

2. The difference between CPD and CME should be explained in the introduction
I have now clarified the difference between CPD and CME in the introduction, adding the sentence “CPD generally refers to the broad range of skills and knowledge needed to effectively practice medicine, including general skills such as management, teaching and leadership skills as well as specific medical knowledge; in contrast the term “continuing medical education” (CME) generally refers to medicine-specific knowledge and skills.” (Page 2).

3. In the limitations section, the authors note possible bias due to the possibility that only, or mostly, those who were unhappy with the CPD process had answered the open-ended question. The authors can resolve this, and the answer may be enlightening. As they have the quantitative data from the rest of the survey, they should be able to determine the percentages of respondents who completed the open-ended questions, who were either broadly in favour or against the current CPD scenario, and how many opposed to the current situation did not answer the open-ended question.
I have now run these numbers and included the following sentence in the limitations section “Additionally, when examining the general attitudes towards PCS among respondents versus non-respondents to the qualitative question, the proportion of participants who agreed that PCS was a good idea overall was the same, 80% agreement for both groups, suggesting no particular prejudice against the idea of formal CPD among the respondents in this paper.” (Page 19, Lines 7-11).

4. The references are dated. Apart from two papers from 2020, the most recent papers are from 2017. More current literature should be presented. For example, Discussion, page 18, para 3: the reference to the efficacy of online CPD in changing physician behaviour is from 2008. More recent literature, such as recent reviews, would suggest otherwise as technology and pedagogical approaches to online learning have advanced since then. A PubMed search on continuing medical education and continuing professional development from 2018 onwards returns over 2,500 papers.
I have added in a reference to a 2021 review paper on the efficacy of online CPD; the paragraph in question now reads “The desire for more online-based CPD as a result of time restrictions is interesting, given the perceptions that CPD activities are of limited benefit outlined in Theme Three. Previous research has shown online CPD to be the least effective in changing doctor behaviour or patient outcomes when compared to more interactive in-person activities, suggesting that doctors may favour CPD activities which have fewer tangible benefits to their practice. However, the reality is more complex; online CPD activities which involve discussion and have higher levels of interactivity and involve practice exercises have been found to improve knowledge and skills [15]. A recent review of the efficacy of online forms of CPD spanning 88 studies found that online learning was of comparable effectiveness to face-to-face learning with regard improving knowledge, skills, and physician behaviour and patient outcomes [22], so it may be the case that the quality of online CPD activities is increasing. The authors note that regardless of the format of CPD, effective activities must be evidence based, interactive, involve some form of self-assessment activity, and multiple exposures to the learning material [22]. Online CPD providers in future should aim to incorporate these factors, to maximise the efficacy of their activities while providing doctors with the benefits of cheaper and more accessible CPD.” (Page 17)
Reference: Ngenzi J.L., Scott R.E. & Mars M. Information and communication technology to enhance continuing professional development (CPD) and continuing medical education (CME) for Rwanda: a scoping review of reviews. BMC Medical Education, 2021;21(1):1-8.

Minor comments
The font size changes in several places in the paper.
The font size has now been standardised throughout.

Reviewer: 1
Competing interests of Reviewer: None

Reviewer: 2
Competing interests of Reviewer: No competing interests.

VERSION 2 – REVIEW

REVIEWER	Samuel, Anita Uniformed Services University of the Health Sciences, Center for Health Professions Education
REVIEW RETURNED	25-Sep-2021

GENERAL COMMENTS	Thank you for addressing the issues highlighted by the reviewers. This is a very comprehensive and well-written paper. It's particularly interesting the amount of information you were able to get from just one question!

REVIEWER	Mars, Maurice University of Kwazulu-Natal, TeleHealth
REVIEW RETURNED	16-Sep-2021

GENERAL COMMENTS	The authors have addressed my questions and concerns. Once again, I enjoyed reading it.