

## 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

<b>TITLE (PROVISIONAL)</b>	Rates of turnover among general practitioners: a retrospective study of all English general practices between 2007-2019
<b>AUTHORS</b>	Parisi, Rosa; Lau, Yiu-Shing; Bower, Peter; Checkland, Kath; Rubery, Jill; Sutton, Matt; Giles, Sally; Esmail, Aneez; Spooner, Sharon; Kontopantelis, Evangelos

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Cunningham, David National Health Service Education for Scotland Knowledge Network, Medicine Directorate
<b>REVIEW RETURNED</b>	23-Mar-2021

<b>GENERAL COMMENTS</b>	<p>This is an interesting manuscript and it will add to the literature relating to the GP workforce recruitment and retention crisis. The aims were clear and the analyses were considered and communicated well. I have little feedback to add to this paper other than:</p> <ol style="list-style-type: none"><li>1. Reference is made to 'the government' in the introduction. (first paragraph of page 7) As a reviewer in Scotland I think this needs to be clarified by the authors. Is this the UK Government in London? The four nations in the UK now have a range of governments and I think the term "UK Government" should be used.</li><li>2. At times the term 'physician' appears in the text. If this is meant to be the same as GP or general practitioner than I think GP should be used. I think the authors could include the expression general practitioner (family physician) to make this clear to an international audience what a GP is.</li><li>3. The aims of the study in the methods section have a list which includes the sub-group "i)" This made me look for further sub-groups e.g. "ii)" etc and I suspect this is just an editing issue. It could be deleted.</li></ol>
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<b>REVIEWER</b>	Pedersen, Anette Aarhus Universitet, Research Unit for General Practice
<b>REVIEW RETURNED</b>	29-Mar-2021

<b>GENERAL COMMENTS</b>	<p>This is a strong register-based study exploring general practitioner (GP) turnover rates among GPs in England between 2007 and 2019. Turnover rates are explored regionally and practice-level factors associated with turnover are identified. The study quantifies trends of GPs leaving general practice which is an appreciated supplement to the many previous studies which have revealed high levels of self-reported intentions to leave general practice within a limited timespan. I have a few comments only to the study:</p>
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	<p>I find the conclusions of the study too negative: "Our findings suggest that GP turnover has increased in the last decade across the whole of England, supporting previous local investigations and national surveys" (conclusions in paper) and "GP turnover has increased in the last decade nationally, with regional variability" (conclusions in abstract). Turnover rates and IRR are actually on the same level in 2019 as in 2009-2010. As mentioned in the paper (but not stressed in the conclusions), turnover rates were the highest during 2013-2014. If 2014 was used as reference, this part of the story would be reflected more clearly.</p> <p>In 2012-2014, two trends are revealed in Table 1: the mean turnover rates peaked and the number of practices were reduced to less than 8.000 and the number of practices has been declining through out the study period (the denominator). Did many GPs retire in 2012-2014 or what else can explain the decreased number of practices? How can it be explained that while the work pressure in general practice supposedly is increasing due to reduced number of practices, the mean GP turnover has declined in the same period (from 2014 onwards)?</p> <p>In the Introduction section, results from national surveys are reported revealing an increase in number of GPs who report intentions to leave general practice from 19.4% in 2005 to 30% in 2015 and 39% in 2017. Could one conclude that the documented increase in GPs' intention to leave practice does not align with the findings of this study?</p> <p>I have a hard time figuring out whether a high personnel flow due to many junior doctors might affect the equation of the turnover rate. Can number of doctors specialising in general practice (and with relatively many clinic stays of short term) be increased without affecting the equation negatively, i.e. resulting in a higher turnover rate?</p> <p>These two papers may be of interest to the authors:  1: Pedersen AF, Nørøxe KB, Vedsted P. Influence of patient multimorbidity on GP burnout: a survey and register-based study in Danish general practice. Br J Gen Pract. 2020 Jan 30;70(691):e95-e101. doi: 10.3399/bjgp20X707837. PMID: 31932298; PMCID: PMC6960003.</p> 2: Pedersen AF, Andersen CM, Olesen F, Vedsted P. Risk of Burnout in Danish GPs and Exploration of Factors Associated with Development of Burnout: A Two-Wave Panel Study. Int J Family Med. 2013;2013:603713. doi: 10.1155/2013/603713. Epub 2013 Dec 7. PMID: 24383000; PMCID: PMC3871500.
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<b>REVIEWER</b>	Marchand, Catherine University of Kent, Centre for Health Services Studies
<b>REVIEW RETURNED</b>	12-Apr-2021

<b>GENERAL COMMENTS</b>	My overall opinion is that this paper is well presented and generally well written. I would have like to see more depth in the
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	<p>presentation of the strengths and limitations of the study. There is also repetition in the Discussion section.</p> <p>The section on Patients and Public Involvement is unclear. I am confused as to whether or not the PPI members were really involved in the project and more importantly I am not sure how the points presented in this section impact how the results were analysed or used in the interpretation of the results.</p> <p>The conclusions need more work. Some really good ideas are presented, but more information is needed and links between the results and the concluding statements need to be clearer.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Dr. David Cunningham, National Health Service Education for Scotland Knowledge Network  
Comments to the Author:

*This is an interesting manuscript and it will add to the literature relating to the GP workforce recruitment and retention crisis. The aims were clear and the analyses were considered and communicated well. I have little feedback to add to this paper other than:*

*1. Reference is made to 'the government' in the introduction. (first paragraph of page 7) As a reviewer in Scotland I think this needs to be clarified by the authors. Is this the UK Government in London? The four nations in the UK now have a range of governments and I think the term "UK Government" should be used.*

Response: This is a good point and we did imply the UK government. The text has been updated to reflect that.

*2. At times the term 'physician' appears in the text. If this is meant to be the same as GP or general practitioner than I think GP should be used. I think the authors could include the expression general practitioner (family physician) to make this clear to an international audience what a GP is.*

Response: Thank you, we agree with this suggestion and we are now using consistent terminology. We use the term "family physician" at first mention of general practitioners.

*3. The aims of the study in the methods section have a list which includes the sub-group "i)" This made me look for further sub-groups e.g. "ii)" etc and I suspect this is just an editing issue. It could be deleted.*

Response: Thank you for your careful reading and apologies, that was a remnant from a previous version of the paper.

Reviewer: 2  
Dr. Anette Pedersen, Aarhus Universitet

Comments to the Author:

*This is a strong register-based study exploring general practitioner (GP) turnover rates among GPs in England between 2007 and 2019. Turnover rates are explored regionally and practice-level factors associated with turnover are identified. The study quantifies trends of GPs leaving general practice which is an appreciated supplement to the many previous studies which have revealed high levels of self-reported intentions to leave general practice within a limited timespan. I have a few comments only to the study:*

*I find the conclusions of the study too negative: "Our findings suggest that GP turnover has increased in the last decade across the whole of England, supporting previous local investigations and national surveys" (conclusions in paper) and "GP turnover has increased in the last decade nationally, with regional variability" (conclusions in abstract). Turnover rates and IRR are actually on the same level in 2019 as in 2009-2010. As mentioned in the paper (but not stressed in the conclusions), turnover rates were the highest during 2013-2014. If 2014 was used as reference, this part of the story would be reflected more clearly.*

Response: Thank you this is a valid point and we have rephrased this statement, to explain that it is not a linear increase and that the increase is small (as we already state in the first paragraph of the discussion). However, we do stand by this statement, since there has been an increase over time, even though there was a noticeable peak in 2013/14 (which we could not explore further, since available data could take us so far). Although the GPs in our team suggested the introduction of the APMS contract in that year may be driving the increase in turnover, we could not conclude with certainty that this was the reason. The sentence has now been amended to:

"We observed a small overall increase in GP turnover in the last decade across the whole of England, supporting previous local investigations and national surveys – although that increase was no linear, with a turnover peak in 2013-14, coinciding with the introduction of the APMS contract."

*In 2012-2014, two trends are revealed in Table 1: the mean turnover rates peaked and the number of practices were reduced to less than 8.000 and the number of practices has been declining through out the study period (the denominator). Did many GPs retire in 2012-2014 or what else can explain the decreased number of practices? How can it be explained that while the work pressure in general practice supposedly is increasing due to reduced number of practices, the mean GP turnover has declined in the same period (from 2014 onwards)?*

Response: This is a valid point, and we should have made the situation clearer for an international audience. There is a well-known trend in UK primary care (with the Harrold Shipman case contributing to that) to move away from single-handed and small practices. Thus, although the number of practices is reduced over time, the list size of the average practice has increased to compensate that. Several national incentivisation and remuneration schemes were and are achievable in a context of a large general practice (with a practice manager, research nurse, pharmacist, many GPs etc), so that drives several practice mergers as well, over the time period of interest. We have added a sentence and a reference at the start of the second paragraph of the discussion to clarify that:

"In the backdrop of a trend towards fewer and larger general practices,<sup>22</sup> our findings revealed..."

22. PULSE. Average practice list size grows by more than 2% in just eight months.

<https://www.pulsetoday.co.uk/news/practice-closures/average-practice-list-size-grows-by-more-than-2-in-just-eight-months/>

*In the Introduction section, results from national surveys are reported revealing an increase in number of GPs who report intentions to leave general practice from 19.4% in 2005 to 30% in 2015 and 39% in 2017. Could one conclude that the documented increase in GPs' intention to leave practice does not align with the findings of this study?*

Response: This is a very good point. Indeed, as expected, intention to leave is not quite the same as leaving. We have added this in the “comparison with other studies section”, to address this point: “Our findings also need to be evaluated in the context of rates of intentions to leave direct patient care within 5 years, as reported in national GP surveys. We cannot directly compare the rates we report and those from the surveys, since we cannot quantify those who leave direct patient care, only practice turnover, and we measure that annually, not over 5 years. However, there was discrepancy in trends, with “intention to leave” rates increasing from 19.4% in 2005 to 39% in 2017, and we would have expected a much larger increase in turnover if the intentions reported were fully followed through. Alternatively, perhaps there is an imminent large increase in turnover expected by 2022.”

*I have a hard time figuring out whether a high personnel flow due to many junior doctors might affect the equation of the turnover rate. Can number of doctors specialising in general practice (and with relatively many clinic stays of short term) be increased without affecting the equation negatively, i.e. resulting in a higher turnover rate?*

Response: Thank you for raising this. Our rates do not include junior doctors (either in the numerator or denominator), only GP partners and salaried GPs. Also, a great influx of junior doctors in primary care could affect the denominator in the turnover equation we present on page 6 (hypothetically, if we had included them in the calculations), thus reducing turnover. However, we know there is a great shortage of GPs in the UK and we rely on overseas qualified GPs to a large extent, while the UK government’s promises on targets for new GPs, to mainly replace retiring GPs, have not been met. To summarise, we do not think there is any risk of bias here, and we have expanded the discussion to reference our previous work that explored overseas GPs and the ageing GP workforce. We have added to the last two paragraphs in the “interpretation of findings and implication for practice” section, to clarify this:

“There is also variation in the characteristics of the GPs across regions, with some regions being served by older or overseas qualified GPs, who may be more mobile.<sup>30</sup>

High or increasing GP turnover is a concern for the entire healthcare system, especially considering existing difficulties in replacing retiring GPs.<sup>30</sup>”

*These two papers may be of interest to the authors:*

1: Pedersen AF, Nørøxe KB, Vedsted P. Influence of patient multimorbidity on GP burnout: a survey and register-based study in Danish general practice. *Br J Gen Pract.* 2020 Jan 30;70(691):e95-e101. doi: 10.3399/bjgp20X707837. PMID: 31932298; PMCID: PMC6960003.

2: Pedersen AF, Andersen CM, Olesen F, Vedsted P. Risk of Burnout in Danish GPs and Exploration of Factors Associated with Development of Burnout: A Two-Wave Panel Study. *Int J Family Med.* 2013;2013:603713. doi: 10.1155/2013/603713. Epub 2013 Dec 7. PMID: 24383000; PMCID: PMC3871500.

Response: Thank you, both are useful and are now cited in context in the first paragraph of the “Interpretation of findings and implication for practice” section.

Reviewer: 3

*Dr. Catherine Marchand, University of Kent Comments to the Author:*

*My overall opinion is that this paper is well presented and generally well written. I would have like to see more depth in the presentation of the strengths and limitations of the study. There is also repetition in the Discussion section.*

Response: Thank you, but this is a very difficult point to deal with since it is lacking in context. We are very happy to address something specific. For example, the “strengths and limitations” section is

currently 330 words, arguably longer than in most papers. Regarding repetitions in the discussion, although we do not feel repetition is necessarily bad if the aim is to explain or drive a point home, we could not identify anything particularly offensive, but we are happy to follow this up if needed.

*The section on Patients and Public Involvement is unclear. I am confused as to whether or not the PPI members were really involved in the project and more importantly I am not sure how the points presented in this section impact how the results were analysed or used in the interpretation of the results.*

Response: As we clearly stated, patients and the public were involved and fed into the interpretation of the findings from a PPI point of view. There is no single approach to PPI and we hope the reviewer understands the limitations when it comes to national administrative databases with a limited set of information, which cannot be expanded, and a single research question that is relevant to these datasets (what is the turnover rate and how has it changed over time). So we are not sure what the reviewer envisages in terms of co-design of the research question and analyses, in this context, but we would be very happy to take on board any suggestions for future work. Thus, considering the limitations with the data, our first PPI session (held on 16/12/2020) focused on the interpretation of the findings and how turnover impacts on the relationship between GP and patient, and continuity of care.

*The conclusions need more work. Some really good ideas are presented, but more information is needed and links between the results and the concluding statements need to be clearer.*

Response: Apologies, we do not feel that is a comment we can act on since it is quite generic and not particularly informative. The paper is currently 4,208 words long, (way) over the limit of most clinical journals – except open access ones. Again, we are happy to follow this up if the reviewer can be more specific.

#### VERSION 2 – REVIEW

<b>REVIEWER</b>	Pedersen, Anette Aarhus Universitet, Research Unit for General Practice
<b>REVIEW RETURNED</b>	17-May-2021
<b>GENERAL COMMENTS</b>	The authors have competently met all the points raised by the reviewers, and I gladly recommend acceptance of the manuscript.